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BOOKLET OF ABSTRACTS

Rebuilding Bridges

Sustainable Cyber-Physical Integration in the AI Era

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Comparative Analysis of Takagi-Sugeno and Mamdani Fuzzy Inference Architectures with ANFIS-Based Automated Rule Generation for EEG-Based Cognitive State Monitoring

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ABSTRACT

Fuzzy inference systems show strong promise for EEG-based cognitive state monitoring in neurodegenerative conditions, but two design choices shape their performance and clinical applicability: inference architecture (Takagi-Sugeno vs Mamdani) and rule/membership-function (MF) generation (manual expert-driven vs data-driven automated). This paper compares both dimensions on an EEG Alzheimer's monitoring system using the ds004504 OpenNeuro dataset (88 subjects: 36 AD, 23 FTD, 29 HC). A hybrid FSM-Fuzzy Takagi-Sugeno system is evaluated against a Mamdani equivalent across inference transparency, output interpretability, computational complexity, and FPGA suitability. We then examine manual MF tuning's failure modes and present an ANFIS proof-of-concept that learns MFs directly from the delta/alpha ratio (DAR) biomarker (70 training, 18 test subjects; training RMSE 0.392, validation RMSE 0.391). Data-driven MF centers shift substantially from manually designed ones — 2.754σ , 0.455σ , and 2.055σ for LOW, MEDIUM, and HIGH — quantifying a representational gap introduced by expert tuning. These findings motivate a hybrid strategy: ANFIS for offline calibration, TS for FPGA inference, Mamdani for clinical output.

From Dissertation to Deployment: A Unified Software Platform Operationalizing Clinical-Prediction and Sequential-Security AI for Healthcare

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ABSTRACT

Advances in machine learning for healthcare are abundant, yet most validated models remain confined to research notebooks and never reach secure, usable clinical software. This paper addresses that deployment gap by presenting a unified, security-hardened software platform that operationalizes two complementary streams of doctoral research inside a single, role-based hospital information system. The first stream contributes a clinical-prediction capability: an ultra-hybrid ensemble that couples a quantum-inspired feature transformation, particle-swarm feature selection, and calibrated soft voting for cancer-outcome prediction (96.41% accuracy, AUC-ROC 0.983 on TCGA-BRCA), survival stratification, multi-cancer generalization, and pharmacogenomic drug-response classification (89.31% mean accuracy across 25 compounds). The second stream contributes a sequential-security capability built on a bidirectional gated recurrent unit (Bi-GRU) for network intrusion detection (94.95–98.40% accuracy across three datasets, including a purpose-built healthcare benchmark) and an attention-enhanced variant for electroencephalography (EEG) biometric identification (96.68% accuracy). The platform follows a three-tier architecture (Flutter client, ASP.NET Core gatekeeper, and an isolated model-serving service) in which security is embedded architecturally through role-based access control, audit logging, an intrusion-detection monitor, and a biometric access gate, aligned with HIPAA and GDPR obligations. A remote elderly-care module illustrates the platform in an aging-in-place scenario. The contribution is the engineering translation of research-grade AI into one deployed, compliant system.

AI-Based Displacement Forecasting for Real-Time Landslide Risk Assessment in the Danube Region

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ABSTRACT

This paper presents a dual-layered AI framework for real-time landslide risk assessment developed under the GeoNetSee project within the Interreg Danube Region Programme. The first layer employs a fuzzy logic model, inspired by the Slovenian MASPREM system, which integrates Landslide Susceptibility Maps (LSS) with high-resolution precipitation forecasts from the Open-Meteo API to generate a Predicted Landslide Hazard (PLSH) score on a 0–5 scale, updated every 6–12 hours. The second layer focuses on real-time ground displacement detection by fusing low-cost dual-frequency GNSS receivers with MEMS accelerometers and applying machine learning regression algorithms, including Support Vector Regression (SVR), Long Short-Term Memory (LSTM), and Convolutional Neural Network – Long Short-Term Memory (CNN-LSTM). Validation at the Curine Njive pilot site in Bosnia and Herzegovina demonstrated that SVR achieved a Mean Absolute Error (MAE) as low as 0.0018 m across four GNSS nodes, while the CNN-LSTM achieved the highest overall predictive accuracy across all evaluated nodes with a MAPE of only 3.99% for Node 41. The fuzzy model successfully identified critical hazard levels during intense rainfall events. Results confirm the viability of integrating low-cost sensor networks with AI-driven analytics for transboundary geohazard early warning systems.

