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(ICSIE 2025)

"Interdisciplinary Bridges in the Digital Age"

ABSTRACT BOOKLET

06 - 07 November 2025

Dear Academicians, Researchers, and Participants,

The 4th International Congress on Science, Innovation and Education (ICSIE 2025), organized in cooperation between Istanbul Şişli Vocational School and International Vision University, serves as an international academic platform that supports the sharing of scientific knowledge and the development of interdisciplinary collaboration. This year, our congress has been held with the theme "Interdisciplinary Bridges in the Digital Age." In an era where digital transformation is rapidly advancing, our aim is to highlight the complementary nature of different disciplines and to encourage joint academic production.

Participants from various countries, including academicians, researchers, graduate students, and related stakeholders, have contributed to our congress. The studies presented in the fields of education, innovation, social sciences, health sciences, law, natural sciences, and engineering enrich the academic literature and shed light on future research endeavors.

We extend our gratitude to all scholars, session chairs, presenters, members of the evaluation committee, and the technical team for their contributions to the realization of this congress. We sincerely congratulate all participants who strengthened scientific interaction with their involvement, and we hope that this academic collaboration will continue to grow in the coming years.

With our respectful regards to all contributors to scientific development,

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ARTIFICIAL INTELLIGENCE IN THE ECONOMY: TRANSFORMING BUSINESS MODELS IN THE DIGITAL AGE

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ABSTRACT:
Digital transformation in Southeastern Europe is accelerating, with Serbia demonstrating leadership through advanced implementation of electronic invoicing and e-government systems. This paper analyzes Serbia's early and comprehensive adoption of mandatory e-invoicing, placing it among countries such as Italy, France, Poland, Belgium, Portugal, Greece, Turkey, Spain, Germany, and Romania, and positioning it as a regional pioneer. Serbia's progress is supported by significant investments in digital public infrastructure, including electronic signatures and seals, e-government services, and the National Data Center in Kragujevac. In contrast, neighboring countries such as Bosnia and Herzegovina are only beginning to establish basic digital tools, revealing a regional gap in digital maturity.

The practical impact of digitalization in Serbia is illustrated through a case study: a digital service implementation scenario carried out in Niš, Serbia, where a small metal processing enterprise adopted an AI-based predictive maintenance system and Power BI dashboards to optimize efficiency. Over twelve weeks, the SME showed substantial improvements: downtime decreased by 27%, overall equipment effectiveness (OEE) increased by nine percentage points, planning time was reduced by 35%, and customer complaints fell by 21%. These results confirm the cost-effectiveness and business value of integrating advanced digital and AI solutions into SME operations.

Beyond the regional context, global manufacturers are increasingly embracing robotics and autonomous systems to boost productivity and reduce dependence on human labor. Amazon, for example, aims to automate 75% of its operations by 2027—a move expected to replace hundreds of thousands of potential new jobs with robots and save over $12.5 billion by 2027. China is also leading this technological shift, surpassing other regions in industrial robotics and autonomous vehicle deployment. However, the European Union lags behind both the United States and China in the widespread adoption of robotics and autonomous technologies, which may affect its future competitiveness and innovation capacity.

Serbia's proactive approach and proven success indicate that strategic policymaking, technological investment, and innovation within SMEs can drive digital transformation. Yet, narrowing the global gap in automation and AI adoption remains an urgent challenge for the EU. The conclusion emphasizes that advancing robotics and autonomous systems, as seen in leading global economies, will be essential for Europe to sustain its industrial competitiveness in the digital era.

Keywords: Digital transformation, Serbia, SME, Artificial intelligence, Robotics.

ARTIFICIAL INTELLIGENCE IN HIGHER EDUCATION: FROM AUTOMATION TO PERSONALIZATION

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ABSTRACT:

The integration of Artificial Intelligence (AI) into higher education is catalyzing a paradigm shift—from automating routine administrative tasks to enabling deeply personalized learning experiences. This paper explores the multifaceted impact of AI, particularly through its synergy with Learning Management Systems (LMS), in transforming pedagogical practices, enhancing student engagement, and optimizing institutional operations. Drawing on recent scholarly literature, the study examines key applications such as intelligent tutoring systems, adaptive learning platforms, automated grading, and AI-driven student support services. While these innovations promise improved learning outcomes, equitable access, and operational efficiency, they also raise significant ethical concerns, including data privacy, algorithmic bias, academic integrity, and the potential displacement of human roles. The paper further identifies critical implementation challenges related to technological infrastructure, faculty readiness, and the digital divide. Emphasizing a human-centered approach, this research advocates for robust ethical frameworks, comprehensive faculty training, and inclusive policy development to ensure that AI adoption in higher education is both transformative and equitable. The study concludes with recommendations for practice, policy, and future research to guide the responsible and sustainable integration of AI in alignment with the core values of higher education.

Keywords: Artificial intelligence, Higher Education, Personalized Learning, Learning Management Systems (LMS), Adaptive Learning and Faculty Development.

TRACING PHYSICAL LITERACY IN THE PRESCHOOL PERIOD

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ABSTRACT:
The aim of this study is to examine preschool teachers' knowledge levels regarding the concept of physical literacy, their classroom practices, observed developmental outcomes, and professional needs. The study is structured according to the embedded single-case design, one of the qualitative research methods. Participants consist of 30 preschool teachers from Istanbul, selected using a convenience sampling method with maximum variation. Data were collected online through a Personal Information Form, Physical Literacy Questionnaire, and Semi-Structured Interview Form developed by the researchers. Interviews were recorded and transcribed. The content analysis process was carried out using MaxQDA software, and inter-coder reliability was found to be above 80%. Four main themes were identified in the data analysis: Knowledge, Practice, Relating and Outcomes, and Evaluation. The Knowledge theme reveals teachers' familiarity with the concept of physical literacy and their information sources. The Practice theme evaluates the frequency and types of physical activities conducted in the classroom. Under the Relating and Outcomes theme, teachers' observations of children's social-emotional, cognitive, and behavioral development in relation to physical activities are analyzed. The Evaluation theme includes teachers' assessments of institutional conditions and their own professional competencies. The findings show that while most teachers are interested in the concept of physical literacy, they can only integrate it into classroom practices to a limited extent due to lack of knowledge. Furthermore, teachers expressed a strong need for practical support, sample materials, and visual content. These results indicate that comprehensive and supportive approaches based on teacher training are needed to structure physical literacy in early childhood education.

Keywords: Physical literacy, preschool teacher, qualitative research, child development, teacher perception, professional competence.

NEURODIVERSITY AND INCLUSIVE EDUCATION: CURRENT APPROACHES, CONCEPTUAL FRAMEWORK, AND EDUCATIONAL IMPLICATIONS

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ABSTRACT:
In recent years, two concepts have emerged in the fields of education and psychology: neurodiversity and inclusive education. Neurodiversity argues that cognitive differences arenot disorders but a natural part of human diversity, and it addresses conditions such as autism, attention deficit hyperactivity disorder, and dyslexia in the context of diversity. Thisperspective, which goes beyond disease-centered approaches, emphasizes that the brain andmind develop unlimited variations and questions the notion of a single "correct" or "normal" understanding. For this reason, neuro-diversity, which has begun to be used in recent years in the literature instead of "disability," positions neurological differences not as a deficiency but as a valuable dimension of social diversity.

Inclusive education is defined as an understanding based on justice and equal opportunity thataims to ensure equal participation in education by respecting the individual differences of allstudents. This study examines the historical development, conceptual framework, and place in the literature of neurodiversity and inclusive education; it discusses the points where the twoconcepts intersect in the context of educational policies, teacher competencies, classroompractices, instructional adaptations, and family-teacher collaboration. Furthermore, theimportance of creating neuro-diversity-friendly learning environments is emphasized withinthe framework of the United Nations Sustainable Development Goals, UNESCO's vision of inclusive education, and Universal Design for Learning (UDL).

This research synthesizes current debates at the conceptual and theoretical levels rather thanrelying on empirical data; it aims to develop a comprehensive understanding of therelationship between neurodiversity and inclusive education. Thus, it offers practicalrecommendations for teachers, education administrators, and policymakers and establishes a foundation for further research.

Keywords: Neurodiversity, Inclusive Education, Education Policies, Universal Learning Design, Diversity

NATIONAL PRIDE AND SPORTSMANSHIP: ETHICAL THEMES IN WOMEN'S VOLLEYBALL NEWS

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ABSTRACT:
This study examines how ethical discourse and fair play values are represented in Turkish media coverage of women's volleyball. Employing a qualitative content analysis design, the research analyzes 35 news items published between 2024–2025 by Anadolu Agency (AA), TRT Spor, Fanatik, and Hürriyet Spor. Items were coded against criteria of impartiality, accuracy, fair representation, respect, credibility, ethical issues, and explicit fair-play emphasis. Findings indicate that news language generally maintains high ethical standards. AA and TRT Spor consistently reflect the principles of public broadcasting—impartiality, accuracy, and credibility. While Fanatik adopts an emotive and supportive tone, it remains within ethical boundaries with a strong emphasis on achievement and respect for athletes' efforts. In Hürriyet, ethical language is preserved in institutional news reports, whereas the use of subjective expressions in opinion pieces partially reduces impartiality. Across all sources, the representation of women athletes is framed by themes of respect, pride, and national identity, with no evidence of focus on physical appearance or gender-based bias. Fair-play references appear mostly indirectly, situated within notions of "the spirit of sportsmanship, national unity, and respect for effort." Overall, Turkish sports media show substantial adherence to ethical principles in reporting on women's volleyball, though levels of impartiality and restraint vary by genre (op-ed, analysis, interview).

Keywords: Sports media, women's volleyball, ethical discourse; fair play, content analysis.

THE MEETING POINT OF UNESCO AND LOCAL CRAFTSMANSHIP: THE CASE OF BULDAN WEAVING

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ABSTRACT:
Weaving is not only an economic activity but also a significant component of intangible cultural heritage, carrying meanings related to identity, memory, and cultural continuity. In this context, Buldan weaving—whose historical roots date back to the Roman period—occupies a unique place in Turkey's cultural richness as a craft that has endured for centuries through local production traditions. Located along the ancient trade routes between Mesopotamia and Anatolia, Buldan has historically been a hub where textile production served as a primary livelihood for the local population. Buldan weaving gained prominence during the Seljuk and Ottoman periods and underwent significant transformations in the 19th century in line with the Ottoman Empire's industrialization efforts. The region's weaving culture developed through a transmission system based on family and workshop-based production models, where traditional knowledge and skills were passed down. The integration of home and workshop enabled artisans to embed production processes directly into their living spaces, facilitating the transmission of the craft both physically and spiritually across generations.

Today, while production culture has been integrated with industrial systems and motorized looms have replaced handlooms, traditional traces still persist. Especially products with geographical indication registration, such as "Buldan Bezi" and "Buldan Bükülü Bezi", continue to represent strong symbols of cultural continuity with their aesthetic and functional qualities. The master-apprentice model plays a vital role in preserving the knowledge and skills related to weaving. However, the dynamics of modern life threaten the sustainability of this system, and a decline in the number of artisans is being observed. Nevertheless, events such as the "Weaving, Culture, and Handicrafts Festival" held in Buldan help raise public awareness and bring weaving back into visibility. Initiatives like the award-winning textile designs inspired by the colors of the ancient city of Tripolis are powerful examples of blending tradition with contemporary creativity. Moreover, national and international projects such as "Truth of the Loom," organized in collaboration with the South Aegean Development Agency and the Buldan Chamber of Commerce, aim to promote Buldan weaving on a global scale and serve as an important bridge in the fields of cultural diplomacy and creative industries. As emphasized in the strategic documents of UNESCO and the Council of Europe regarding the sustainability of cultural heritage, there is a strong relationship between cultural and economic value. In the case of Buldan, this relationship can be clearly observed. Cultural heritage is not merely a "past" to be preserved, but also a dynamic resource that nurtures development, creativity, and social cohesion.

Buldan weaving represents a dynamic and living form of cultural heritage, where traditional craft knowledge interacts with contemporary production techniques. This craft is not only about producing material goods but also about generating meaning, transferring experience, and constructing social identity. As bearers of this heritage, masters and artisans play a critical role in ensuring cultural continuity. The preservation of artisanal practices by integrating them with traditional knowledge systems allows cultural heritage to be both safeguarded and adapted to contemporary conditions. In this regard, local production centers like Buldan are considered unique examples that contribute to cultural diversity not only at the national level but also globally.

Keywords: Buldan Weaving, Handicrafts, Cultural Heritage, Sustainability, Artisanship

LAW'S EVOLUTION IN THE AI AGE: HUMAN DIGNITY AND GLOBAL GOVERNANCE

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ABSTRACT:
The evolution of law in the age of artificial intelligence is not merely a legislative adaptation to novel technological phenomena, but the renewed safeguarding of human dignity within a digital context. This article analyzes, through a dignity-centered approach, the risks of rights violations arising from algorithmic decision-making, autonomous systems, and data-driven governance practices—namely loss of autonomy, discrimination, mass surveillance, and gaps in transparency and accountability. The inquiry employs a comparative legal method and a normative–conceptual framework, jointly addressing the principles, rules, and institutional mechanisms situated at the intersection of constitutional law, international human rights law, and administrative law. The study advances three claims: (i) Dignity, as a "super-principle" within the AI ecosystem, should function as a binding interpretive criterion guiding core rights such as privacy, equality, and freedom of expression; (ii) Global governance should, through a multi-level and multi-stakeholder design, integrate soft-law standards with hard-law mechanisms in a complementary manner; (iii) Effective protection can be secured—on the basis of a lifecycle approach—through ex ante risk assessment, human rights due diligence, explainability, traceability, and obligations of independent oversight.

Within this framework, the article translates a dignity-based normative matrix into concrete policy instruments: mandatory impact assessments for high-risk systems; record-keeping and auditability to ensure algorithmic accountability; developer and deployer duties of care centered on "fidelity and non-maleficence"; data-governance and quality standards to ensure compliance with the prohibition of discrimination; a right to explanation and an effective avenue of appeal in administrative procedure; and principles of mutual recognition and minimum harmonization for cross-border applications.

In conclusion, the authority of law in the AI era cannot be reduced to technical solutionism; it can be strengthened through an accountable and inclusive design of global governance that centers the principle of human dignity. The proposed architecture should be complemented by effective domestic legal mechanisms that reinforce sanctions and remedies; experimental regulatory sandboxes bounded by minimum "safety rails"; technical protocols that secure interoperability of standards, data portability, and shared auditing; as well as capacity-building and fair-benefit-sharing principles in the Global South—and monitoring.

Keywords: Evolution, Law, Human Dignity, Global Governance.

RIGHT TO ORGANIZE MEETINGS, DEMONSTRATIONS AND MARCHES IN NORTH MACEDONIA AND TURKEY

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ABSTRACT:
The purpose of this thesis is to analyze the constitutional right to organize meetings, demonstrations and marches as one of the fundamental pillars of democratic societies. The study aims to evaluate how this right enables individuals to collectively exercise their freedom of thought and expression, and how it is implemented within the constitutional and legal frameworks of Turkey and North Macedonia. In this context, the research examines the historical development of the right to peaceful assembly and demonstration, its constitutional foundations, and its position within international human rights law. International instruments such as the European Convention on Human Rights (ECHR) and the International Covenant on Civil and Political Rights (ICCPR) are analyzed alongside the relevant judgments of the European Court of Human Rights and national constitutional courts. The comparative analysis focuses on both the similarities and differences between the two countries systems, emphasizing administrative procedures for notification and authorization, the scope of police intervention, and the legitimacy of restrictions imposed on this right under democratic principles. Recent case studies and practices are examined to determine whether the implementation of this right aligns with the rule of law, democratic participation, and the protection of fundamental freedoms. The findings indicate that while both Turkey and North Macedonia recognize the right to assembly and demonstration in their legal systems, significant differences exist in practice. In Turkey, broad administrative discretion and security-based restrictions frequently result in limitations on this freedom, whereas North Macedonia adopts a more flexible, rights-oriented approach that facilitates broader public participation. These variations directly influence the quality of democratic engagement and the realization of freedom of expression. The thesis concludes that the effective protection of the right to assembly depends not only on its constitutional recognition but also on the democratic maturity of state institutions and their adherence to human rights–based governance. Consequently, both Turkey and North Macedonia should strengthen their legal and institutional frameworks to ensure that any limitations on this right remain necessary, proportionate, and consistent with international human rights standards.

Keywords: Right to meeting, demonstration and marches; democratic principles; Turkey; North Macedonia.

COLD APPLICATION AFTER TRANSRADIAL CORONARY ANGIOGRAPHY INTERVENTION EFFECT ON PAIN, ECCHYMOSIS, AND COMFORT LEVELS IN PATIENTS

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ABSTRACT:

Objective: This study aims to evaluate the effect of cold [ice] application following transradial coronary angiography [TRA] on early postoperative complications [pain, hematoma, bleeding, edema, ecchymosis, and ambulation difficulty] and postoperative comfort in patients who underwent TRA with TR band application.