ERP Systems' Effect on Production and Supply Chain Management

Benjamin Bae and C. Christopher Lee

ABSTRACT

This study investigates the relationship between the adoption of International Financial Reporting Standards (IFRS) and the performance of banks in a number of Middle East countries. We examine whether performance levels and audit qualities play any role in adopting the International Financial Reporting Standards (IFRS) in Middle East banks. This study hypothesizes that in general, banks with high performance and audit quality measures tend to adopt the IFRS than low-performing banks as the adoption of a new standard takes lots of time and expenses which could be an additional burden to them. The results show that three hypotheses are strongly supported whereas the cultural factor hypothesis is not. Banks with high ROA and ROE tend to adopt IFRS than low-performing banks. Big banks are also more likely to adopt IFRS than small or medium-sized banks. Contrary to the hypothesis, the Islamic bank status as a cultural factor has some positive impact on the adoption of the banks in the region. Overall, this research adds to our understanding of the bank's performance. First, evidence on the relationship between the adoption of IFRS and the bank's performance should be useful to investors. Second, the findings of this study provide financial statement users with useful information about the bank's performance measures.

Artificial Intelligence Agentic AI and Content Creation: Transforming Strategy, Innovation, and Digital Ecosystems

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ABSTRACT

Artificial Intelligence (AI) has advanced rapidly, progressing from symbolic expert systems to statistical machine learning and, most recently, to foundation models and autonomous agents. Generative AI, exemplified by large language models (LLMs) and multimodal systems, specializes in creating human-like outputs across text, images, and code [11], [13], [15]. Agentic AI, by contrast, emphasizes autonomy, decision-making, and proactive task execution [12], [14], [16]. This paper presents a comparative review of these paradigms, examining their distinct functions, convergence, and ethical implications. Through a structured literature review, the study highlights their applications in education, research, business, and cybersecurity. Findings indicate that Generative AI enhances creative synthesis, while Agentic AI extends independence into problem-solving and workflow automation. However, ethical dilemmas—transparency, accountability, and alignment—pose urgent challenges [5], [17]. Recommendations emphasize safeguards and responsible governance to ensure these systems augment rather than undermine human potential.

Investigating Internal and External Factors Influencing Transportation Suppliers' Bidding Decision-Making

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ABSTRACT

Transportation suppliers often participate in competitive bidding processes, which can create operational inefficiencies, margin erosion, sunk investments, and consequently, heightened exposure to the winner's curse. Despite previous research on buyer-side benefits of transportation procurement, limited attention has been given to how suppliers evaluate whether and how to respond to requests for proposals (RFPs). This study investigates the internal and external factors that may influence transportation suppliers' bidding decision-making. This study evaluates fourteen bid-relevant criteria, including seven internal supplier-related factors and seven external tender-related factors, using the Analytic Hierarchy Process (AHP). Data were collected from 108 professionals working in transportation supplier organizations, involving individuals in sales, pricing, product, operations, tender management, and executive roles. Pairwise comparisons were used to estimate the relative importance of each factor. The main analysis used a subsample of the full dataset, filtered out any response with a consistency ratio over 0.20. Two further analyses were conducted on the full sample and a stricter subsample, including only responses with a consistency ratio below 0.10, to check the robustness of findings. Findings indicate that "Need for Work" is the most influential internal factor, suggesting that economic pressure to secure revenue strongly impacts supplier bid participation and markup decisions. Among external factors, "Type of Bid" is the most influential, highlighting the importance of bid structure in supplier decision-making. Additionally, the findings of this study suggest that organizational characteristics, including size and revenue, significantly influence how suppliers weigh these factors. The study contributes to supply chain and transportation procurement literature by offering an empirically grounded decision-support framework for supplier bidding evaluation. Practically, the findings of this study assist transportation suppliers in developing more robust bidding strategies and making more informed decisions that balance revenue growth, operational fit, and risk exposure.