Method: This research was conducted using an experimental, pretest-posttest control group design. A total of 104 patients who underwent TRA and TR band application were included in the study. Patients were randomly assigned to an experimental group [n=52] and a control group [n=52]. While the experimental group received an additional cold [ice] application over the TR band, the control group received only the standard TR band care. Data were collected through laboratory parameters, pain scores [NRS], the Early Postoperative Comfort Scale [EPKÖ], and complication frequencies.

Results: At the 0th hour after the procedure, no statistically significant differences were found between the experimental and control groups regarding pain, hematoma, bleeding, or comfort levels [p>0.05]. However, during the 1st–6th hour period, the experimental group showed significantly lower rates of pain, hematoma, edema, ecchymosis, and ambulation difficulty [p<0.05]. The duration of TR band retention was shorter in the experimental group, and both inflation volume and air withdrawal amounts were lower. From the 7th to 24th hour, the incidence of ecchymosis and edema also remained significantly lower in the experimental group. No significant difference was found between groups in terms of postoperative comfort levels.

Conclusion: The findings indicate that ice application effectively reduces local complications following TRA. However, it does not create a significant difference in postoperative comfort levels. Therefore, cold application can be considered a safe and effective supportive nursing intervention for preventing post-procedural complications.

Keywords: Transradial angiography; TR band, cold application; pain management; comfort level.

POKA-YOKE APPLICATION IN HEALTHCARE SERVICES

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ABSTRACT:

Since healthcare services comprise high-risk and structurally variable processes, the likelihood of errors increases. Particularly, errors in clinical practices can jeopardize patient safety, disrupt treatment processes, and increase healthcare costs. Therefore, all processes in healthcare services must be regularly inspected and controlled. Reducing errors that may occur within processes or in interactions between processes will directly contribute to increasing service quality. Minimizing human errors within organizational activities is critical for the sustainability of quality and safety. In this context, the Poka-Yoke approach, which was developed to prevent errors in the production sector or to detect them at an early stage, also has significant potential in the field of healthcare. In the literature, it is stated that visual, mechanical and digital Poka-Yoke techniques applied in the field of health are effective in reducing errors caused by incorrect medication use, patient identification errors, inappropriateness in surgical procedures and lack of communication. Furthermore, practical applications such as barcode systems, automated alert mechanisms, color-coding protocols, and electronic prescribing serve the objective of minimizing the risk of errors and thereby enhance process reliability. Also, it is reported that Poka-Yoke methods contribute to healthcare services significantly by reducing costs, enhancing patient and staff satisfaction and improving the quality of service. However, barriers such as cultural resistance, financial limitations, and lack of training are among the factors limiting the widespread use of the method. In the future, the integration of artificial intelligence, machine learning and augmented reality technologies is anticipated to make Poka-Yoke applications more effective and sustainable. In conclusion, Poka-Yoke is regarded as a vital instrument in healthcare for attaining and sustaining standards of safety and quality.

Keywords: Digital Health, Error Prevention, Healthcare Services, Patient Safety, Poka-Yoke

THE PSYCHOLOGICAL EFFECTS OF CONGENITAL ANOMALIES ON PARENTS

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ABSTRACT:
This study comprehensively examines the psychological effects of congenital anomalies on parents. Congenital anomalies are structural or functional abnormalities that occur during fetal development and are considered a major public health issue in both developed and developing countries. From the moment of diagnosis, parents may experience intense emotional reactions such as shock, denial, guilt, anger, anxiety, and hopelessness. Mothers, in particular, often associate the cause of the anomaly with their own behavior or health conditions, leading to feelings of guilt and inadequacy. Such emotional burdens can significantly affect parents' daily lives, marital relationships, and social functioning. The psychological experiences of parents are shaped by emotional reactions following diagnosis, changes in social relationships, coping strategies, and psychosocial support needs.

Research indicates that parents of children with congenital anomalies are at higher risk for depression, anxiety, and post-traumatic stress disorder compared to parents of healthy children. Nevertheless, factors such as social support, religious coping mechanisms, access to accurate medical information, and effective communication with healthcare professionals contribute to better psychological adjustment and resilience. Providing early psychological counseling and psychosocial support services for parents not only enhances their emotional well-being but also improves the quality of child care. Developing family-centered psychosocial support programs and promoting multidisciplinary approaches within health systems are essential for improving the overall quality of life of these families. This article aims to deepen the understanding of how parents cope with congenital anomalies, identify their psychological challenges, and highlight effective intervention strategies that can facilitate adaptation and resilience.

Keywords: congenital anomalies, parental psychology, psychosocial support, stress, coping mechanisms

THE IMPACT OF MOISTURE, MOLD, AND VENTILATION SYSTEMS ON HUMAN HEALTH IN HEALTHCARE FACILITIES

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ABSTRACT:
Healthcare buildings represent highly sensitive environments where infection control, indoor air quality, and thermal comfort must be maintained at optimal levels. This study examines, through a multidisciplinary engineering perspective, the effects of humidity, mold growth, and ventilation systems on human health within healthcare facilities. Excessive relative humidity creates a favorable medium for microbial proliferation, enabling airborne mold spores to trigger allergic, toxic, and infectious reactions among occupants. Insufficient or improperly balanced mechanical ventilation systems further contribute to the spread of airborne pathogens, increasing the prevalence of symptoms associated with the Sick Building Syndrome (SBS).

The research evaluates the design parameters of HVAC (Heating, Ventilation, and Air Conditioning) systems used in hospitals, focusing on air exchange rates, filtration efficiency, and humidity control mechanisms. Findings reveal that precise humidity regulation and optimized airflow dynamics play a critical role in reducing biological contaminants and ensuring environmental sterility. Moreover, surface–microorganism interactions were investigated to highlight the importance of antimicrobial coatings and material selection in maintaining healthy indoor environments.

Results indicate that humidity and ventilation management should not be viewed merely as environmental control criteria, but as fundamental public health engineering issues. Ultimately, achieving sustainable indoor air quality in healthcare structures requires effective moisture control, systematic maintenance, and integrative ventilation design strategies that collectively safeguard human health.

Keywords: Indoor Air Quality, Moisture and Mold Control, HVAC System, Healthcare Facilities, Building Biosecurity.

UNIVERSAL DESIGN AND PEDESTRIAN BRIDGE ACCESSIBILITY IN THE VARDAR RIVER CORRIDOR, GOSTIVAR (NORTH MACEDONIA)

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ABSTRACT:
Urban river corridors are critical public realms that structure mobility, recreation, ecological continuity, and social cohesion within cities. However, inadequate design solutions particularly at pedestrian bridges create serious accessibility barriers for vulnerable groups such as persons with disabilities, the elderly, cyclists, and parents with strollers. This study investigates the accessibility of the Vardar River corridor in central Gostivar, North Macedonia, with a particular focus on the most frequently used pedestrian bridge and its integration into the riverside path network.

The research employed a mixed-methods approach, combining field observations with a trilingual (Turkish–Albanian–Macedonian) survey of 100 participants aged 14–73. Findings reveal that 90% of respondents considered the bridge inaccessible, while 88% expressed a preference for ramped design over stairs. These results demonstrate that the existing structure does not comply with the Principles of Universal Design or the European Accessibility Act (2019).

In response, the study advances a universally designed bridge proposal featuring ramps, tactile surfaces, and inclusive circulation principles to accommodate all user groups. Beyond a physical intervention, this proposal represents a strategic step toward promoting accessible, equitable, and sustainable urban life in Gostivar.

Keywords: Accessibility, Universal Design, Public Space, River Corridor, Pedestrian Bridge, Gostivar, North Macedonia.

REDUCING AND RECYCLING THE STRUCTURAL WASTES IN THE CONTEXT OF SUSTAINABLE ARCHITECTURE: A CASE STUDY IN GOSTIVAR

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ABSTRACT:
In the ever-developing and changing world contexture, many changes and innovations in the field of architecture have been brought to the world of science. In particular, it is known that the development of industry and the fact that the waste generated constantly occupies the agenda in the society, wastes have developed as a sub-branch of architecture before they become a problem of sustainable architecture. Based on this, since the sustainable architecture and the waste diary of the city of Northern Macedonia and Gostivar, where our university is located, has not been included in any scientific study before, the subject of the thesis has been chosen to provide both an alternative study for our city and a different work in this field. The thesis study has been determined as the reduction and recycling of structural wastes in the context of sustainable architecture. The area previously used as a factory in the Gostivar region was chosen as the study area. Based on this, the concept of sustainability, sustainable architecture and its principles are examined in the context of the theoretical framework. In the theoretical framework, the definition, the scope and the recycling of structural wastes was

In this study, besides the structural waste management in developed countries and the structural waste legislation in Macedonia, the reduction and recycling of structural wastes from the Gostivar region were analized. In this section, the general definition of the working area and the working area calculations have been made. As a result of the findings obtained in the study, the aim of the local / central government to be a guide regarding the application of waste reduction and recycling has been investigated and presented to the interest of the country / region administration and the scientific world.

Keywords: Sustainable Architecture, Waste Reduction, Gostivar.

EMBEDDED SYSTEMS: A LOOK AT THE FUTURE WITH ARTIFICIAL INTELLIGENCE AND SUSTAINABILITY

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ABSTRACT:
This paper investigates the intersection of embedded systems, Artificial Intelligence (AI), and sustainability, presenting a holistic, future-oriented vision. Through a comprehensive literature review, the study analyzes the opportunities and challenges that arise from the integration of these domains. Embedded AI (EAI), particularly with ultra-low-power approaches like TinyML, is identified as a critical enabler for sustainability goals by enhancing resource efficiency in areas such as smart grids, precision agriculture, and smart cities. The edge computing paradigm forms the basis of "Green AI" strategies by reducing latency, strengthening data privacy, and alleviating the energy burden of centralized cloud infrastructures. However, the proliferation of this technology introduces significant environmental, social, and ethical challenges, including the carbon footprint from manufacturing billions of devices, the escalating electronic waste (e-waste) crisis, and algorithmic bias. The study highlights this dichotomy in EAI's impact and warns of the "rebound effect," where efficiency gains risk increasing total consumption. In conclusion, it is argued that building a sustainable digital future is possible not only through technological optimization but also through the adoption of life cycle assessment, circular economy principles, and human-centric, ethical governance frameworks.

Keywords: Embedded AI (EAI), Sustainability, Green AI, TinyML.

MOBILE HEALTH APPLICATIONS AND PATIENT MANAGEMENT

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ABSTRACT:
Mobile health (mHealth) refers to the provision and management of healthcare services through mobile devices and technologies. This encompasses the use of smartphones, tablets, wearable devices, and other portable technologies to collect, monitor, manage, and analyze health-related data. mHealth applications enable individuals to monitor and manage their health more effectively, while also allowing health professionals to remotely track patients and optimize treatment processes, thereby making healthcare more accessible and personalized. Beyond merely tracking health information, mobile health applications are employed to manage patient care, support diagnosis, and improve and facilitate treatment processes. They serve a broad range of functions, from managing chronic conditions to tracking physical activity. In particular, for individuals suffering from diseases requiring longterm monitoring and treatment—such as diabetes or hypertension—these applications offer opportunities for regular tracking and data collection. Consequently, patients can record daily health metrics (e.g., blood glucose, blood pressure, heart rate) in real time and share them with physicians or healthcare professionals. This capability enhances the ability of health professionals to monitor patients' conditions more effectively. Moreover, mobile health applications ensure that individuals' health information can be stored digitally, enabling secure preservation of patient data. The digital accessibility of data facilitates time savings in treatment processes, accelerates access for healthcare workers, and supports more accurate decisionmaking. At the same time, the use of mHealth strengthens communication between patients and physicians. By offering personalized approaches in patient management, these technologies can increase adherence to treatment and improve overall health outcomes. In conclusion, mobile health applications contribute significantly to rendering health services more efficient, personalized, and accessible, thus playing a pivotal role in the future of healthcare management.

Keywords: Digital Health, Mobile Health, Patient Management, Patient Monitoring.

SMARTPHONES, SCREENS, AND FOUNDATIONAL SKILLS: POTENTIAL NEGATIVE IMPACTS ON CHILDREN AGED 7–11, TRIANGULATED WITH VETERAN TEACHERS' REPORTS

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ABSTRACT:
Objective. To examine evidence on smartphones/screen media and core outcomes in children aged 7–11—reading, writing, mathematics, attention, sleep, and language—and to triangulate findings with a survey of teachers with ≥20 years' experience. Narrative review of recent international assessments and peer-reviewed studies, paired with a cross-sectional survey of 50 veteran primary teachers (Years 1–5). International data show record post-2018 declines in mathematics and notable reading drops; classroom device distraction is common and relates to lower achievement. Clinical guidance links evening device use to curtailed sleep, a known mediator of academic performance. Our teacher survey indicates pronounced deterioration vs ~20 years ago in reading comprehension (90% "worse"), written expression (94%), basic mathematics (80%), attention (96%), pleasure reading (98%), handwriting (92%), and following multi-step instructions (88%). Teachers also report sharp increases in speech-sound problems (98% "more common"). Heavy or unstructured smartphone/screen use, especially at night and for leisure, plausibly contributes—via displacement of reading/talk, attentional fragmentation, and sleep loss—to weaker foundational skills. Policy should pair consistent school-day phone limits with family media plans and language-rich routines. Evidence remains heterogeneous; distinctions between purposeful learning use and leisure overuse are critical.

Keywords: smartphone, children's, education, teachers, reading, writing, mathematics, attention.

THE ROLE OF FEEDBACK IN ENHANCING STUDENT MOTIVATION IN DIGITAL LEARNING ENVIRONMENTS

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ABSTRACT:
With the advancement of technology, digital learning environments have gained a significant role in education, offering an alternative to traditional methods. Maintaining high student motivation in these environments is crucial for the efficiency of learning processes. Feedback, as a key component of education, provides students with guidance, support, and opportunities to enhance their learning experience. On digital platforms, in particular, effective feedback increases student motivation and has a direct impact on success.

This study examines the impact of feedback on student motivation within digital learning environments. Research shows that when feedback is constructive, timely, and personalized, it strengthens students' self-confidence and positively influences their motivation. The instant feedback opportunities provided by digital tools offer students the chance to quickly assess their learning progress and correct their mistakes. Consequently, student participation and comprehension of course materials increase while the likelihood of motivational loss decreases.

The study also addresses the effects of delivering feedback in written, verbal, and visual forms in digital settings. Feedback that is clear and tailored to students' needs significantly enhances the effectiveness of learning processes. Additionally, positive and encouraging feedback fosters greater student interest in course material.

In conclusion, feedback in digital learning is an essential source of motivation for students' learning processes. The main focus of the article is on how educators can support students academically and psychologically by being mindful of the quality and timing of feedback.

Keywords: Digital Learning, Student Motivation, Feedback

DIGITAL AGE AND MENTAL HEALTH: AN EXAMINATION OF PSYCHOLOGICAL WELL-BEING

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ABSTRACT:
The digital age significantly influences individuals' daily lifestyles, social relationships, andmental health. This transformation brings new perspectives on how psychological well-beingis defined, maintained, and enhanced, and it introduces different research and interventionneeds in the field of psychiatry. The aim of this paper is to examine the effects of the digitalage on psychological well-being from a psychiatric perspective and to evaluate the positiveand negative impacts of technology use on individuals' mental health based on currentliterature. Research indicates that digital technologies have bidirectional effects on psychological well-being. Social media and digital applications facilitate interpersonalcommunication, increase access to social support networks, and strengthen well-beingthrough psychological support and awareness-focused interventions. However, excessivetechnology use, digital addictions, cyberbullying, and online burnout can increase levels of depression, anxiety, and loneliness. Therefore, the digital age presents both a powerfulsupport resource and a risk factor for psychological well-being. In psychiatry, there is a needfor preventive mental health approaches that promote the conscious and healthy use of digitaltechnologies. Furthermore, the widespread implementation of digital mental healthapplications in an evidence-based, ethical, and accessible manner represents a significant step toward enhancing individuals' psychological well-being.

Keywords: Digital Age, Psychological Well-Being, Mental Health, Psychiatry, TechnologyUse

INTEGRATION OF BRAIN–COMPUTER INTERFACE AND TRANSCRANIAL MAGNETIC STIMULATION: NEW HORIZONS IN NEUROMOTOR LEARNING

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ABSTRACT:
Neuromotor learning is a fundamental field that aims to restore motor functions following damage to the nervous system caused by any reason. In recent years, innovative technologies integrated into the field of neuromotor rehabilitation have accelerated recovery processes while supporting conventional treatment methods. Among these innovative technologies, approaches such as brain-computer interface (BCI) and transcranial magnetic stimulation (TMS) have attracted significant attention. These technologies enhance recovery by supporting the brain's capacity for relearning, namely neuroplasticity. BCI technology detects motor intentions from brain biosignals and transfers them to external devices, whereas TMS is a non-invasive method that regulates neural activity by applying magnetic stimulation to specific regions of the brain, thereby supporting neuroplasticity. Although the effectiveness of both techniques has been demonstrated individually, their integration has emerged as a novel research area. Reinforcing motor intention signals obtained through BCI simultaneously with TMS has the potential to accelerate learning processes and strengthen functional recovery. This study focuses on the combined use of BCI and TMS, addressing the potential contributions of this integrated method to neuromotor learning and aiming to provide perspectives that may guide future research.