When Does Global Search Pay for Itself? A Measured Exploration Cost and Energy Break-Even Analysis of a Metaheuristic Search Controller in Solar Energy Systems

Mohamed Ali Muammar Ezgour

ABSTRACT

Autonomous energy systems increasingly delegate the choice of operating point to embedded search algorithms, trading a fast local optimizer that can settle on a wrong point against a slower global search that guarantees the right one at a measurable cost. This paper reframes maximum power point tracking under partial shading as that decision and measures its economics on a fixed photovoltaic plant in MATLAB/Simulink. A Hippopotamus Optimization global search handed over to incremental conductance is compared with incremental conductance alone across seventeen initial duty cycles and thirty random seeds. The hybrid reached the global peak in all thirty seeds, whereas the local controller was trapped at about 72.9% of the available power from the upper third of its operating range (Fisher exact, $p = 0.004$). The search time, 55.80 s, is fixed by the plant rather than the algorithm and shows zero variance across seeds. Against a local controller that would have succeeded, the search is a permanent energy cost of about 5.6 kJ; against one that would have been trapped, the hybrid reaches cumulative-energy break-even at 59.90 s and then leads by a steady 92 W. The outcome is a decision rule, not a claim of universal superiority.

From Data to Decision-Making: The Role of Local Digital Twins in Cross-Domain Management Within Municipalities

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ABSTRACT

Municipalities are facing increasingly complex, interconnected challenges in areas like housing, climate adaptation, mobility, and social policy. Local Digital Twins (LDTs) are seen as a promising tool to make this complexity more understandable and support decision-making. At the same time, both literature and practice show that few initiatives get past the pilot phase, even though getting through that phase is essential for successful long-term adoption. This paper presents a research-in-progress study on the development and application of an implementation method for LDT technology within the municipality of Veenendaal, based on human values rather than driven by technological possibilities. Based on literature, case studies, and an initial stakeholder analysis, both opportunities and bottlenecks are identified. The first results show that stakeholders broadly recognize the added value of LDTs, but that fragmented data, limited organizational maturity, and lack of governance are important obstacles. This research contributes to understanding the conditions for successful implementation of LDTs as policy and management tools in municipal organizations.

Techno-Economic Assessment of Residential Prosumer Systems Using Real Household Consumption Data: A Case Study from Bosnia and Herzegovina

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ABSTRACT

This paper evaluates the technical, economic, and environmental feasibility of residential prosumer implementation in Sarajevo, Bosnia and Herzegovina, through the integration of photovoltaic (PV) generation and battery energy storage. A simulation-based assessment was performed in HOMER Pro using a measured 12-month household load profile with an average daily consumption of 11.25 kWh and a peak demand of 2.85 kW. Six system configurations were investigated, consisting of 3 kW, 4 kW, and 5 kW PV installations, each analyzed with and without a 5.04 kWh lithium-ion battery, over a 25-year project lifetime under a zero-credit export scheme. Among the analyzed configurations, the 3 kW PV system without battery storage achieved the lowest Net Present Cost (NPC) and Levelized Cost of Energy (LCOE) of 0.137 BAM/kWh, representing a 28% reduction compared to the grid tariff, with a simple payback period of 17 years and the highest Internal Rate of Return (IRR) of 3.8%. The 4 kW PV system provided the most balanced operational performance, generating 4,954 kWh annually with imports and exports nearly equal, yielding an LCOE of 0.139 BAM/kWh and a 20-year payback. The 5 kW PV system generates highest total renewable energy and full annual carbon neutrality, but its surplus generation provided limited additional financial benefit under the current net-metering framework, which only offsets future bills rather than generating revenue. Battery storage integration substantially enhanced energy autonomy by increasing self-consumption and renewable fraction (from 52% to 61% for the 3 kW system, and from 57% to 68% for the 4 kW system), but it raised LCOE to 0.198–0.202 BAM/kWh due to higher capital investment. The environmental assessment demonstrated that PV adoption significantly reduces greenhouse gas emissions, with the 3 kW system lowering annual CO₂ emissions by ~76%, the 4 kW system by ~92%, and the 5 kW system achieving net-negative emissions. The results demonstrate that under zero-sellback regulatory frameworks, PV sizing must prioritize direct self-consumption matching. Moderate-capacity PV installations therefore represent the most economically viable investments, while battery storage serves primarily as a driver of energy independence rather than immediate financial gain.