Keywords: Brain–computer interface, Neuromotor learning, Neuroplasticity, Neurorehabilitation, Transcranial magnetic stimulation.

ZIONISTS AND THEIR ACTIVITIES UNTIL THE ESTABLISHMENT OF THE MANDATE OF PALESTINE

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ABSTRACT:
The birth of Zionism as a political ideology was based on the colonization of the territory of Palestine with Jews living in Europe, the USA and Russia. This political initiative as an idea was not only of some Jews but also had support from some Christians. Zionist Christians, based on their religious interpretations, justified and supported the migration of Jews to Palestine as a religious duty. They believed that the coming of Jesus Christ to earth would happen after the Jews were gathered again in Palestine.

In this scientific paper, I will mainly analyze the activity of Jewish Zionists and their cooperation with politicians and bureaucrats of the West and the Ottoman Empire to achieve their goal. The Zionists also intensified their activity in the Ottoman Empire, especially during the period of the Young Turks. Their political activity intensified when the First World War began, since with the entry of the Ottoman Empire into that war, the Zionists saw the opportunity to separate the territory of Palestine from Ottoman sovereignty. After the Paris Peace Conference, it was decided that Palestine would be under the mandate of Great Britain, a decision that was in favor of realizing the goals of the Zionists to form their state in Palestine.

While writing this scientific paper, I will analyze some important treaties, documents and books of Zionist authors, as well as published memoirs of some statesmen of that period.

Key words: Zionism, Palestine, Ottoman Empire, Theodor Herzl.

LEGAL CAPACITY AS A DETERMINATIVE FACTOR IN THE FORMATION OF LEGAL RELATIONS

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ABSTRACT:
This paper examines legal capacity as a determinative element in the creation, validity, and enforceability of private-law relations. Despite detailed civil-law provisions and substantial jurisprudence, ambiguity persists concerning the two foundational dimensions of capacity—capacity to have rights (status or passive capacity) and capacity to act (active capacity). The study clarifies their conceptual boundaries and practical intersections for both natural persons and legal persons, arguing that many disputes arise from conflations of personality, agency, and representation, as well as from under-specified limits on institutional authority.

The analysis proceeds along three axes. First, it delineates threshold conditions governing capacity—age of majority, mental competence, emancipation, corporate purpose, and organ authority—together with limits imposed by mandatory norms, public policy, ultra vires doctrine, and protective regimes such as guardianship and curatorship. Second, it maps modalities of capacity—full, limited, and derivative—across the transactional life cycle: ex ante in consent formation, representation, and disclosure; and ex post in remedies, including nullity, annulability, restitution, and reliance-based relief. Third, it evaluates conflicts of law and forum considerations, showing how divergent national standards and recognition of legal personality impact cross-border dealings and the allocation of risk between counterparties.

Methodologically, the paper integrates statutory interpretation with a functional reading of leading cases to articulate criteria that promote legal certainty, foreseeability, and the protection of vulnerable parties while preserving transactional efficiency. It proposes a proportionality-informed framework that calibrates evidentiary burdens, allocates duties of inquiry, and tailors remedies to degrees of incapacity and counterparty diligence. The study concludes that a coherent doctrine of capacity requires explicit alignment between substantive rules and remedial design, and that clearer guidance on representation, disclosure, and institutional authority would reduce litigation and support stable private ordering.

Keywords: legal capacity; passive capacity; capacity to act; natural person; legal person; legal relation; guardianship; ultra vires; private international law.

ASSESSMENT OF WATER RESOURCES SUSTAINABILITY IN THE KÜÇÜK MENDERES BASIN, TURKEY

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ABSTRACT:

This study evaluates the sustainability of surface water resources in the Küçük Menderes Basin, Turkey, where a significant share of the available water is allocated to agricultural use. The Water Evaluation and Planning (WEAP) System, developed by the Stockholm Environment Institute, was applied to model the basin's water balance and management strategies. The analysis included seven operational irrigation reservoirs—Beydağ, Burgaz, Bademli, Rahmanlar, Aktaş, Ergenli, and Uladi—along with irrigation areas exceeding 1,000 hectares. Baseline hydrological conditions were defined using observed mean flow data from 1980–2014. Building on these data, three management scenarios (optimistic, reference, and pessimistic) were simulated by adjusting conveyance losses and irrigation efficiencies. In addition, a "Drought Years Scenario" was developed by combining drought-period flows with the pessimistic management assumptions to represent the most critical hydrological conditions. Simulation results reveal that all scenarios project a growing water deficit in the basin during the 2010–2050 period. The average annual deficit was estimated at 13.4×10^6 m³ under the optimistic scenario, 38×10^6 m³ under the reference scenario, 80×10^6 m³ under the pessimistic scenario, and 135×10^6 m³ under the drought scenario. These findings indicate that even under favorable management and hydrological conditions, the Küçük Menderes Basin will face escalating water stress in the coming decades. Therefore, implementing water-saving irrigation technologies, minimizing conveyance losses, and integrating climate-resilient water management policies are essential for ensuring the basin's long-term water sustainability.

Keywords: water resources management; WEAP modeling; scenario analysis; irrigation efficiency; Küçük Menderes Basin

PRODUCTION AND CHARACTERIZATION OF SULFATED PVA MEMBRANES

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ABSTRACT:
The growing need for efficient and sustainable energy storage systems has made vanadium redox flow batteries (VRFBs) a promising technology due to their long cycle life, scalability, and operational safety. However, commercial membranes such as Nafion are limited by their high cost, oxidative instability, and low selectivity toward vanadium ions. To address these challenges, this study focuses on the design and characterization of electrospun composite membranes incorporating metal–organic frameworks (MOFs) into a sulfonated polyphenylsulfone (sPPSU) matrix as cost-effective and high-performance alternatives for VRFB applications. Three different MIL-140-based MOF structures were synthesized and used as fillers: pure MIL-140-S, amine-functionalized MIL-140-N, and polydopamine-coated MIL-140-P. Each MOF type was incorporated at 3 wt% into the sPPSU polymer and fabricated into nanofiber membranes via the electrospinning technique. The produced membranes were extensively characterized to

investigate their physicochemical, morphological, and electrochemical properties using X-ray diffraction (XRD), Fourier-transform infrared spectroscopy (FTIR), Brunauer–Emmett–Teller (BET) surface area analysis, and scanning electron microscopy (SEM). In addition, key performance parameters such as ion exchange capacity (IEC), proton conductivity, porosity, water uptake, swelling ratio, and mechanical strength were evaluated. The results demonstrated that MOF incorporation significantly improved both the ionic and mechanical performance of the membranes. The MIL-140-N membrane exhibited the highest proton conductivity (5.79 µS/cm) and IEC value (8.39 meq/g), attributed to the amine groups that enhance proton transport through hydrogen bonding and improved hydrophilicity. The MIL-140-N sample also showed the highest porosity (75.99%) and water retention capacity, confirming its potential as a highly conductive proton exchange membrane. Conversely, the MIL-140-P membrane achieved superior mechanical strength (21.86 N/mm²) and the lowest swelling ratio (8.0%) due to the polydopamine coating, which improved interfacial compatibility and limited excessive water absorption. Overall, the comparative results revealed that both MIL-140-N and MIL-140-P modified membranes exhibited a favorable balance between ionic conductivity, dimensional stability, and mechanical robustness. These findings indicate that sPPSU/MIL-140 composite membranes can serve as promising, cost-effective, and environmentally sustainable alternatives to commercial Nafion membranes in vanadium redox flow battery systems. Future studies will focus on long-term charge–discharge cycling tests to assess their electrochemical durability under real VRFB operating conditions.

Keywords: Electrospinning, MOF, PPSU, proton conductivity, vanadium redox flow battery

APPLICATION OF RESPONSE SURFACE METHODOLOGY (RSM) IN OPTIMISING PECTIN EXTRACTION FROM PUMPKIN PEEL WASTE

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ABSTRACT:
The transformation of food waste into high-value products is a significant study area that supports the circular economy by providing solutions to environmental and economic issues. The global accumulation of waste produced by agriculture-based industries over time adversely affects the economy and living beings. This waste comprises by-products produced during the processing of raw materials in the food sector. Researchers aim to mitigate environmental waste by transforming food waste into valuable items. The method of waste disposal poses a threat to the environment and food safety. The use or recycling of food by-products contributes to food reduction and the sustainability of the food chain. Thus, food by-products and waste have the potential to be converted into high value-added products. Pumpkin production and consumption are widespread throughout the world. Pumpkin peel, considered a major by-product of the pumpkin processing chain, is discarded in landfills. During pumpkin processing, the consumable part of the fruit must be separated from the peel (2.6-16%), seeds (3.1-4.4%), and by-products (25%). Since pumpkin peel constitutes 5-20% of the overall fruit, approximately 1.35-5.4 million tonnes of pumpkin peel waste is produced each year. Pectin can be extracted and utilized from pumpkin peel, which possesses a high pectin content. Pectin is a functional molecule characterized by scarce commercial sources and significant commercial value. It is extensively utilized in the food, cosmetics, and pharmaceutical sectors. Due to heightened demand and utilization associated with population density, research into the commercial production of pectin has been growing. This study addressed the extraction of pectin from pumpkin peels utilizing organic citric acid, characterized by minimal toxicity, as opposed to conventional extraction methods. The optimization of the extraction procedure entailed utilizing a pH range of 1-3, a temperature of 60-100 °C, and an extraction duration of 60-180 minutes. The conditions were optimized by response surface methodology (RSM). The yields of pumpkin pectin (PP) varied between 1.71% and 20.18%. The maximum yield of 20.18% was observed at a temperature of 80°C, a duration of 120 minutes, and a pH of 1. The effective optimization utilizing RSM revealed that high-quality pectin appropriate for industrial applications could be produced.

Keywords: Pumpkin peel, pectin, extraction, optimization

FROM DIGITAL DIVIDE TO DIGITAL INEQUALITIES: A STUDY ON DIGITAL CAPITAL IN ISTANBUL

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ABSTRACT:
Early scholarship on the Internet emphasized its potential as a great equalizer. Yet, as digital technologies have increasingly permeated all spheres of social life, they have generated not only new opportunities but also reinforced and transformed existing inequalities. Digital inequality extends beyond issues of mere access to connectivity; it also encompasses individuals' competencies in using digital tools and the concrete social, cultural, and economic outcomes of such usage in everyday life. In order to explain digital divides, the literature frequently employs concepts such as the digital divide, digital gap, techno-capital, and technological capital.

This study takes digital capital as its central analytical lens to examine the differentiated experiences of individuals from diverse socioeconomic backgrounds in Istanbul. Drawing on Ragnedda and Ruiu's Digital Capital Index and adapting it to the Turkish context, the research employs a survey-based methodology to provide empirical evidence on how digital inequalities intersect with gender, age, educational attainment, and place of residence. The findings reveal that the effects of digitalization are not confined to questions of infrastructure and access. Instead, they highlight how structural barriers, disparities in digital skills, and unequal capacities to transform online engagement into tangible offline outcomes further deepen social stratification.

By situating digital inequality within a broader intersectional analysis, the study underscores that inequalities in the digital age are not merely economic but also profoundly cultural and social. In doing so, it contributes to interdisciplinary debates on the societal consequences of digitalization by bridging perspectives from communication studies, sociology, and cultural studies. Furthermore, the paper offers policy recommendations aimed at mitigating the impact of digital divides and fostering more inclusive forms of digital participation.

Keywords: digital divide, digital inequality, digital capital, Internet, social inequality

DESIGNING SUSTAINABLE EDUCATIONAL MATERIALS FROM WASTE PAPER

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ABSTRACT:
Environmental sustainability emerges as a transformative element not only in individual lifestyles but also within educational systems. The principles of sustainability in education are directly linked to environmental awareness, the efficient use of natural resources, and sensitivity to ecological balance. In this context, the design of educational materials with environmentally friendly, economical, and recyclable resources contributes significantly to the achievement of sustainable development goals. This study aims to develop an innovative educational material by focusing on the interaction between waste management and educational practices, specifically through the recycling and reutilization of waste paper based on principles of biodegradability and ecological reintegration. As an alternative to conventional educational materials with high environmental impact, waste paper—an easily accessible and cost-effective resource—has been repurposed into unique and functional learning tools. The material, developed with student participation, is intended to serve as an eco-friendly and economical substitute for plastic devices traditionally used in radiotherapy, particularly for head and neck immobilization in cancer patients. Through this work, we demonstrate that it is possible to integrate university students into waste management practices and sustainable educational applications, thereby fostering an environmentally responsible approach to learning. Ultimately, the creative reutilization of waste paper not only addresses pressing environmental challenges but also provides educators with a practical and innovative instructional model.

Keywords: Recycling, Waste Paper, Eco-friendly Educational Material, Sustainable Education, Waste Management.

ADULT SOCIAL SKILLS SCALE (YASBO): VALIDITY AND RELIABILITY STUDY

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ABSTRACT:
Social skills are learned behavioral patterns that enable individuals to establish healthy relationships in social life, behave in accordance with communication norms, gain acceptance in social settings, and achieve their goals. These skills encompass abilities such as empathy, communication, cooperation, and responsibility. The literature indicates that social skills are not limited to childhood and adolescence; rather, they represent a core psychosocial competence that directly affects the quality of work life, marriage, parenting, and social relationships in adulthood. However, in Turkey, there is a noticeable lack of a valid and reliable measurement tool that can assess adult social skills in a manner appropriate to the cultural context. The aim of this study is to develop the Adult Social Skills Scale (ASSS), which evaluates the social skills of Turkish adults across four fundamental dimensions: empathy, communication, cooperation, and responsibility. This study employs a descriptive and psychometric research design based on the scale development process. The research was conducted in two phases, including validity and reliability analyses. Participants consisted of adults aged 18–25 living in various provinces of Turkey. Data were collected online on a voluntary basis. During the scale development process, an extensive item pool was initially created, followed by expert reviews to ensure content validity. After the pilot study, the trial form was

administered to two independent sample groups. Exploratory Factor Analysis (EFA) conducted with the first sample indicated that the scale has a four-factor structure. These factors represent the dimensions of empathy, communication, cooperation, and responsibility, as theoretically predicted. The KMO value and Bartlett's test of sphericity confirmed the suitability of the data for factor analysis. Confirmatory Factor Analysis (CFA) with the second sample yielded acceptable model fit indices (χ^2/df, CFI, TLI, RMSEA, and SRMR), confirming the four-dimensional structure. Item-total correlations were found to be above 0.30, and items below this threshold were removed from the scale. Cronbach's alpha coefficients calculated for the sub-dimensions and total score indicated high internal consistency. Additionally, statistically significant positive correlations were obtained in the test-retest procedure conducted four weeks apart. As part of criterion-related validity, significant and expected-direction correlations were found between ASSS scores and scores on the Social Skills Inventory. In conclusion, the developed Adult Social Skills Scale (ASSS) is a valid and reliable measurement tool that comprehensively evaluates the social competence needs of adulthood while considering the unique cultural context of Turkish society. The scale is deemed highly applicable in fields such as psychological counseling, organizational development, adult education, and personal awareness programs. This study fills a critical gap in the Turkish literature by providing a robust psychometric instrument capable of multidimensional assessment of adult social skills.

Keywords: Adult, social skill, scale development.

THE EFFECT OF TRAINING IN PERSONAL HYGIENE CARE PRACTICES GIVEN TO PARENTS OF CHILDREN WITH SPECIAL NEEDS USING DIFFERENT TEACHING METHODS

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ABSTRACT:
Personal hygiene care practices for children with special needs are mostly the responsibilityof their parents. This study, designed to address this need, aimed to examine the effect of training in personal hygiene care practices provided to parents of children with severe intellectual disabilities using different teaching methods. The study employed a pre-test-post-test design. The sample consisted of the parents of 24 children with special needs attending a special education school within a state school in Turkey. A pre-test was administered to theparents before the educational activities commenced. As part of the training activities, educational events were planned for parents on personal hygiene care practices, includingproper tooth brushing, special oral care, perineal care, and hand washing. The activitiesutilised methods such as straightforward narration, questioning, discussion, demonstrationand practice, simulation, and modelling. The final test of the project was conductedapproximately 15 days after the completion of the educational activities. When comparingparents' personal hygiene practices before and after the training, a statistically significantdifference was found in parents' personal hygiene practices after the training compared tobefore the training (p<0.05). The research results showed that after the personal hygienetraining, which was delivered using different methods, there was a positive improvement in parents' correct hygiene behaviours.