The Value of Personal Data Ecosystems: A Flemish Media Sector Case Study

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ABSTRACT

Personal Data Stores (PDSs) have been proposed as a privacy-preserving approach to data sharing that increases individual control over personal data while enabling new forms of cross-organizational collaboration. This collaboration leads to the emergence of Personal Data Ecosystems (PDEs). Despite growing interest in PDEs, limited research has examined how the organizational and economic barriers identified in prior studies manifest in practice. This paper investigates these challenges through a case study of the Flemish media sector within the Solid4Media project, which explores the use of PDSs to support data sharing and personalization across media organizations. Using a qualitative research design, data were collected through interviews and multi-stakeholder workshops, involving public and commercial media- and culture organizations, technology providers, intermediaries, and policy actors between 2024 and 2026. The findings confirm three key challenges for PDEs. First, provider incentives limit achievable sovereignty. Media and cultural organizations are willing to share metadata and aggregated audience insights but remain reluctant to share content catalogues and detailed behavioral data. Second, the intermediary layer is primarily driven by organizational value creation rather than user empowerment. Participants emphasized the need for an integrated profile platform that supports audience growth, cross-platform recommendations, and competitive positioning against global technology platforms, while depending on participation from influential actors such as major media organizations. Third, governance emerged as a critical challenge to prevent lock-in. Participants supported decentralized control in principle but remained divided between cooperative and independent governance models, each raising concerns about trust, influence, and the risk of recreating ecosystem lock-in. The study thus demonstrates how PDE tensions surrounding sovereignty, intermediary design, and governance materialize in a real-world media context.

Responsible People Analytics for Remote-Work Decisions: A Machine-Learning Benchmark for Classifying Perceived Productivity

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ABSTRACT

This study examines whether employee-perception survey data can support responsible people-analytics decisions about remote-work productivity. Using the public New South Wales (NSW) Remote Working Survey 2021, the study benchmarks statistical and machine-learning classifiers for self-reported perceived productivity classes (same, less, or more productive when working remotely relative to onsite work), not objective output, under default, class-weighted, and resampling protocols. Main evidence comes from 55 repeated stratified cross-validation using macro F1 and balanced accuracy with fixed model specifications. Class-balanced separability is modest. Random Forest, CatBoost, and LightGBM form a leading cluster with overlapping confidence intervals (macro F1 approximately 0.52). Affective/well-being items, especially feeling better when working remotely, carry disproportionate signal (well-being block macro F1 0.485 vs. full model macro F1 0.522), consistent with construct overlap and possible common-method variance. Resampling does not materially change this conclusion. Managers should not use survey classifiers for individual employee evaluation, return-to-office enforcement, or surveillance. The framework supports aggregate survey auditing, measurement evaluation, and more cautious interpretation of people-analytics dashboards. The study provides a decision-oriented reporting standard for responsible HR analytics using employee-perception survey data.

Which Cultural Values Influence the Success of Process Implementations Within SME Service-Oriented Organizations in the Netherlands?

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ABSTRACT

Digitalization has shifted Business Process Management (BPM) from a technical discipline toward a stronger emphasis on culture, behaviour and organizational knowledge. Yet little is known about which cultural values support process implementation in SMEs. This study examines how BPM culture influences process implementation success in Dutch service-oriented SMEs, drawing on six values: customer orientation, excellence, responsibility, teamwork, innovation, and results orientation. A qualitative multiple case study was conducted across four SMEs, based on thirteen semi-structured interviews and the Organizational Culture Assessment Instrument (OCAI). While implementation success was assessed through employee acceptance, actual use and structural embedding. The findings show that teamwork and responsibility are most strongly associated with implementation success, whereas customer orientation and results orientation act mainly as motivators when made concrete for employees. The study further identifies communication, leadership & decision-making and organizational culture as contextual conditions that shape how BPM values translate into sustainable process behaviour.