Keywords: Personal hygiene care practices, Parent, Children with special needs, Healtheducation.

THE ROLE OF NURSES IN END-OF-LIFE CARE

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ABSTRACT:
Palliative care is a holistic healthcare approach designed for individuals and their families facing lifethreatening illnesses. This approach not only focuses on symptom management but also addresses the physical, psychosocial, and spiritual needs of patients. With its historical roots in the hospice movement, palliative care has become an integral component of healthcare systems worldwide. In end-of-life care, nurses play a pivotal role within the multidisciplinary team by assuming critical responsibilities in comfort enhancement, symptom control, patient and family education, ethical decision-making, and advocacy. Nurses provide not only physical care but also support patients in experiencing a dignified, peaceful, and meaningful end-of-life process. This study addresses the historical development of palliative care, its ethical and legal dimensions, and the roles and responsibilities of nurses, emphasizing the indispensable importance of nursing in end-of-life care.

Keywords: End-of-life Care, Ethics, Hospice, Nursing, Palliative Care

EFFECT OF HUMIDITIY, HEAT, NOISE AND LIGHT LEVELS ON SLEEP QUALITY AND COMFORT IN PATIENTS ADMITTED TO THE INTENSIVE CARE UNIT

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ABSTRACT:
Richards-Campbell Sleep Questionnaire (RCSQ), the General Comfort Questionnaire (GCQ). Environmental factors were measured systematically at the bedside using calibrated digital devices and recorded in the Humidity, Heat, Noise, and Light Level Recording Form. Measurements were taken at the same times on two consecutive days. Statistical analysis was performed using SPSS v27. No statistically significant differences were found between GCS, humidity, heat, noise, and light levels measured on the 3rd and 4th days of ICU stay (p >0.05). However, some weak but statistically significant correlations were found between certain environmental factors and GCQ subdimensions. On the second day, heat was negatively correlated with relief, relaxation, psychospiritual, and sociocultural comfort, and positively correlated with transcendence and environmental comfort (p<0.05). Noise level showed a positive correlation with relief and a negative one with transcendence (p<0.05). Although no direct significant relationship was identified between environmental factors and sleep quality (RCSQ), comfort levels appeared to be influenced by environmental stimuli. These findings suggest that environmental factors in ICU settings affect patient comfort in multidimensional ways.Therefore, nursing interventions targeting environmental improvements may enhance patient satisfaction and care quality.

Keywords: Environmental factors, noise, light, heat, comfort, sleep quality, intensive care unit.

NATURAL COMPOUNDS AS POTENTIAL BIOFILM INHIBITORS: MOLECULAR DOCKING INSIGHTS FOR ANTIBACTERIAL SURFACE APPLICATIONS

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ABSTRACT:
Biofilm formation is a major factor contributing to bacterial resistance and chronic infections, necessitating the development of novel antibiofilm agents. In this study, the molecular interactions between selected plant-derived compounds and biofilm-associated proteins were investigated using computational approaches. High-resolution crystal structures of Staphylococcus aureus Clumping factor A (ClfA) and Fibronectin-binding proteins (FnBPs) were employed as target proteins. Ligands, including D-Limonene, Menthol, Capric acid, Lauric acid, Myristic acid, Catechin, Epicatechin, and Procyanidin B2, were obtained from the PubChem database. Molecular docking analyses were performed using the HDOCK server, and the resulting complexes were further examined with UCSF Chimera ver 1.16 and the PLIP tool to identify hydrogen bonds, hydrophobic contacts, salt bridges, and π-stacking interactions. Docking results revealed that all ligands formed stable complexes with the target proteins, with model_1 consistently displaying the most favorable docking and confidence scores. Polyphenolic compounds such as Catechin, Epicatechin, and Procyanidin B2 exhibited stronger and more intricate binding patterns, involving extensive hydrogen-bonding networks in addition to hydrophobic interactions. Key amino acid residues responsible for ligand stabilization were identified, providing insights into potential binding sites and mechanisms underlying antibiofilm activity. Overall, the results suggest that these plant-derived compounds could serve as promising inhibitors of bacterial adhesion and quorum sensing, offering potential therapeutic strategies for preventing biofilm-associated infections.

Keywords: Staphylococcus aureus, Antibacterial coatings, Biofilm inhibition, Plant-derived polyphenols, Molecular docking

THE TREASURE AT HOME: PAULO COELHO'S THE ALCHEMIST IN THE LIGHT OF ISLAMIC MYSTIC LITERATURE

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ABSTRACT:
Paulo Coelho's The Alchemist (1988) has become one of the most widely read novels of the modern era, celebrated as a fable of inspiration and self-discovery. Yet beneath its universalist language lies a narrative deeply indebted to Islamic mystic literature. This paper argues that The Alchemist reworks one of the oldest parables of Sufism: the seeker who journeys far in pursuit of treasure only to discover it at home. By comparing Coelho's novel with "The Ruined Man Who Became Rich Again Through a Dream" in One Thousand and One Nights and Rumî's retelling in the Masnawî, the study demonstrates the structural continuity of the "treasure-at-home" motif across centuries. Additional comparisons with Attar's Conference of the Birds, Ibn Ṭufayl's Ḥayy ibn Yaqẓân, and Jamî's Salaman u Absal reveal how motifs of the guide, the trial, and the symbolism of fire, gold, and birds are preserved and transformed in Coelho's narrative. Methodologically, the paper combines folkloric motif analysis (ATU 1645) with Sufi hermeneutics, showing how Coelho secularizes and universalizes concepts such as ṭarîqah (the path), tawḥîd (unity), and dhawq (direct experience) into terms like "Personal Legend" and "Soul of the World." The findings suggest that The Alchemist should be understood not merely as inspirational fiction but as the latest link in a transhistorical chain of mystical storytelling that stretches from medieval Baghdad and Konya to Borges' Argentina and Coelho's Brazil. Thus, the paper argues that Coelho's novel embodies both continuity and transformation: continuity in preserving the structure and logic of Sufi parables, transformation in translating them into a universal idiom for contemporary global audiences. For the field of comparative mystic literature, this case highlights the enduring relevance of Islamic traditions in shaping world literature.

Keywords: Comparative literature; Islamic mystic literature; Sufism; The Alchemist; Treasure-at-home motif (ATU 1645)

THE ROLE OF ILLUSTRATION IN TITLE DESIGN: THE OPENING CREDITS OF THE FILM SULUBOYA

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ABSTRACT:

In the evolving landscape of contemporary digital media, illustration has been repositioned as a visual language that transcends the boundaries of graphic design and actively contributes to the construction of narrative. Particularly in cinema and digital video production, title design has transformed from a purely technical component into a pre-narrative form that establishes the atmosphere of the work and anticipates its thematic structure. Within this framework, illustration functions not merely as an aesthetic element but as a visual medium that conveys conceptual depth, symbolic layers, and mediates the viewer's first contact with the narrative.

This analysis focuses on Suluboya (2009), one of the first full-length rotoscope animation films digitally produced in Türkiye, to reveal the multilayered role of illustration in title design. The narrative oscillates between the internal world of a child protagonist and external reality, with the title sequence serving as a liminal space that constructs the visual codes of this transition. The linear dynamism achieved through rotoscoping is integrated with watercolor aesthetics to create a visual atmosphere that prepares the viewer for the film's dreamlike rhythm.

The illustrative structure is not confined to a stylistic choice; rather, it is a composition consciously shaped through line, color, and motion to preconfigure the character's emotional state, the metaphorical depth of the narrative, and the emotional resonance to be established with the viewer. The dominance of pastel tones, the transparency of watercolor textures, and the fluidity of drawn forms serve as symbolic indicators of the character's internal fragility. Title design is evaluated as a production field situated at the intersection of graphic design, animation, and cinema, where illustration assumes both aesthetic and narrative responsibility. Throughout the sequence, typographic elements, color transitions, brush textures, and rhythmic structures are revealed to be deliberate design decisions that are fully integrated with the visual language of the narrative.

From a theoretical perspective, the illustrative elements found in title sequences function not as surface embellishments but as the first layer of meaning constructed between the viewer and the film. This layer emerges from the intersection of cinematic visual semiotics and the narrative strategies of graphic design. Especially when dealing with themes such as childhood, imagination, and emotional vulnerability, illustration plays a central role in building the emotional subtext of the narrative. The illustrations in the film simultaneously take on the roles of producing visual metaphors, creating atmosphere, and reflecting character psychology, making them an active component of the narrative's formal architecture.

The illustrative strategies employed in the title sequence of Suluboya demonstrate that title design should not be viewed as a subordinate element of the filmmaking process but as an original narrative form and a plane of graphic aesthetics. The multifaceted role of illustration in contemporary cinema reveals a transformation of visual communication into a narrative instrument that goes beyond surface-level aesthetics, attaining semantic depth and emotional resonance.

Keywords: Illustration, Title Design, Rotoscope Technique, Visual Narrative, Suluboya Film

THE PRODUCTION AND CHARACTERIZATION OF SULFONATED PPSU MEMBRANES WITH MOF-801 ADDITIVES PRODUCED BY CASTING METHOD FOR VANADIUM REDOX FLOW BATTERIES

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ABSTRACT:
Vanadium redox flow batteries (VRFB) offer long-lasting, safe, and sustainable solutions to the needs of energy storage arising from the discontinuous nature of renewable energy sources. The proton-conducting membranes used in these systems are critical components that directly affect the battery's energy efficiency and cycle life. Although commercially available Nafion membranes provide high proton conductivity, the development of more suitable, low-cost, and balanced alternative membranes is important for VRFB applications due to issues such as high cost, limited ion selectivity,

and long-term chemical stability.

In this study, composite membranes were produced using the casting method with a sulfonated polyphenylsulfone (sPPSU) matrix for utilization in VRFB batteries. Three different MOF-801 variants (pure MOF-801, NH_2-MOF-801, and PDA-MOF-801) were used as additives at a 3% loading ratio. Ion exchange capacity (IEC), proton conductivity, mechanical strength, and dimensional swelling tests were performed on the produced membranes. The results obtained revealed that the PDA-MOF-801 and pure MOF-801 variants had the best performance. PDA-MOF-801 showed the highest proton conductivity value of 85.51 µS/cm, while its dimensional swelling rate of 8.0% was lower than that of Nafion. Pure MOF-801 exhibited a balanced performance. In contrast, NH_2-MOF-801 demonstrated low performance with a proton conductivity of 24.19 µS/cm and an IEC value of 1.29 meq/g, which was explained by the amino groups limiting the proton transport pathways.

Consequently, it is predicted that the use of PDA-coated MOF-801-added membranes in VRFB applications will yield higher efficiency.

Keywords: Cast film membrane, MOF-801, proton conductivity, sulfonated PPSU, vanadium redox flow battery.

TELEHEALTH USE IN NURSING: CURRENT APPROACHES AND FUTURE PERSPECTIVES

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ABSTRACT:
With the acceleration of digital transformation in healthcare, telehealth applications have become a crucial component of nursing care. Telehealth increases individuals' access to healthcare regardless of geographic barriers, supports continuity of care, and provides cost-effectiveness. Telehealth in nursing has a wide range of applications in chronic disease management, child and adolescent health, maternal and child health, elderly and palliative care, mental health, and nursing education. In chronic disease management, nurses can use telehealth to monitor symptoms, assess medication adherence, and provide self-care support. In pediatrics, vaccination and growth development monitoring can be conducted, while in maternal and child health, pregnancy and postpartum counseling services can be provided through telehealth. While symptom management and family support are prominent in elderly and palliative care, tele-counseling plays an active role in depression and anxiety management in mental health. Furthermore, telehealth-based simulations help nursing students develop their clinical skills. Advantages of telehealth applications include increased access, time and cost savings, continuity of care, and increased patient satisfaction. However, technological infrastructure deficiencies, data security issues, nurses' need for digital competence, and limitations in face-to-face communication remain key barriers to implementation. In the future, the use of telehealth is expected to further strengthen with AI-enabled solutions, mobile health applications, and metaverse-based education methods.

Keywords: Telehealth, Nursing, Digital Health, Care Services, Health Technologies

PRODUCTION AND CHARACTERIZATION OF SULFATED PVA MEMBRANES

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ABSTRACT:
This study focuses on the development, characterization, and evaluation of membranes obtained by blending sulfated polyvinyl alcohol (s-PVA) with pure polyvinyl alcohol (PVA). Traditional proton exchange membrane (PEM) fuel cells largely utilize fluorinated polymer membranes. However, these materials have some disadvantages, such as high cost, environmental concerns, and mechanical durability issues. PEM fuel cells are esteemed for their efficacy in clean energy conversion, particularly in portable and automotive applications. The dependence on fluorinated polymers presents considerable issues regarding sustainability and cost-effectiveness, necessitating the exploration of alternatives. This research aims to develop a more economical and environmentally friendly alternative membrane material by investigating the effects of sulfonation degree and blending ratios on membrane properties. To this end, PVA was sulfonated using sulfuric acid (H_2SO_4), and membranes with 10%, 20%, and 30% s-PVA content were synthesized. Pure PVA membranes were used as a reference. The sulfonation process entails the incorporation of sulfonic acid groups ($-SO_3H$) into the polymer backbone, hence augmenting its proton conductivity. Sulfuric acid was selected for its potent acidity and efficacy in functionalizing hydroxyl groups in PVA. The membranes were prepared using electrospinning techniques, thus ensuring homogeneous distribution of functional groups and optimized structural properties. An increase in the water retention capacity of the membranes was observed with increasing sulfation degree. This situation, which is directly related to the ion exchange capacity, indicates that the ion exchange capacity increases as the sulfonation amount increases. The hydrophilic structure of the membranes is strengthened by sulfonation. A decrease in the mechanical strength of the membranes was observed with increasing sulfonation degree. While the mechanical strength of pure PVA is 33.69 N/mm^2, this value decreased to 17.77 N/mm^2 when the sulfonation degree was increased to 30%. This observation stems from the sulfonation process weakening the interactions between polymer chains, negatively affecting the mechanical integrity of the membrane. It has been observed that proton-conducting membranes, which are also the subject of this project, are suitable in terms of water retention capacity and ion exchange capacity. Further research may focus on long-term durability tests, scalability of membrane production, and integration into full-fuel cell systems to validate their commercial potential.

Keywords: Polyvinyl Alcohol, PVA, Sulfonation, Electrospinning, Fuel Cells, PEM

VISUAL ARTS EDUCATION FROM A POSTHUMANIST PERSPECTIVE: PEDAGOGICAL IMPLICATIONS OF HUMAN–ARTIFICIAL INTELLIGENCE CO-CREATION

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ABSTRACT:
As the accelerating technologies of the digital age fundamentally transform the production, circulation, and reception of art, the need to rethink the limits of human-centred pedagogy in visual arts education becomes evident; in tandem, aesthetic experience is conceived not merely as an individual sphere of expression but as a multi-subject interactional space woven through technological infrastructures and algorithmic processes. With the embedding of artificial intelligence (AI)-based creative tools into classroom practice, art moves beyond purely individual aesthetic expression toward a relational, process-oriented domain of co-production negotiated between human and machine; in this respect, technology is positioned not only as an instrument but as a co-agent participating in the cognitive, ethical, and creative dimensions of learning. Within the study, drawing on the relational ontology and the notion of subjectivation in posthumanist thought, agency is shown to resist reduction to a single "author" and to be produced in a distributed manner at the nodal points of material-technical apparatuses, cognitive strategies, and pedagogical interactions; in this frame, inquiries are pursued into how algorithmic partnership transforms the learning experience, on which planes it reconfigures the understanding of originality, and by what pedagogical arrangements it repositions teacher–student roles. The aim of the study has been defined as contributing to the repositioning of the pedagogical design of AI-supported co-production within the theory–practice relation in visual arts education through a posthumanist lens; accordingly, a conceptual reference ground has been provided for the literature. Methodologically, a qualitative review approach has been adopted; the international literature has been analysed through systematic document analysis and thematic content analysis, and the findings have been discussed holistically along three axes: the transition from human-centred pedagogy to a posthumanist framework, the functions of digital/algorithmic co-production in creative processes, and the redistribution of teacher–student roles. The findings have shown that AI-supported art pedagogy significantly strengthens students' creativity, critical thinking, problem-solving, interdisciplinary connection-making, and digital literacy; that originality has been reconceived as a relational production emerging from human–machine interaction rather than reducible to an individual "signature"; and that assessment has shifted from product-orientation toward process/portfolio-based structures aligned with principles of explainability. On the ethical plane, it has been demonstrated that systematically embedding issues of dataset bias, algorithmic transparency, authorship, and ownership into classroom discussions strengthens responsible technology use and critical awareness. Consequently, it has been recommended to ensure AI integration in curricula in alignment with ethical transparency, to support teachers' professional development focused on digital pedagogy, and to expand process-based assessment tools; by jointly considering posthumanist subjectivation and the pedagogical design of co-production with AI, the study has narrowed the gap between theory and practice and provided a practical roadmap for project-based, co-designed activities aligned with explainability principles.

Given its nature as a qualitative review, it has been emphasised that the findings require contextual interpretation and that the proposed model should be tested through in-class and experimental studies.

Keywords: Digital pedagogy, Visual arts education, Human–machine partnership, Posthumanism, Artificial intelligence.

ANIMATION IN THE CONTEXT OF VARIABLE TYPOGRAPHY "AN ANALYSIS OF MÜZE MONO TYPEFACE FOR İŞBANK MUSEUM"

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ABSTRACT:
This study explores the multi-layered interaction between variable font technology, developed within the scope of digital typography, and kinetic typography integrated with animation, revealing the transformative journey of typographic design in contemporary visual communication. Historically, writing has emerged as one of the first structured systems for the transmission of knowledge and emotion. Over time, it has evolved into an aesthetic, functional, and cultural medium. The convergence of modern typography with digital platforms has shifted the perception of letters from fixed forms to dynamic, interactive design elements. At the core of this transformation lies the variable font technology.

Variable fonts enable designers to manipulate parameters such as weight, width, height, and angle within a single font file. This structural flexibility gives rise to new narrative forms in digital media design and motion graphics. When animation is incorporated into typefaces, kinetic typography adds a temporal dimension to written content, enhancing emotional impact and visual engagement. In this context, writing becomes not only a readable text but also a watchable, perceivable, and spatial audiovisual experience.

The research focuses on "Müze Mono," a variable font system designed in 2019 by Emre Senan and typographically engineered by Onur Yazıcıgil for the İşbank Economic Independence Museum in Ankara. Müze Mono is not merely a typeface, but a comprehensive typographic system that reflects institutional memory, spatial design, and contemporary graphic language. With features such as directional expansion (north, south, east, west), glyph variations, fixed grid structure, parametric form generation, and software-based localization, Müze Mono facilitates a direct aesthetic and informational relationship with the museum visitors.

The study analyzes Müze Mono's technical and aesthetic structure, motion capacity, design process, and animated use on digital screens. It also discusses the effects of kinetic typography on user experience, particularly in terms of orientation, attention guidance, and narrative depth. The use of animated typography on museum wayfinding screens not only supports the exhibition's visual identity but also enhances intuitive access to information for visitors.

The findings demonstrate that contemporary typographic design has evolved into a multidimensional communication form encompassing visual, auditory, temporal, and emotional dimensions. The fusion of variable font technology and animation provides new possibilities for graphic design in branding, cultural representation, digital architecture, and user-centered experiences, transforming typography into a multisensory, experiential tool that transcends its traditional role.

Keywords: Variable Fonts, Typography, Kinetic Typography, Animation

A PORTABLE MICROFLUIDICS AND EDGE AI PLATFORM FOR PRE-SYMPTOMATIC PLANT PHYSIOLOGY DIAGNOSIS

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ABSTRACT:

Current plant health monitoring systems predominantly rely on detecting visual symptoms, which often signifies an advanced, difficult-to-reverse stage of physiological stress or pathogen infection. Conversely, laboratory analyses, while accurate, provide delayed data unsuitable for real-time decision-making due to lengthy sampling and processing protocols. This study proposes a portable diagnostic platform based on the real-time biochemical analysis of plant sap to enable pre-symptomatic intervention. The core innovation lies in the integration of three advanced technologies into a single device: a microfluidics (Lab-on-a-Chip) analysis module, a colorimetric/optical sensor array, and an Edge AI-based diagnostic engine. A lamella-like cartridge facilitates sample intake, where the microfluidic chip automatically processes the sap. Integrated miniature LEDs and photodetectors then measure key parameters including pH, Brix, and target ion concentrations (e.g. NPK) via optical methods. The acquired sensor data is processed locally by an on-board microprocessor running a machine learning model, which interprets the multivariate data in context of plant species and environmental conditions to assess risks of nutrient deficiency or stress instantly, without requiring an lainternet connection. The primary objective is to validate the conceptual viability of this integration and develop a functional prototype. The methodology involves a phased approach: initial design and calibration of the microfluidic chip and sensors, followed by the creation of a crucial, non-existent dataset through controlled greenhouse experiments on specific crops, with parallel analysis using the device and standard boratory methods for validation. This work aims to pioneer a new, biochemistry-based diagnostic paradigm in agriculture, moving beyond image processing. It openly addresses significant technical challenges such as sample standardization and sensor stability.

Keywords: microfluidics, plant sap analysis, edge AI.

TRANSMEDIA RETCON THROUGH HERO'S JOURNEY IN UNBROKEN

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ABSTRACT:
Fantasy franchises across multimedia platforms often retcon their pre-established lore to make additions to their stories or adapt their fictional world for their expanding audience. These retcons in the lore can be minor or major, depending on the content, and are justified through various media platforms. The Warcraft universe began 30 years ago with real-time strategy games and later expanded into the field of literature. Since the beginning, the Warcraft universe has received various retcons and retrofits with the release of new games, expansions, novels, and short stories. This study focuses on how the cultural and racial changes of the Draenei race were narrativised after players met the race during an ongoing expansion. The study explores how the Warcraft universe retconned the lore established in The Rise of the Horde further by creating Unbroken, a hero story, in addition to in-game storytelling in the World of Warcraft video game to justify both the visual and cultural differences of the Draenei race between Warcraft III: The Frozen Throne and The Burning Crusade expansion, and universalises the race-bound practice of shamanism. It adopts an interdisciplinary approach, combining game, transmedia and literary studies, aiming to reveal the function of the story through analysing the Krokul as the "Other" in Draenei society and Draenei protagonist Nobundo's journey in the framework of Campbell's Hero's Journey to understand how Nobundo's exile, marginalisation and symbolic rebirth as a shaman provide a justification for the inclusion of shamanic practices within Draenei culture.

MOTIVATION SOURCES FOR PROBLEM-SOLVING PROCESSES IN ONLINE LEARNING ENVIRONMENTS IN MATHEMATICS

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ABSTRACT:
Online learning environments in mathematics have become popular in recent years with the developments that have taken place, and motivation sources have become important. In this context, the study systematically reviewed the literature published in Web of Science (WoS) and SCOPUS between 2000 and 2024 on motivation sources for problem-solving processes in online mathematics learning environments. The study was designed as a qualitative review. Data were obtained using the İnönü University database, analyzed within the framework of the Prisma scheme, and presented using Word Cloud, Bibliography Theme, and Tables. The results show that motivational sources are utilized in learning environments during problem-solving processes in mathematics education. These motivational sources are listed in WoS as Digital Competencies, Digital Learning, Digital Skills, Online Learning Tools, Visualization, Information, Flipped Classroom, Game-based Learning, Homework Behavior, Peer Collaboration, Interactive Learning, Environments, Intelligent, Tutoring Systems, Cooperative/Collaborative Learning, Evaluation Methodologies, Help-Seeking, Creative Confidence, Remedial Courses, Instructional Modality, Volunteer Mentors, Augmented Reality, Expert Recommendation, Group Learning, Brainstorming, Storyline, Humor/Puzzles/Games, Feedback, Teacher Caring, Teacher Credibility, One-to-one Tutoring, Simulations, 3D Digital Modeling and Worked Examples while SCOPUS includes Gamification, Knowledge Sharing, Homework Time, Visualization Tools, Practice-Based Tools, Crossword Puzzle, Flipped Learning, Cooperative/Collaborative Learning, Remedial Courses, Competition-Based Learning, Online Readiness, Hybrid Learning, 3D Virtual World, Graphs, Recommender, Continuous Assessment, Synchronous Video Conferences Volunteer Mentors, Reflection and Constructivist Theory.

Keywords: Online learning environments, problem solving, motivation.

A SYSTEMATIC REVIEW OF THE IMPACT OF WORD-OF-MOUTH MARKETING ON CONSPICUOUS CONSUMPTION BEHAVIORS

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ABSTRACT:
Marketing is fundamentally based on meeting the needs and desires of consumers. However, traditional marketing methods have become inadequate in addressing the changing expectations of today's consumers. The increasing number of product and brand alternatives, along with the declining trust in mass media, has made consumers' decision-making processes more complex and challenging. This is because individuals now value not only the functional benefits of products but also the social status, prestige, and reputation symbols they represent. For this reason, businesses increasingly employ word-of-mouth marketing strategies to reach consumers and strengthen their brand image. Through the influence of word-of-mouth marketing, consumers tend to share the status and prestige associated with the products or services they own during interactions with their social circles, thereby reinforcing their social positions.

This study aims to provide a general framework by reviewing existing research on the impact of word-of-mouth marketing on conspicuous consumption. In this context, the study systematically evaluates the effects of word-of-mouth marketing on conspicuous consumption. A literature review was conducted using databases such as the Council of Higher Education Thesis Center (YÖK), Google Books, ULAKBİM (National Academic Network and Information Center), DergiPark, TR Dizin, and Google Scholar. The collected theses, books, and articles were analyzed through a systematic review method.

Keywords: Word-of-mouth marketing, conspicuous consumption, prestige symbol, status seeking

ROBOTIC AND AI-ASSISTED SURGERY: CLINICAL SAFETY, HUMAN–MACHINE INTERACTION, AND THE ALGORITHMIC JUSTICE PERSPECTIVE

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ABSTRACT:
This article examines robotic and AI-assisted surgery through the integrated lenses of clinical safety, human–machine interaction (HMI), and algorithmic justice. We argue that surgical performance and patient outcomes emerge from coupled sociotechnical systems in which models, sensors, interfaces, and teams co-produce risk and resilience. First, we propose a safety framework that links model development (dataset curation, bias assessment, external validation) to perioperative performance metrics (conversion, complication and re-operation rates, time-to-intervention) and post-market surveillance using calibration drift monitoring and CUSUM-based signal detection. Second, drawing on human factors, we analyze interface design (latency, haptics, alerting) and its effects on situation awareness, workload, and trust calibration, highlighting risks of automation bias and over-reliance during critical steps such as dissection, hemostasis, and anastomosis.

The justice perspective addresses distributive and procedural equity. We delineate subgroup error profiling (e.g., by sex, age, BMI, comorbidity, and anatomical variation), fairness-aware model tuning, and proportional explainability relative to clinical stakes. Governance recommendations include auditable data provenance, pre-deployment safety cases, independent algorithmic auditing, and incident learning registries that integrate video review, telemetry, and human-in-the-loop annotations. Operational guidance emphasizes team training with simulation and stress-testing, fail-safe and graceful degradation modes, clear responsibility assignment, and patient-facing transparency regarding indications, limits, and alternatives.

We conclude that robotic and AI-assisted surgery can advance safety and equity only when performance optimization is coupled with rigorous validation, robust HMI design, and enforceable fairness safeguards, ensuring that technological gains translate into reliably improved outcomes across diverse patient populations.

Keywords: robotic, al-assisted surgery, clinical Safety, Human–Machine Interaction, and the Algorithmic, Justice, Perspective.

THE THREAT OF ALGORITHMIC AUTHORITARIANISM: EXAMINING THE LEGAL GAPS IN REGULATING STATE USE OF AI IN WESTERN BALKAN POLICE PRACTICES

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ABSTRACT:
The accelerating implementation of Artificial Intelligence (AI) tools by state security agencies across the Western Balkans (WB) presents a critical challenge to fundamental human rights and democratic oversight. This paper critically examines the legal and normative deficits, or the "mosaic of laws", that currently govern the deployment of AI in police practices across WB jurisdictions, specifically focusing on the emerging threat of algorithmic authoritarianism. The research analyzes the official connection established by state officials, within the scope of security operations, between the recordings of citizens generated in public spaces and the identification of individuals by automatically matching such recordings with biometric data stored in official identity document databases, utilizing AI technologies.

Drawing from the observation that political regimes frequently seek to consolidate control over citizens through advanced technological means, the study analyzes the risks associated with the unsupervised use of AI in law enforcement. These practices include the automated matching of audio-visual surveillance data from public spaces with stored biometric identifiers (e.g., from national ID databases), a practice often implemented without clear statutory authorization. Although the integration of biometric and surveillance data through AI is not a novelty in many European legal systems, a critical legal gap exists across the WB, typified by the case of Serbia, which lacks a specific legal framework governing this practice.

Comparative Analysis and Legal Gaps: While WB states have largely aligned their Personal Data Protection laws with the GDPR, the adoption of specific, horizontal AI regulation remains fragmented or non-existent, leaving high-risk police applications in a legal vacuum. For instance, the unsupervised linkage between ambient public surveillance and biometric identity data constitutes an unlawful data processing framework where the absence of legal regulation raises fundamental questions about the lawfulness and legitimacy of their application in practice. A core legal and ethical concern arises from the inability to selectively filter audio and video surveillance data matched with biometric datasets to support one purpose while excluding others, thereby amplifying the risk of misuse. This comprehensive profiling capability offers immense potential for both legitimate analysis and abusive or manipulative uses.

The paper posits that the current unregulated state, particularly the failure to recognize these AI-driven biometric matching processes as controversial or destabilizing, renders this data processing framework unlawful. This practice exposes citizens to heightened risks of subversive control by ruling elites and politically affiliated non-state actors. This paper questions why AI surveillance technologies have proven so attractive to ruling elites and security agencies and emphasizes the need to approach their use with legal seriousness and analytical caution.

The findings advocate for a swift, regionally harmonized response. Specifically, the paper proposes:
- The urgent adoption of dedicated laws within each WB jurisdiction to strictly regulate the use of AI and emerging technologies in police practices, focusing on the high-risk nature of biometric identification systems, in line with emerging European Union standards (such as the AI Act).
- The establishment of an independent, regional, or national oversight commission, responsible for authorizing and supervising the use of AI in biometric identification, safeguarding affected individuals' rights, and overseeing the accountability of security institutions to prevent abuse.

This comparative analysis aims to stimulate urgent dialogue on how WB states can protect fundamental rights and the rule of law against the unchecked advancement of AI in state security apparatuses.

Keywords: Algorithmic Authoritarianism, Western Balkans, Police Practices, AI Regulation, Biometric Surveillance, Legal Gaps, Rule of Law, Human Rights.

CLINICAL DECISION SUPPORT SYSTEMS AND AI TRIAGE IN THE DIGITAL CENTURY: PATIENT SAFETY WITHIN THE FRAMEWORK OF POSTPHENOMENOLOGY, ACTOR–NETWORK THEORY, AND "ALGORITHMIC JUSTICE"

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ABSTRACT:
This article interrogates the patient-safety implications of contemporary clinical decision support systems (CDSS) and AI-enabled triage in the digital century. It synthesizes post-phenomenology, actor–network theory (ANT), and "algorithmic justice" to build a sociotechnical framework.

From a post-phenomenological lens, we show how human–technology relations mediate clinical perception and judgment: interface affordances, alert timing, and default recommendations shape attention and trust calibration. Multistability explains why the same tool may amplify vigilance in one context yet induce automation bias or alarm fatigue in another.

ANT maps the heterogeneous network—clinicians, patients, datasets, sensors, vendors, regulators, and protocols—through processes of translation and delegation. We argue that safety is produced (or degraded) by inscriptions in data pipelines, model updates, and workflow couplings, distributing agency and diffusing accountability.

Algorithmic justice introduces distributive and procedural concerns. We examine error burdens across language, age, and comorbidity strata; the interaction of calibration drift and dataset shift; and the limits of explainability as a proxy for due process. Justice requires measurable fairness constraints alongside transparency and contestability.

Methodologically, the article offers an evaluation matrix that integrates: clinical safety metrics (sensitivity, PPV, time-to-intervention), human-factors indicators (workload, trust, handoff resilience), and justice metrics (equalized opportunity, subgroup false-alarm rates). Illustrative cases include emergency-department triage, sepsis early warning, and radiology worklist prioritization. We delineate roles for clinicians, developers, and regulators in accountability.

We conclude by reframing patient safety as an emergent property of sociotechnical systems. Practical recommendations include pre-deployment safety cases, continuous post-market surveillance, incident learning, participatory design, independent auditing of models and data provenance, and governance that aligns performance with equity and clinical accountability.

Keywords: Clinical Decision, Systems and AI, Patient Safety, Postphenomenology.

METAVERSE EVIDENCE AND JURISDICTION: DIGITAL EXPANSION AND UNIVERSAL JURISDICTION IN PROSECUTING CRIMES AGAINST HUMANITY

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ABSTRACT:
This article examines how the rapid expansion of immersive, networked environments—the "metaverse"—reshapes evidentiary practice and jurisdictional theory in prosecutions for crimes against humanity. It argues that platformized social spaces, persistent avatars, and blockchain-anchored assets produce novel forms of digital traces whose scale, mutability, and cross-border circulation both enable and complicate accountability.

First, the article develops a taxonomy of metaverse evidence (server-side logs, spatial interaction captures, avatar biometrics, blockchain transactions, voice and haptic streams, and synthetic media), and assesses admissibility through authenticity, integrity, reliability, and probative value. It proposes a layered chain-of-custody protocol combining cryptographic hashing, decentralized time-stamping, and reproducible capture workflows to meet due process standards while resisting deep-fake contamination and adversarial manipulation.