Developing Coding Schemas in Socio-Technical Software Engineering: A Grounded Theory Approach

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ABSTRACT

Qualitative research has become increasingly important in software engineering as researchers seek to understand the complex social, organisational, and technical factors that shape software development. Contemporary software projects involve intricate interactions among developers, users, managers, domain experts, and technologies, making purely quantitative approaches insufficient to explain how these interactions influence software development practices. Consequently, Grounded Theory has become one of the most widely adopted qualitative methodologies in empirical software engineering because it enables theory to emerge inductively from practitioners' experiences rather than from predetermined assumptions. Despite its widespread adoption, comparatively little attention has been paid to one of Grounded Theory's most important analytical outputs: the coding schema. Existing studies frequently describe the application of open coding, constant comparison, memo writing, and theoretical saturation, yet few explain how these analytical activities evolve into a coherent coding schema that underpins theory development. This lack of methodological transparency makes it challenging for researchers, particularly doctoral students and early-career scholars, to demonstrate the analytical progression from raw qualitative data to conceptual categories and substantive theoretical explanations. This paper presents a methodological perspective on developing coding schemas for socio-technical software engineering research using Grounded Theory. Rather than viewing coding as a mechanical process of assigning labels to textual data, the paper conceptualises coding schema development as an iterative process of conceptual discovery and theoretical abstraction. Initial codes emerge from participants' experiences and narratives and are continuously refined through iterative data collection, constant comparison, and analytical interpretation. Throughout this process, memo writing captures emerging insights, conceptual relationships, and methodological decisions, enabling researchers to progressively construct categories that explain the phenomenon under investigation. The proposed approach comprises a series of interconnected analytical activities that begin with familiarisation with qualitative data, followed by line-by-line coding, constant comparison across interviews, iterative refinement of concepts, and the theoretical integration of categories. Particular emphasis is placed on developing clear code definitions, establishing explicit inclusion and exclusion criteria, maintaining traceability between empirical evidence and analytical interpretation, and revisiting earlier coding decisions as theoretical understanding evolves. Collectively, these practices strengthen analytical consistency while preserving the flexibility that characterises Grounded Theory. The paper contributes to empirical software engineering by offering practical guidance for developing transparent, rigorous, and well-structured coding schemas for socio-technical software engineering research. The proposed approach is applicable across diverse domains, including Agile software development, DevOps, digital health, artificial intelligence, software architecture, and digital transformation, where human, organisational, and technical factors are closely intertwined. By making the coding process more explicit and systematic, the approach enhances the credibility, dependability, and reproducibility of qualitative findings and helps readers understand how theoretical explanations are grounded in empirical evidence. Ultimately, the paper argues that a coding schema is far more than a repository of codes; it serves as the analytical bridge connecting qualitative data to theory development. A systematically developed coding schema strengthens the methodological rigour, transparency, and trustworthiness of Grounded Theory research. As empirical software engineering continues to mature, greater methodological clarity in coding schema development will contribute to more robust, transparent, and theoretically grounded qualitative research.

Implementing Novel Algorithms for the Maintainability Measurement in Java Software Code

Remi Yusuf, Julian Bass, and Md Shadab Mashuk

ABSTRACT

Software metrics play a central role in assessing and managing the quality of software systems providing quantitative insights into attributes such as complexity, reliability, rigidity, modifiability and maintainability. Among these, maintainability is particularly critical, as it directly influences the ease of system evolution, long-term sustainability, and overall cost-effectiveness. Despite the widespread use of metric-based maintainability measurement algorithms, capturing a value that reflects the maintainability situation of software source code remains a challenging task, especially in the presence of design deficiencies such as code smells. To measure changes in maintainability, this study experimentally characterises the relationship between code smells and maintainability. Four commonly studied code smells—Long Method, Long Parameter List, Feature Envy, and Refused Bequest—were systematically injected into open-source codebases derived from Apache Commons Lang. The modified systems were then evaluated using SonarQube, enabling a quantitative assessment of how these injected design deficiencies affect maintainability metrics. To have a comparative result set the Microsoft Maintainability Index algorithm was implemented into a tool to evaluate the same code base. The results from these approaches were combined into a structured dataset capturing the impact of different code smells across multiple measurement techniques. The analysis reveals notable discrepancies among existing maintainability algorithm, particularly regarding their sensitivity to specific types of code smells, which contrasts with expectations derived from prior literature, inconsistent maintainability degradation, ranking inconsistency, little or no reaction to some code smell. To address these limitations, we proposes a novel maintainability evaluation algorithm designed to better reflect the nuanced effects of structural and object-oriented design issues, bearing in mind not just the presence of code smell but the distribution of these smells. The proposed algorithm demonstrates improved alignment with observed patterns of maintainability degradation compared to traditional indices. This work contributes (i) a reproducible methodology for systematically evaluating maintainability degradation, (ii) a comparative analysis of widely used maintainability metrics, and (iii) a new algorithm that enhances the accuracy of maintainability assessment in the presence of code smells, also the proposed algorithm showed high sensitivity and low sensitivity to some particular smells, it also showed that the maintainability value are sometimes clustered within a very short range of numbers irrespective of the number of smell injected.