Second, the analysis reframes jurisdiction. While territoriality and nationality remain touchstones, crimes orchestrated in virtual spaces frequently involve geographically diffuse perpetrators, victims, and infrastructure. The article evaluates universal jurisdiction as a principled response to such fragmentation, mapping its compatibility with complementarity under the Rome Statute, fair-trial guarantees, and limits grounded in reasonableness and non-intervention. It also addresses corporate and platform complicity, data localization obstacles, and the role of mutual legal assistance in collecting platform-held evidence.

Third, the article outlines investigative best practices: privacy-by-design warrants, proportionate remote searches, preservation orders to platforms, cross-validation of open-source intelligence with platform telemetry, and expert explanation of algorithmic curation effects on user behavior.

The article concludes that metaverse evidence can strengthen atrocity accountability if courts adopt technologically rigorous evidentiary standards and states operationalize universal jurisdiction within clear safeguards. Absent such convergence, digital proliferation risks impunity by enabling deniable orchestration, selective erasure, and jurisdictional evasion across virtual-real seams.

Keywords: Metaverse, Evidence and Jurisdiction, Universal Jurisdiction, Crimes, Humanity.

FROM CLASSICAL TEST THEORY TO ITEM RESPONSE THEORY: EPISTEMOLOGICAL FOUNDATIONS AND A PARADIGM SHIFT IN PSYCHOMETRIC MEASUREMENT

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ABSTRACT:
This paper examines the epistemological reorientation that accompanies the transition from Classical Test Theory (CTT) to Item Response Theory (IRT), arguing that the shift is not merely technical but paradigmatic. CTT operationalizes measurement through observed scores, reliability indices (e.g., Cronbach's α), and assumptions such as tau-equivalence and homogeneity, treating error as undifferentiated and sample-bound. Knowledge claims are therefore conditional on test forms and populations, with validity largely aggregated at the test level. By contrast, IRT relocates inference to the level of items and latent traits, modeling the probabilistic relation between ability (θ) and response via item parameters (difficulty, discrimination, and—where applicable—guessing) under assumptions of local independence and (often) unidimensionality. The result is parameter invariance (within model fit), person- and item-specific standard errors, and score scales that are, in principle, sample-free.

Epistemologically, the move entails a transition from an empiricist, score-centric stance to a realist, model-based account in which constructs are treated as latent variables with structured causal significance. This reconceptualization transforms reliability into information (Fisher information, test information functions), reframes validity as model-data fit and construct representation, and foregrounds fairness via differential item functioning analyses. Methodologically, IRT's likelihood-based and Bayesian estimation enables adaptive testing, vertical scaling, and equating across forms, enhancing comparability and precision while exposing new risks of model misspecification and population heterogeneity.

The paper synthesizes these contrasts to show how IRT redefines evidence: from population-bound summaries to parameterized explanations that travel across samples and instruments. It concludes by outlining implications for assessment design and policy—emphasizing transparent model checking, substantive theory–model alignment, and the ethical governance of high-stakes decisions—while calling for pluralistic measurement practice that integrates CTT's practical diagnostics with IRT's inferential rigor.

Keywords: Classical Test Theory, Response Theory, Paradigm, Psychometric Measurement.

APPLYING MINORITY RIGHTS THROUGH LIBERAL MULTICULTURALISM: THE CASE OF NORTH MACEDONIA AND THE EU ACCESSION PROCESS

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ABSTRACT:
This article analyzes how liberal multiculturalism can structure minority-rights protection in North Macedonia during its European Union accession trajectory. Drawing on normative theory (e.g. group-differentiated rights within an individual-rights baseline), the study maps key policy domains—language use, education, political representation, decentralization, and cultural autonomy—against constitutional arrangements and the post-2001 Ohrid Framework Agreement. Methodologically, the paper combines doctrinal analysis with a structured policy comparison, assessing alignment with EU accession benchmarks (Copenhagen political criteria), the Framework Convention for the Protection of National Minorities, and nondiscrimination acquis.

The argument proceeds in three steps. First, it conceptualizes liberal multiculturalism as a governance design that reconciles equal citizenship with targeted safeguards (mother-tongue education, proportional representation, equitable public employment) to prevent systematic disadvantage. Second, it evaluates North Macedonia's mixed model —consociational elements, language-use thresholds, and decentralization—identifying gains in institutional inclusion alongside persistent challenges: clientelism, census politics, party patronage, localized parallelism in service delivery, and uneven policy capacity across municipalities. Third, it proposes an operational toolkit for accession-compatible reforms: (i) clear, justiciable language-rights triggers with budgeted implementation plans; (ii) quality-assured bilingual education with teacher pipeline incentives; (iii) merit-based, audited "equitable representation" metrics across the civil service; (iv) an independent equality body empowered to issue binding recommendations; and (v) rights-compatible data collection (disaggregated indicators, privacy by design) to track outcomes.

The paper concludes that a liberal-multicultural architecture can stabilize interethnic relations only when embedded in rule-of-law institutions, predictable financing, and participatory oversight involving minority communities. EU accession acts as a credible commitment device, but success depends on shifting from formal compliance to measurable capability—evidenced by learning outcomes, service-access parity, and trust indices—thereby translating abstract minority protections into day-to-day equality for citizens.

Keywords: Minority rights, liberal multiculturalism, North Macedonia, EUprocess.

ALGORITHMIC DECISION-MAKING, FAIR TRIAL RIGHTS, AND CYBERSECURITY: JUDICIAL PROCESSES IN THE TRANSPARENCY–ACCOUNTABILITY DILEMMA

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ABSTRACT:
This article analyzes the incorporation of algorithmic decision-making into criminal and civil adjudication and evaluates its implications for fair-trial rights under simultaneous demands for transparency and cybersecurity. Tools such as risk assessments, digital-forensic classifiers, evidence-triage systems, and case-management analytics create new forms of epistemic authority while importing statistical error, dataset bias, model drift, and susceptibility to adversarial manipulation. The paper advances three claims. First, transparency is multidimensional: courts should distinguish between disclosure of model documentation, data provenance, validation protocols, performance metrics, feature importance, and error distributions. Unqualified disclosure, however, can expand attack surfaces, enable strategic gaming, and compromise trade secrets or sensitive personal data. Second, accountability requires justiciable standards—pre-deployment impact assessments, traceable and reproducible pipelines, independent auditability, and rights to meaningful explanation, counter-evidence, and human review—implemented without undermining system security. Third, cybersecurity is not a mere technical constraint but a procedural justice concern, protecting the integrity of digital evidence, audit logs, and chain-of-custody against tampering and reverse engineering.

Building on these claims, the article proposes a courtroom-ready toolkit: tiered disclosure under protective orders and neutral-expert supervision; escrowed source-code access with sandboxed testing; layered explanations calibrated to procedural posture; error-aware remedies (confidence-weighted findings, constrained injunctions, and remand for human re-weighing); and continuous post-deployment monitoring via tamper-evident audit trails. Benchmark metrics—within-group calibration, false-positive parity, adversarial-robustness thresholds, and forensic reproducibility scores—anchor judicial review in measurable risk. The conclusion reframes the transparency–accountability dilemma as an institutional design problem: proportionate, risk-based disclosure and standardized audits can vindicate fair-trial rights while safeguarding cybersecurity, translating abstract guarantees into operational protections in contemporary judicial processes.

Keywords: Algorithmic Decision, Cybersecurity, Judicial Processes, Accountability Dilemma.

CHANGING CONCEPTIONS OF MORALITY IN DIGITAL TRANSFORMATION: THE SOCIAL CONSTRUCTION AND ACCEPTANCE OF DIGITAL ETHICAL VALUES

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ABSTRACT:
Digital transformation is reconfiguring moral vocabularies, decision procedures, and responsibility attributions across everyday life. This article develops an analytical account of how "digital ethics" is socially constructed and collectively accepted, arguing that moral change in platformized, datafied environments follows patterned pathways of norm emergence, contestation, negotiation, and stabilization. Drawing on social-constructionist theory, science and technology studies, and normative political philosophy, it theorizes digital ethical values as institutional facts produced through interactions among technical affordances, organizational incentives, regulatory signals, and public discourse.

Methodologically, the study integrates conceptual analysis with illustrative cases in content moderation, algorithmic personalization, and biometric surveillance. It maps how values such as privacy, fairness, autonomy, and dignity are reframed by risk-management logics and measurement practices, and how countervailing claims—transparency, contestability, and data sovereignty—gain traction through civil-society mobilization and regulatory feedback. The model explains why ostensibly universal principles generate divergent practices across cultural contexts and asymmetric power relations.

The article makes three contributions. First, it distinguishes compliance-oriented ethics (principles, audits, checklists) from justice-oriented ethics that foreground structural harms and group-differentiated impacts. Second, it formulates acceptance conditions for digital moral innovations: epistemic publicity, explainability proportional to impact, participatory oversight, and credible, accessible remedies. Third, it advances evaluative criteria for legitimacy in platform governance, including integrity of value alignment across the system lifecycle, robustness of accountability chains, and verifiability of outcomes.

By elucidating the social foundations of digital ethics, the paper offers scholars and policymakers a vocabulary and diagnostic toolkit to anticipate value conflicts, design context-sensitive safeguards, and steer digital transformation toward democratically negotiated ends. It concludes that sustainable acceptance depends not only on technical reliability, but also on procedural fairness, distributive equity, and the ongoing renegotiation of the digital moral order.

Keywords: Morality, Digital Transformation, Social Construction,Ethical Values.

A GLOBAL ANALYSIS OF ARTIFICIAL INTELLIGENCE IN GIFTED EDUCATION AND THE ASCEND FRAMEWORK FOR TALENT DEVELOPMENT

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ABSTRACT:

The convergence of artificial intelligence (AI) and education presents a paradigm shift for talented and gifted learners, offering a powerful alternative to traditional models that often fail to meet their unique cognitive needs. This paper provides a comprehensive global analysis of AI's application in gifted education, examining its transformative potential for personalization, academic acceleration, and fostering higher-order thinking. Grounded in Gagné's Differentiated Model of Giftedness and Talent (DMGT), the analysis highlights how AI can serve as a catalyst in the talent development process. However, the paper critically assesses the significant pedagogical and ethical challenges inherent in AI integration, including algorithmic bias, data privacy concerns, the risk of overreliance diminishing critical skills, and the necessity of human oversight. Through a comparative analysis of divergent national strategies—from state-driven models in Singapore and China to the innovation-driven landscape of the United States—the research underscores that technological implementation is a reflection of socio-political values. Culminating this analysis, the paper proposes the ASCEND framework—an actionable methodology structured around six pillars: Autonomous Exploration, Scaffolded Complexity, Creative Synthesis, Ethical Engagement, Networked Collaboration, and Dynamic Feedback. This framework is designed to guide educators and students in harnessing AI not merely as an instructional tool, but as a catalyst for profound, ethical, and human-centric talent development.

Keywords: Gifted Education, Artificial Intelligence (AI), Personalized Learning, Talent Development, ASCEND Framework, Educational Technology, Ethical AI, Pedagogy.

NEXT-GENERATION STRATEGIES IN SIMULATION-BASED EDUCATION FOR CLINICAL SKILL DEVELOPMENT

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ABSTRACT:
In contemporary health sciences education, one of the most critical needs is to ensure that students acquire skills through safe, repeatable, and realistic clinical experiences. Simulation-Based Education (SBE) has emerged as an innovative approach that meets this need. In particular, high-fidelity simulations, structured debriefing methods, and virtual reality (VR)-supported applications enable students to learn from mistakes in a safe environment, repeatedly experience clinical scenarios, and enhance their self-efficacy. However, some studies have reported inconsistent results regarding the long-term retention of skills, underscoring the importance of continuous reinforcement and the regular integration of simulation-based activities into curricula. Overall, research conducted between 2020 and 2025 highlights that simulation-based education has become a strategic tool in preparing future healthcare professionals for safe clinical practice and should be considered an indispensable component of future health education curricula.

This paper aims to summarize the effects of simulation-based education approaches on clinical skill development in light of randomized controlled and quasi-experimental studies published between 2020 and 2025.

A systematic review methodology was adopted, focusing on experimental studies published between 2020 and 2025. Literature searches were conducted using PubMed, Scopus, and Web of Science databases, employing the keywords "simulation-based education," "clinical skills," "randomized controlled trial," and "nursing/medical education." Inclusion criteria comprised studies published after 2020 that employed randomized controlled or quasi-experimental designs and focused on the development of clinical skills.

- High-fidelity simulations have been shown to accelerate short-term skill acquisition and outperform traditional teaching methods.
- Scenario-based training combined with structured debriefing enhanced not only technical but also cognitive and social competencies such as communication and teamwork.
- VR and remote simulation modalities were highly accepted by students due to their accessibility and repeatability.
- Several longitudinal studies revealed diminished differences in skill levels over time, emphasizing the need for continuous practice and reinforcement.

Experimental studies conducted between 2020 and 2025 demonstrate that simulation-based education is an effective, safe, and innovative method for strengthening clinical competencies. The integration of high-fidelity simulation, structured debriefing, and VR-based applications into health sciences curricula is strongly recommended. Through these methods, students can develop not only technical proficiency but also advanced competencies in communication, decision-making, and patient safety.

Keywords: Clinical skills, health education, simulation-based education, virtual reality.

ALA EL ASVANI'S NOVEL NAMED EGYPTIAN AUTOMOBILE CLUB: A DISCOURSE ANALYSIS

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ABSTRACT:
This study examines Ala El Aswani's novel, The Egyptian Automobile Club (Nadi al-Sayyārat), using discourse analysis to analyze its linguistic and rhetorical structure, as well as its social and ideological contexts. The novel presents a multilayered narrative of Egyptian society in the 1940s, exploring themes such as colonialism, class distinctions, power relations, and individual resistance. The work examines in detail the representation of different social classes and how these representations contribute to the narrative's overall narrative. The study uses discourse analysis to identify the novel's dominant discourses and analyze their interactions within the narrative. The findings demonstrate that the work's linguistic structure incorporates various strategies that reinforce or challenge social hierarchies and power dynamics. The novel delves deeply into the relationships between the aristocracy, the working class, and colonial rule, revealing individuals' processes of resistance and adaptation through diverse characters. The work emphasizes that the oppressive mechanisms of authority are perpetuated not only through physical violence but also through language and rhetoric. The analysis reveals that The Egyptian Automobile Club reflects the social injustices, class conflicts, and political manipulations in Egyptian society at the time through its dramatic plot and character development. While the novel's narrative reflects the dominant discourse in Egypt at the time, it also opens space for alternative discourses of resistance. The study demonstrates the power of language and narrative to maintain or transform social structures. Furthermore, considering the novel's historical context, it evaluates how the narrative's discourses relate to the political and social movements in Egypt during the 1940s. The novel holds a significant place within the social realist tradition of Egyptian literature by revealing individuals' struggles with power, the ideological functions of language and rhetoric in society, and how they shape identity construction. This study aims to demonstrate how literary works function not only as artistic productions but also as tools of social transformation and critique. This research, based on a discourse analysis of the Egyptian Automobile Club, offers a new perspective on understanding Egypt's cultural and political structure by shedding light on the dynamic relationships between literature, language, and society.

Keywords: Ala al-Aswani, Egyptian Literature, Egyptian Automobile Club, Nadi al-Sayyārat, Discourse Analysis

THE IMPACT OF HEEL (TIP) AND THE IMPORTANCE OF MEDICAL IMAGING TECHNICIANS ON RADIOGRAPH QUALITY

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ABSTRACT:
Image quality in radiography is fundamentally determined by the extent to which anatomical structures or pathological findings of interest can be visualized with optimal clarity and precision. A high-quality radiograph is characterized by its ability to provide the maximum diagnostic yield while ensuring patient exposure to the lowest achievable radiation dose (Kaya T et al. 2016). Multiple factors influence radiographic quality, including the performance of the X-ray tube and generator, the physical characteristics of the X-ray beam, patient-related variables, the properties of the image receptor, and the technical aspects of image processing and printing (Kaya T et al. 2016). Among these determinants, the heel effect represents a phenomenon associated with image receptor performance. Originating from the inherent heterogeneity of the X-ray beam, the heel effect manifests as variations in beam intensity across the detector or film, thereby introducing density inhomogeneities that may compromise image quality. Despite its relevance, this phenomenon is frequently underrecognized and inadequately addressed in routine clinical practice by radiologic technologists. Greater awareness and appropriate consideration of the heel effect have the potential to enhance radiographic outcomes, particularly in examinations involving anatomical regions with pronounced structural asymmetry, thereby contributing to the acquisition of more diagnostically reliable and technically consistent radiographs.

Keywords: Radiology, Medical Imaging, Heel Effect, Conventional Radiography, Digital Radiography, X-rays.

A HYBRID FRAMEWORK FOR DETECTING HALLUCINATIIONS IN LLM RESPONSES USING LEXICAL AND SEMANTIC EVIDENCE

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ABSTRACT:
These days, computers can generate responses with the help of advanced language models or LLMs. But the responses they generate have one notable issue. The response might contain fabricated information. This kind of error is known as a "hallucination." The response might have a valid structure but contains incorrect information. This is of great concern in sensitive institutions such as hospitals, schools, courtrooms, banks, and media houses. The users might stand to suffer physical injury, financial loss, or be misinformed if they rely on the response. We have created a new system that solves this problem by verifying the responses of the computer in a detailed manner. The first step is checking the response against authentic sources like Wikipedia and PubMed. Then, the response is analysed by special computer programs like spaCy and NLTK. They check for overuse of rare vocabulary, unusual grammar, and mismatched names and figures. This is important for identifying strange patterns in the text. Lastly, we apply another model that is intelligent and focuses on understanding the meaning and not just the words. With tools like BERTScore, this system poses a question: "Is this response relevant to the question, and do all the components align?" It is helpful in identifying whether a response is a hallucination or not. After that, we use another sophisticated model that examines the meaning rather than just the words. This model's evaluation, as with BERTScore, is, "Is the answer relevant to and coherent with the question? Is every element logically connected?" If it is not, it is likely a hallucination. This system increases users' confidence in the responses generated by AI. It reduces time spent verifying, decreases the chance of errors, and ensures that LLMs can be trusted in operational environments.

Keywords: Large Language Models (LLMs), hallucination detection, semantic similarity, lexical features, BERTScore, fact-checking, NLP, SVM, MLP, Lexical Hallucination Index (LHI).

THEORETICAL FOUNDATIONS OF FREINET PEDAGOGY AND ITS COMPARISON WITH ALTERNATIVE PEDAGOGIES

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ABSTRACT:
This study examines the historical and theoretical foundations of Célestin Freinet's pedagogy and compares it with Montessori, Dewey, Reggio Emilia, and Waldorf. Emerging in the early 20th century in response to social change, Freinet centers learning on the child and on productive, work-based activity. Core principles include democratic participation, student autonomy, free expression, and social responsibility; students are not only consumers of knowledge but producers. Grounded in pragmatism, experiential learning, and democratic education, the classroom functions as a living laboratory where real-life projects make learning meaningful and durable. In comparison, Montessori prioritizes individualized, self-paced learning, whereas Freinet stresses collective learning and civic responsibility. Like Dewey, Freinet values experience and active participation, but he more explicitly integrates work-based learning and democratic processes. Reggio Emilia emphasizes aesthetics and multiple forms of expression; Freinet foregrounds productivity and democratic duties. Waldorf seeks spiritual and artistic development; Freinet privileges social and democratic values. Amid rapid change, digitalization, and weakened social bonds, Freinet's relevance has grown. Addressing challenges such as individualization and isolation, it offers a sustainable, inclusive model that fosters collaboration, productivity, and participation. Students assume individual and collective responsibilities and internalize democratic values. In sum, Freinet pedagogy remains a dynamic, contemporary approach that emphasizes autonomy, self-management, and shared decision-making, offering actionable insights for educators and policymakers.

Keywords: Freinet pedagogy; Democratic education; Child-centered learning.

THE ROLE OF VIRTUAL LABORATORIES IN ORGANIC CHEMISTRY EDUCATION: TECHNOLOGICAL INNOVATIONS, PEDAGOGICAL APPROACHES AND META-ANALYTICAL EVALUATION

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ABSTRACT:
Organic chemistry education depends on laboratory experiences that integrate theoretical knowledge with practical application. Conventional hands-on laboratories, however, impose substantial costs, safety risks, logistical constraints and limited capacities for conceptual visualization. Over the past two decades, advances in educational technology have positioned virtual laboratories (VLs) as powerful complementary and alternative modalities. In this study is systematically examined the development and deployment of core VL technologies—virtual reality (VR), augmented reality (AR), 3D simulation and web-based platforms—across key experimental domains including synthesis, purification, spectroscopy, reaction mechanisms and stereochemistry. Evidence from leading platforms (Labster, ChemCollective, PraxiLabs, VRLab, PhET) and recent systematic reviews and metaanalyses has been synthesized to evaluate pedagogical frameworks and impacts on learning outcomes. The evidence indicates that VLs significantly improve cognitive and affective outcomes relative to passive instruction and function effectively as preparatory tools for physical laboratories. Integration of artificial intelligence and intelligent tutoring systems enables adaptive, personalized learning and real-time formative feedback, supporting higher-order cognition and learner self-efficacy. Notwithstanding gains in safety, cost-effectiveness, accessibility and conceptual visualization, VLs remain constrained in fostering psychomotor competencies and fully authentic laboratory experiences. Accordingly, strategic blended curricula that combine virtual and physical modalities should be adopted, and VL fidelity should be advanced via AI, haptic interfaces (e.g. gloves), and metaverse integration to maximise learning outcomes.

Keywords: Organic Chemistry Education, Virtual Laboratories, VR/AR & 3D Simulations, Intelligent Tutoring Systems, Blended Learning.

DIGITAL EDUCATION APPLICATIONS IN CHILD DEVELOPMENT CURRICULUM: INTEGRATION OF MICRO-LEARNING AND ARTIFICIAL INTELLIGENCE

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ABSTRACT:
The purpose of this paper is to examine how microlearning and artificial intelligence (AI) technologies can be effectively integrated into courses within the child development curriculum. The study examines how microlearning can be adapted to child development courses and how this integration can contribute to student learning. Specifically, microlearning is expected to accelerate student learning and provide deeper understanding through short, focused, and interactive content. In child development courses, concepts in areas such as developmental psychology, child behavior, and pedagogy can be supplemented with short video lessons, interactive quizzes, and visuals. Furthermore, AI-powered applications can optimize learning by providing students with personalized learning paths and content recommendations tailored to each individual's developmental needs. AI is expected to monitor student performance, provide real-time feedback, and reinforce learning by suggesting supplemental materials on topics they struggle with. The study examined the potential of integrating microlearning and AI to increase student engagement, improve learning speed, and foster greater interaction in classrooms. It also explored how teachers can strengthen their digital pedagogical skills. It highlighted the benefits these technologies can offer in terms of ensuring equity and accessibility in education, as well as ways to make educational materials more accessible. Ultimately, it concluded that microlearning and AI-based educational applications have the potential to make child development lessons more engaging, personalized, and effective.

Keywords: Micro-Learning; Artificial Intelligence (AI); Child Development; Educational Technologies

THE TRANSFORMATION OF THE SELF IN THE DIGITAL AGE: A PHENOMENOLOGICAL EVALUATION OF IDENTITY CONSTRUCTION ON SOCIAL MEDIA

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ABSTRACT:
This study offers a phenomenological evaluation of how social media platforms mediate the construction of selfhood in the digital age. Grounded in Husserlian and Heideggerian insights on lived experience, temporality, and intersubjectivity, it interrogates the ways algorithmic curation, metricized visibility, and persistent datafication reshape identity as an ongoing project rather than a stable essence.

Methodologically, the research adopts interpretative phenomenological analysis, drawing on in-depth, semi-structured interviews (n=28) and two-week digital diaries to elicit first-person accounts of online self-presentation, recognition, and reflexivity. The analysis illuminates four interlinked phenomena: (1) performative authenticity, wherein users negotiate sincerity under conditions of strategic self-branding; (2) temporal compression, as feeds and stories reorganize narrative identity through accelerated cycles of anticipation, display, and retrospective editing; (3) distributed embodiment, where filters, avatars, and camera practices enact a technologically extended body schema; and (4) algorithmic intersubjectivity, in which perceived others are co-constituted with opaque recommendation systems that prefigure horizons of attention and value. Participants describe an oscillation between agency and heteronomy: while platforms expand capacities for expression, community, and political articulation, they simultaneously induce comparability, ambient surveillance, and normative convergence via engagement incentives.

The paper theorizes "curated self-presence" as a double bind of freedom and constraint, explaining micro-experiences of empowerment, anxiety, and moral ambivalence within broader political-economic logics of platform capitalism. Implications include rethinking digital literacy beyond instrumental skills toward hermeneutic and ethical competencies; designing transparency-enhancing and friction-supporting interfaces that protect deliberative pacing; and developing governance frameworks attentive to phenomenological harms such as attenuated autonomy and relational strain. By centering lived experience, the study reframes identity not as a byproduct of technology, but as a situated, negotiated achievement under algorithmically structured conditions of appearing.

Keywords: Transformation of the Self, Digital Age, Evaluation of Identity, Social Media.

THE RISE OF E-COMMERCE IN THE PROCESS OF DIGITALIZATION: AN ANALYSIS OF TAXATION ISSUES

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ABSTRACT:
Recent advancements in information and communication technologies have profoundly transformed almost every aspect of modern life. One of the most notable manifestations of this transformation is the rapid rise of electronic commerce (e-commerce)—a technology-driven form of trade enabled by the widespread use of the Internet. During the COVID-19 pandemic, online shopping activities increased dramatically. The restrictions and social-distancing measures implemented during this period further accelerated the process of digitalization, turning e-commerce into one of the most dynamic components of the global economy.

As digitalization has become an intrinsic part of everyday life, the shift of economic activities into the digital sphere has brought about new taxation challenges. E-commerce has introduced innovative business models that test the limits of traditional tax systems, particularly regarding the question of where value is created and which jurisdiction holds the right to tax it. The erosion of geographical boundaries in the digital environment has revealed legal loopholes and created greater opportunities for tax evasion and avoidance.

Consequently, the taxation of e-commerce has become a pressing issue at both national and international levels. However, due to the global nature of the digital economy, sustainable solutions cannot be achieved solely through national efforts. This situation necessitates the development of harmonized international tax policies aimed at establishing a fairer, more transparent, and coherent framework for the digital economy.

This study examines the impact of digitalization on the development of e-commerce and the role of the COVID-19 pandemic in accelerating this transformation. It further analyzes the fiscal dimensions of e-commerce and the legal and technical challenges encountered in taxation processes, aiming to contribute to the ongoing debate on achieving fair and efficient taxation in the digital economy.

Keywords: E-Commerce, Tax Law, Taxation, Digitalization.

CULTURAL BIAS AND INEQUALITY IN AI-ENHANCED EDUCATION: REGULATORY SOLUTIONS IN COMPARATIVE LAW

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ABSTRACT:
This article examines how AI-enhanced educational systems can reproduce or intensify cultural bias and inequality, and evaluates regulatory solutions through a comparative law lens. It argues that bias enters at multiple stages—problem formulation, dataset composition, model design, deployment context, and post-decision feedback loops—producing disparate impacts on linguistic, ethnic, religious, gender, and disability groups. Methodologically, the paper combines normative analysis with a structured comparison of regulatory regimes, focusing on the European Union's risk-based approach to AI governance, Council of Europe human-rights standards, selected EU Member State equality frameworks, and U.S. federal and state norms on anti-discrimination and educational accountability. The analysis clarifies how general non-discrimination duties, data protection principles (purpose limitation, data minimization, fairness), and sector-specific education laws interact with algorithmic auditing, impact assessments, explainability, and contestability rights.

The article advances a model regulatory toolkit for education authorities and institutions: mandatory pre-deployment algorithmic impact assessments tied to protected characteristics; independent auditing with disclosure of bias metrics (e.g. equalized odds, calibration, subgroup error rates); robust data governance with culturally representative sampling and participatory annotation; procurement clauses mandating transparency, access for oversight, and post-market monitoring; layered explanations that map model features to pedagogical rationales; redress pathways guaranteeing timely human review; and public reporting dashboards enabling scrutiny across schools and districts. Comparative findings highlight strengths of the EU's preventive, rights-forward architecture and the U.S. system's litigation-driven deterrence, while warning against "formal compliance" that neglects classroom context. The paper concludes that culturally inclusive AI in education requires enforceable standards, institutional capacity-building, and continuous stakeholder participation—especially from affected communities—to translate abstract equality guarantees into measurable, pedagogically sound outcomes.

Keywords: Cultural Bias, Inequality in AI-Enhanced, Education, Comparative Law.

UNIVERSAL JURISDICTION IN THE DIGITAL AGE: ALGORITHMIC EVIDENCE, OSINT, AND EMERGING TRENDS IN STATE PRACTICE

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ABSTRACT:
This article analyzes how universal jurisdiction adapts to the evidentiary realities of the digital age, focusing on algorithmic evidence, open-source intelligence (OSINT), and emerging patterns in state practice. It argues that atrocity investigations increasingly rely on machine-generated traces—platform telemetry, network metadata, model outputs—and on OSINT assemblies that challenge doctrines of authenticity, reliability, and chain of custody.

First, the article proposes an evaluative framework for "algorithmic evidence" that distinguishes between raw data, model architecture and training corpus, inference outputs, and audit logs. It sets admissibility criteria grounded in reproducibility, documented provenance, error-rate disclosure, and explainability proportional to the weight accorded by the tribunal. It highlights bias risks, adversarial manipulation, and the need for cryptographic hashing and decentralized time-stamping.

Second, the article surveys state practice, including universal-jurisdiction investigations that have integrated OSINT (geolocation, chronolocation, sensor fusion) with compelled platform disclosures and mutual legal assistance. It identifies converging safeguards—early preservation orders, authenticity triage, and defense parity—alongside divergences regarding privacy expectations, extraterritorial search powers, and the treatment of corporate platform custodians.

Third, the article outlines operational standards for investigators and courts: layered verification of digital media; validation of machine inferences against independent sources; disclosure protocols for model parameters where feasible or, alternatively, neutral expert review; and proportional redaction to protect sources and methods.

The article concludes that universal jurisdiction remains normatively viable and practically potent if refitted with technologically literate evidentiary standards. By institutionalizing rigorous provenance, transparency, and equality of arms—without collapsing into trade-secret maximalism or evidentiary minimalism—states can harness algorithmic and open-source materials to reduce impunity while preserving due process and fundamental rights.

Keywords: Jurisdiction, Digital Age, Algorithmic Evidence, OSINT, State Practice.

PATIENT AUTONOMY IN TELEHEALTH AND REMOTE MONITORING: A THEORETICAL ASSESSMENT THROUGH SELF DETERMINATION THEORY AND THE CAPABILITY APPROACH

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ABSTRACT:
This article examines how telehealth and remote patient monitoring reconfigure patient autonomy by integrating Self-Determination Theory (SDT) with the Capability Approach (CA). SDT treats autonomy, competence, and relatedness as basic psychological needs whose satisfaction shapes adherence and durable behavior change. CA reframes autonomy not merely as non-interference but as the substantive capability to achieve valued health functionings, contingent on personal, social, and technological "conversion factors."

We argue that datafication, continuous sensing, and algorithmic triage exert ambivalent effects on autonomy. Real-time feedback, asynchronous clinician messaging, and adaptive prompts can scaffold competence and support shared decision-making; yet design choices—default nudges, opaque risk scores, and compliance-oriented dashboards—risk crowding out autonomous motivation, intensifying surveillance, and entrenching dependency. Using CA, we show how bandwidth, health literacy, disability, caregiving arrangements, platform governance, and reimbursement schemas modulate the translation of digital affordances into genuine freedoms, thereby surfacing distributive inequities.

Methodologically, the paper proposes an evaluation matrix that aligns SDT-informed experience measures (autonomy support, perceived competence, relational warmth) with capability indicators (available choice sets, conversion barriers, failure-mode resilience). We map governance levers—consent as an ongoing process, granular data permissions, transparency about model behavior, independent auditing, and institutionalized contestability pathways—needed to preserve agency in data-intensive care.

Policy and design recommendations include participatory co-design with marginalized users; defaults that privilege explanation and refusal options over mere compliance; offline-capable, low-bandwidth interfaces; and payment models that reward autonomy-supportive outcomes rather than engagement minutes. We conclude that autonomy in digital care is an emergent relation among users, clinicians, algorithms, and infrastructures; safeguarding it requires aligning motivational architectures with distributive justice and robust accountability.

Keywords: Patient Autonomy, Telehealth, Remote Monitoring.

A LITERATURE REVIEW ON THE CONCEPT OF MATERNAL GATEKEEPING

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ABSTRACT:
Maternal gatekeeping refers to mothers' conscious or unconscious tendencies to limit fathers' participation in parenting by maintaining control over childcare responsibilities and authority domains. In recent years, with the transformations in gender roles, parenting dynamics, and the division of domestic labor, this concept has gained increasing attention in family psychology and psychological literature. This study aims to review existing theoretical approaches and empirical findings related to the phenomenon of maternal gatekeeping.

Literature reviews indicate that maternal gatekeeping is generally discussed in three dimensions: (1) control over caregiving and household tasks, (2) perceptions of fathers' parenting competence, and (3) attitudes toward parenting roles. Research suggests that maternal gatekeeping is associated with both individual factors (self-concept, parental identity, gender role beliefs) and relational factors (marital satisfaction, communication patterns, power dynamics). Moreover, high levels of maternal gatekeeping reduce fathers' involvement in childcare, increase parental conflict, and negatively affect family cooperation.