Designing Classifact: Towards a Transparent and Secure Platform for Stakeholder-in-the-Loop Data Annotation

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ABSTRACT

AI systems often depend on human judgments to train, evaluate, or validate data-driven models. Yet organizations working with sensitive data need to involve people with relevant contextual knowledge while retaining privacy, governance, and accountability. This design-science study presents Classifact, a platform for stakeholder-in-the-loop data annotation and validation. Classifact was developed around four objectives: (1) enabling stakeholder-relevant annotation and validation, including non-specialist mission preparation; (2) supporting clarity and cooperation across data-science, context, annotation, and data-protection roles; (3) preserving transparent data governance and privacy; and (4) supporting focused and sustained participation through calm, intuitive, and cooperative mission design. The artifact was shaped through iterative formative input from practitioners and researchers across AI and data, operational practice, UX and engagement, privacy and governance, security, and lived-experience or project settings. It combines a console for mission configuration, role-based governance, and audit documentation with a game-like interface for annotators. A proof-of-concept pilot assessed whether the artifact could be prepared and operated by people with limited IT experience, support the workflow from mission setup to results export, and sustain annotation activity. In a descriptive comparison of complete workshops using the same task and dataset, a non-ICT team member prepared the Classifact mission in approximately two hours; participants used their own devices; and the Classifact workshop recorded more annotations under the documented conditions. The comparison assesses the practical operation of complete workflows, rather than the causal effect of gamification or a single interface feature. The study shows that the four objectives can be operationalized in a single stakeholder-in-the-loop annotation infrastructure. It establishes feasibility and practical potential, not improved annotation quality, stakeholder representation, inclusion, fairness, or downstream AI performance. Classifact contributes a practical design for organizing human judgment, governance, and documentation in transparent, secure, and ethically governed annotation for sensitive organizational settings.

Between Blockchain and Black Markets: South Africa's Legal Readiness for Crypto-Driven Cyberfraud

Sagwadi Mabunda and Yassin Chande

ABSTRACT

This paper examines whether the proliferation of cryptocurrency-facilitated fraud warrants a reclassification of the terrestrial crime of fraud into the distinct statutory offence of cyberfraud under South African law. Engaging with established fraud typologies — exit scams, Initial Coin Offering (ICO) scams, Ponzi schemes, pump-and-dump schemes, and market manipulation — the article tests their definitional fit against both the common law of fraud and section 8 of the Cybercrimes Act 19 of 2020. Through a hypothetical composite scenario combining multiple fraud typologies, the article demonstrates that whilst cryptocurrency significantly amplifies the reach and complexity of fraudulent schemes, it functions primarily as an instrument of fraud rather than a constitutive element of cyberfraud as defined under South African law. The article further critically examines the regulatory response of the United States Securities and Exchange Commission (SEC) and derives lessons for South Africa's developing regulatory framework. It concludes with recommendations centered on consolidated cryptocurrency legislation, robust Know Your Customer (KYC) obligations, and a comprehensive public-awareness strategy.

Progress Without Consent: AI Deployment and the Democratic Legitimacy Gap

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ABSTRACT

Drawing upon critical and technology studies, this conceptual provocation introduces the concept of “Progress without Consent”, referring to the introduction of AI technological innovation into society without collective societal deliberation and democratic legitimacy. The paper problematises the introduction of structurally transformative AI technology into society, the depoliticisation of that technology via product launches, robotic automation without social mandate, and the way technological innovation moves faster than democratic institutions can process its implications for societal structures. Read through Habermas's two-track model of democratic legitimacy, these conditions converge on what the paper terms a legitimacy gap. Ultimately, the authors argue, the development and deployment of AI do not belong to isolated laboratories and the private sphere of technological innovation but require, in principle, a transfer to the public sphere, representing the space of rational communication, collective contestation and democratic authorisation.