This literature review demonstrates that maternal gatekeeping is not merely an individual attitudebut a phenomenon closely linked to cultural values and gender norms. Future research should focus more on cross-cultural comparisons, fathers' subjective experiences, and reciprocal interaction processes between parents.

Keywords: Maternal Gatekeeping, Fatherhood, Parental Involvement, Family Dynamics

THE ROLE OF ARTIFICIAL INTELLIGENCE IN CRIMINAL PROCEDURE LAW

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ABSTRACT:
Criminal procedure law encompasses the legal rules governing the processes of determining whether a crime has been committed, identifying the perpetrator(s), establishing criminal liability, determining the type and extent of sanctions for responsible parties, and ensuring the enforcement of executable sanctions. Its primary objective is to uncover the material truth in compliance with human rights. Criminal procedure consists of two main phases—investigation and prosecution—and is conducted with the participation of various individuals and authorities. In this context, the roles, powers, and obligations of relevant actors, as well as applicable procedures, constitute the core subject matter of this legal discipline. Artificial intelligence technologies (AI) hold significant potential to enhance the efficiency and accuracy of criminal procedure practices.

AI applications, focusing on areas such as digital evidence analysis, automated audio transcription, language translation, case law searches, pattern recognition, and deepfake verification, contribute to preserving the chain of evidence during the investigation phase. In the prosecution and adjudication phases, the interpretation of audio-visual materials, expert software, and case databases strengthens judicial decision-making capacity. However, within the framework of the Criminal Procedure Code (CMK), principles such as the presumption of innocence, equality of arms, and adversarial proceedings necessitate AI's compliance with transparency, explainability, and verifiability requirements. AI outputs are classified not as "evidence" but as "tools for accessing or analyzing evidence," which is critical for legal compliance checks and methodological testability. Under the Personal Data Protection Law (KVKK) and GDPR, principles of data minimization, purpose limitation, and anonymization require adherence to proportionality, particularly in facial recognition and location data analysis. The normative legitimacy of risk-scoring systems in detention, judicial control, or sentencing remains contentious, as the prohibition on automated decision-making preserves the judge's independent discretion and obligation to provide reasoned judgments.

Keywords: Criminal Procedure, Artificial Intelligence, Fair Trial, Evidence Analysis, Data Protection

INTEGRATION OF ARTIFICIAL INTELLIGENCE IN EARTHQUAKE ENGINEERING: A STUDY ON FRAGILITY ASSESSMENT OF EXISTING STRUCTURES

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ABSTRACT:
This study examines how artificial intelligence (AI) can augment established approaches for assessing the seismic fragility of existing building stocks. Earthquakes remain a persistent hazard in seismically active regions; North Macedonia, situated along active fault systems, faces elevated risk because a substantial share of its building stock either predates or fails to comply with current seismic codes. Consequently, expected damage and life-safety losses in future events are non-trivial. Conventional fragility assessment methods—analytical or empirical—are often data-intensive, time-consuming, and costly, limiting the scale and frequency of evaluations.

We propose a research agenda that integrates machine learning (ML), deep learning (DL), and hybrid physics–ML modeling to generate probabilistic fragility functions at scale while preserving engineering interpretability. Candidate inputs include structural typology, material properties, geometric attributes, construction era, occupancy and retrofit status, and intensity measures (e.g. spectral accelerations), complemented by nonstructural proxies obtainable from rapid visual screening, municipal records, street-level imagery, and remote sensing. Training corpora may combine nonlinear simulations, ground-motion records, and post-event damage observations. Methodologically, gradient-boosting and random-forest models, convolutional networks for image-based features, and Bayesian or quantile regression for uncertainty quantification are considered, together with techniques for class imbalance, domain adaptation, and transfer learning. Model transparency is advanced through feature-importance diagnostics and SHAP analyses, calibrated against expert judgment and code-based benchmarks.

Implementation pathways couple AI models with GIS-based exposure inventories to support risk-informed prioritization of retrofits, scenario loss estimation, and preparedness planning. Ethical and governance considerations—data quality, explainability, and accountability in high-stakes decisions—are addressed alongside policy implications for code enforcement and targeted investment. We conclude that AI-enabled fragility assessment can accelerate, and in some settings enhance, conventional workflows, provided that models are rigorously validated, uncertainty is explicitly characterized, and results are embedded within defensible engineering and regulatory frameworks.

Keywords: Seismic Fragility Assessment; Earthquake Engineering; Existing Building Stock; Artificial Intelligence; North Macedonia; Retrofit Prioritization.

GLOBAL GOVERNANCE: RESEARCHING THE ROLES OF INTERNATIONAL AND REGIONAL ORGANIZATIONS

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ABSTRACT:
Global governance as a concept contributes to the development of institutional bodies that will enable and facilitate the process of coordination of international political, economic, social and environmental relations in the new world order. Global governance is a segment in international relations that emphasizes the relevance of international governmental and non-governmental organizations, which enable a new methodology of governance based on political, economic and social interdependence.

The paper makes a distinction between the definition of global governance and governance that defined political correlation in the past, which still exists as a method, as well as the causal substitutability that leads to it. In this context, the subject of this paper will also be the analysis of the functioning of international organizations and their contribution to the process of global governance in a period of increasing multipolarity that reflects and encourages rapid economic and technical development.

The increasing political correlativity of states and their method of creating tools for dealing with problems arising from the unpredictability of international relations as a result of the disparities in the economies of different regions of the world will also be an essential segment of analysis by the authors of this paper.

Keywords: Global Governance, Roles, Organizations, International ,Regional.

AI-BASED ECONOMIC TRANSFORMATION: THE RESTRUCTURING OF ENTERPRISES AND NATIONAL ECONOMIES IN THE DIGITAL AGE

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ABSTRACT:
This article examines AI-driven economic transformation at both micro (firm-level) and macro (national) scales in Turkey and the European Union. AI-enabled digitalization is reshaping industries and economies, yielding notable productivity and innovation gains. For example, experts estimate that widespread generative AI could add roughly 5% to Turkey's GDP over the next decade , reflecting efficiency and output improvements. The EU explicitly recognizes that accelerated AI adoption is vital for competitive advantage.

The impact on employment is nuanced. Automation may replace some routine tasks, but AI also creates new roles. A recent analysis suggests only about 4% of jobs will be highly impacted by AI, while the majority will integrate AI into existing workflows. The World Economic Forum similarly forecasts that AI will generate tens of millions of new jobs. In Turkey, generative AI's projected contribution to growth underscores this trend.

Data management and ethics are critical concerns. Robust digital infrastructure – including data security, high-capacity processing, and connectivity – is essential for effective AI deployment. Equally important are ethical principles: AI systems should be designed with transparency, accountability and fairness. Addressing algorithmic bias, privacy and societal impacts is central to policy frameworks; for instance, the EU's AI Act seeks to ensure trustworthy AI by mandating clear ethical standards.

Comprehensive policy frameworks can unlock AI's full benefits. In Turkey, experts recommend reskilling the workforce, boosting R&D and scaling innovation through national programs, while EU initiatives similarly call for investment in infrastructure, research and skills. Such strategic approaches aim to maximize AI-driven innovation, competitiveness and inclusive growth in the digital economy.

Keywords: Economic Transformation, Digital Age, Restructuring, Enterprises, National Economies.

THE INTEGRATION OF ECONOMIC STRUCTURES WITH ARTIFICIAL INTELLIGENCE IN THE DIGITAL CENTURY: A STRATEGIC ANALYSIS ON GLOBAL COMPETITIVENESS AND THE INNOVATION ECOSYSTEM

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ABSTRACT:
In the digital era, technological advances go hand in hand with fundamental transformations in economic paradigms. In today's interconnected world, technology, economy, and society are more intertwined than ever. Rapid digitalization has globalized competition, prompting nations and organizations to position AI at the core of their economic and social strategies. In this context, artificial intelligence (AI) emerges as a transformative force spanning production, management, financial systems, and social interactions.

The data analytics, predictive modeling, process automation, and cognitive learning capabilities enabled by AI are fundamentally altering the way economic systems operate. As a result, traditional growth models give way to new dynamics driven by knowledge, algorithms, and digital capital.

This paper aims to analyze the multi-dimensional impacts of AI integration on economic structures. In particular, it examines AI's role in global competitiveness, the maturity of innovation ecosystems, and sustainable growth. The maturity of innovation ecosystems emerges as a key factor in maximizing AI's economic contributions, and countries with advanced ecosystems are better positioned to translate AI's potential into competitive advantage in the digital economy.

The findings indicate that AI applications do not merely improve operational efficiency; they also serve as strategic assets that enhance nations' economic independence, knowledge production capacity, and innovation capabilities.

The research further demonstrates that AI-driven institutional transformation provides competitive advantages at both the micro (enterprise) and macro (national economy) levels in the transition to a digital economy. However, considerations such as the ethical governance of AI, data sovereignty, and labor market transformation are critically important for economic stability, making comprehensive regulatory frameworks and strategic policies to manage AI's benefits and risks a priority.

Thus, in the digital age, AI integration is regarded not merely as a technological innovation but as a strategic imperative that redefines economic sovereignty and sustainable development. As such, the multi-dimensional impacts of AI on economic structures necessitate interdisciplinary approaches.

Keywords: Integration of Economic, Artificial Intelligence, Digital Century, Innovation, Ecosystem.

DIGITAL EVIDENCE AND UNIVERSAL JURISDICTION: THE INTERSECTION OF STATE IMMUNITIES, OPEN SOURCE INTELLIGENCE (OSINT), AND PROCEDURAL SAFEGUARDS

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ABSTRACT:
This article examines the new form of universal jurisdiction in the digital age, along with the rise of open-source intelligence (OSINT) in the evidentiary regime. Our thesis argues that OSINT, by providing prima facie probative power in serious international crimes, has effectively eroded the traditional barriers established by the doctrine of state immunity. However, this transformation can generate a crisis of legitimacy unless rigorous procedural safeguards are established.

First, the scope, types of OSINT (satellite imagery, social media videos, digital mapping, blockchain analysis), and its time-sensitive, reproducible nature are explained. Then, its impact on universal jurisdictional practice is illustrated with examples such as Al-Werfalli at the ICC, the Kobani trial in Germany, and the Myanmar IIMM practices.

Second, the classical foundations of state immunity (the jus imperii/jus gestionis distinction, functional immunity) and the debate on exceptions in jus cogens violations are evaluated. OSINT's capacity to penetrate the barrier of immunity through the production of high-resolution data demonstrating the existence of a crime and the individual attribution of the perpetrator is discussed.

Thirdly, specific risks such as forged content, decontextualization, chronology distortion, identification and chain of custody deficiencies are analyzed, as well as tensions arising from the principles of the right to a fair trial, equality of arms, adversarial proceedings, privacy, and data protection. The article recommends transparent methodology for admissibility, verifiability protocols, digital forensic standards, OSINT literacy among judges and prosecutors, and the institutionalization of impartial expert reports. Ultimately, the study argues that OSINT-enhanced universal jurisdiction offers an opportunity to strengthen accountability, but a rigorous normative framework around proportionality, auditability, and procedural compliance is essential to protect the legitimacy of the law.

This framework, along with standardized chain-of-delivery processes for evidence integrity, source criticism, methodological replication, and clear, auditable procedures prioritizing independent scrutiny by the defense, forms the basis of the article.

Keywords: Digital Evidence, Universal Jurisdiction, State Immunities, Open Source Intelligence, Procedural Safeguards.

DEEP LEARNING-BASED ANOMALY DETECTION: A COMPARATIVE ANALYSIS ON HIGH ENERGY PHYSICS AND MEDICAL IMAGES

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ABSTRACT:

This study comparatively examines deep learning-based anomaly detection methods on high-energy physics (HEP) event data and medical image (BreastMNIST) data. The study applied variational autoencoder (VAE) and transfer learning-based convolutional autoencoder (TL-ConvAE)approaches; the results obtained were evaluated through histogram analyses, visual panels, ROC and PR curves. The peaks and tails observed in the histograms indicate that the models statistically associated extreme values with physically meaningful anomalies. The findings reveal that rare event detection approaches used in high-energy physics can also distinguish structural irregularities in medical images based on similar statistical principles. Consequently, the applicability of interdisciplinary transfer learning has been confirmed, and it has been demonstrated that anomaly indicators can be represented in a common probability space.

Keywords: Deep Learning, Autoencoder, Anomaly Detection, High Energy Physics, Medical Imaging

INNOVATIVE ENGINEERING APPROACHES IN EARTHQUAKE-RESISTANT STRUCTURAL SYSTEMS

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ABSTRACT:
Dynamic effects such as destructive earthquakes have long been a subject of critical investigation. Considering earthquakes solely as an engineering phenomenon while neglecting their economic, social, and psychological dimensions represents an incomplete and misleading approach. Despite the utilization of advanced technological techniques and materials in many countries, it is still impossible to guarantee a structure that will remain completely undamaged during a severe earthquake. In seismic regions, designing structures solely based on load-bearing capacity and stiffness is no longer deemed sufficient. Therefore, innovative engineering approaches such as the integration of energy dissipation systems, base isolation mechanisms, advanced materials, and digital-intelligent technologies are increasingly being emphasized to enhance both the resilience and overall performance of structures.

This study examines the most recent techniques employed in earthquake-resistant structural systems considering current literature, discussing their advantages, limitations, and potential directions for future research. Passive and active energy dissipation systems, base isolation, high-strength materials, structural health monitoring, digital twin applications, and artificial intelligence assisted methods are explored. Consequently, the study proposes practical strategies for engineering applications and highlights the existing research gaps that may guide future investigations.

Keywords: Earthquake-Resistant Structures; Energy Dissipation Systems; Base Isolation; Performance-Based Design; Smart Structures.

CHALLENGES AFFECTING ERASMUS OUTGOING STUDENTS IN INTERNATIONAL MOBILITY PROGRAMS: FROM BARRIERS TO BRIDGES

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ABSTRACT:
 The Erasmus program stands as one of the European Union's most influential initiatives, fostering educational mobility and intercultural exchange among university students. While its benefits are widely acknowledged, participation in Erasmus mobility also presents a range of challenges. This study explores the key difficulties faced by outgoing Erasmus students during their mobility periods, including linguistic barriers, cultural adaptation struggles, administrative complexities, issues of academic recognition, social isolation, and financial limitations. Drawing on both qualitative and quantitative research conducted across Europe, the paper provides a comprehensive analysis of these challenges and offers recommendations for universities and policymakers to address them, with the ultimate aim of improving the overall Erasmus mobility experience.

Keywords: Erasmus Mobility, Student Challenges, Intercultural Adaptation, Academic Recognition, Financial Constraints

A NEW STUDY ABOUT THE SKOPJE CLOCK TOWER

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ABSTRACT:

The Skopje Clock Tower stands out for both its architectural and functional characteristics, distinguishing it from other clock towers built in the Balkans during the Ottoman period. Clock Towers, an important element in regulating time and controlling public spaces in Ottoman cities, were generally built in city centers or near administrative buildings. In this context, the Skopje Clock Tower is both a part of the city's administrative structure and one of the elements that complete its architectural identity. The building gained its current appearance with the simple functional lines of 16th-century Ottoman architecture as well as the restorations it underwent in the 19th century. Located at a dominant point in the city, the tower has held strategic importance throughout history, serving both as a means of the measurement and as a watchtower for defensive purposes.

This study examines the location, architectural features, and historical functions of the Skopje Clock Tower within the framework of Ottoman urban planning, aiming to reveal the structure's relationship with the defensive tower tradition in Ottoman architecture. Within the scope of the research, data obtained through archive documents, field observations and existing literature review were evaluated. Additionally, the Skopje Clock Tower was analyzed comparatively with similar architectural approaches of the period.

Keywords: Skopje, Clock Tower, Ottoman Architecture, North Macedonia

AN EMPIRICAL EVALUATION OF A MODEL-BASED TEST DATA GENERATION FRAMEWORK FOR REDUCING SYSTEM INTEGRATION DELAYS

Datta Snehith Dupakuntla Naga

ABSTRACT:
Modern software engineering has introduced a manual bottleneck in the setup of test data that slows down the Continuous Integration and Continuous Delivery (CI/CD) cycles, hence long integration cycles with the system and increased risks on quality. This paper empirically evaluates a novel Python-based model-driven framework designed to automatically generate complex relational state-aware test data. Parsing declarative models of data entities and their constraints will help us develop an approach to automatically create valid and semantically appropriate test datasets for large-scale enterprise projects from the financial and healthcare domains within their CI/CD pipelines. Changes in some of the key metrics were analyzed by way of a longitudinal case study, i.e. before and after implementation. It takes only 15 minutes compared to 8 hours earlier, leading to a reduction of 97% in time spent setting up the test environment. Also, by keeping data safe and ready, the plan helped cut down on 60% of production flaws tied to data problems. This fix made it possible to fully automate after-deployment checks and greatly improved the test range.