AI Slop in the Generative AI Era: Uncovering Hidden Costs for Information Quality, Trust, and Human-Centered Systems

Blenda G. Mutuma

AI SUMMARY *The submitted manuscript did not contain a labeled abstract; this summary was prepared for booklet of abstracts*

ABSTRACT

This conceptual, literature-based paper examines AI slop: generative-AI output that appears fluent and complete while lacking sufficient accuracy, substance, or contextual value. It argues that AI slop is not merely a content-quality problem, but a structural shift that transfers unrecognized verification and repair work to colleagues, instructors, and other recipients. Synthesizing research on foundation-model risks, information quality, cognitive load, trust in automation, and human-centered AI, the paper proposes a three-dimensional taxonomy organized around intent, detectability, and organizational impact. It introduces the concept of invisible verification labor to describe the cognitive effort required to detect, interpret, and correct superficially polished but inadequate output. The analysis connects this burden to productivity loss, automation bias, and erosion of interpersonal and institutional trust. The paper then proposes a human-centered mitigation framework built around detection and quality standards, equitable recognition and distribution of verification labor, and sustainable governance design. It concludes that organizations and academic institutions should treat trustworthy information quality as a shared responsibility and preserve meaningful human control at the point of AI-assisted production.

Beyond AI Literacy: Developing and Validating a Reflective Human–AI Learning Scale in Higher Education

Alison Munsch

ABSTRACT

Generative artificial intelligence (GenAI) is transforming higher education, yet current AI literacy frameworks primarily assess what students know about AI and how they use it rather than how they think while learning with AI. This paper introduces Reflective Human–AI Learning (RHAL), a complementary construct that captures the quality of students' reflective cognition while collaborating with AI. Drawing upon AI literacy, metacognition, significant learning, critical thinking, and self-regulated learning, the study proposes a multidimensional instrument and outlines a rigorous psychometric validation process. The resulting scale is intended to complement—not replace—existing AI literacy measures by assessing reflective judgment, intentional inquiry, and ethical human-AI collaboration.

Digital Mindset Efficacy for Human-AI Career Readiness

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AI SUMMARY *The submitted manuscript did not contain a labeled abstract; this summary was prepared for booklet of abstracts.*

ABSTRACT

This conceptual paper examines how digital mindset efficacy can prepare learners and professionals for human-AI collaboration. It defines digital mindset efficacy as calibrated confidence and capability to learn with, collaborate through, evaluate, and govern digital and AI systems. Drawing on self-efficacy theory, digital-mindset research, digital-intelligence frameworks, AI competency standards, and life-skills literature, the paper links digital mindset to AI proficiency through mastery experience, vicarious learning, social persuasion, affective regulation, and performance calibration. It argues that critical thinking, communication, adaptability, ethical judgment, teamwork, and self-regulation are constitutive elements of responsible AI proficiency rather than optional complements. The model is illustrated through the interdisciplinary General Education course Leadership for Global Challenges: Exploring the Digital Mindset and its story-driven companion manuscript, Digital Apprentice. The paper also outlines a quasi-experimental pre-post design for future empirical validation, combining self-report measures with scenario-based performance tasks. The proposed approach emphasizes not only learners' willingness to use AI, but their ability to verify outputs, disclose AI assistance, recognize uncertainty, maintain human oversight, and escalate when appropriate.

Twenty Years Later: Measuring the Accessibility of the U.S. State Government Websites

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ABSTRACT

Web accessibility remains an important issue as individuals rely on Internet access and web site accessibility for daily functions. It is an unwritten rule that people should access an organization's website to search for answers before calling to ask a human (or a bot). Over twenty years ago, in 2005, a study (White, Goette, & Young) was conducted to analyze the accessibility of state government web sites. The assumption was made that state governments should be setting an example of following accessibility guidelines. The study found that about a third of the home pages did not meet basic accessibility guidelines. In February 2026, the home sites of all 50 states and the District of Columbia were evaluated again. This time, using the Axe browser extension, 12 states had no errors. Using a Python program as a checker, 13 states had no errors. Putting the results of the two methods together, seven sites had 0 errors. This resulted in 86.27% of the 51 sites not meeting the April 2026 requirements. Because the deadline was April 26, 2026, the sites were tested again on Monday, April 27, 2026. Two states had corrected their errors, resulting in nine states with no errors. Amazingly, 17 states still had more than five issues with 15 additional states still having one to three issues.

Public Sector Experiences of Disruptions in the Psychological Contract: The Influence of Ideological Currency and Digital Transformation on Public Servants

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ABSTRACT

Digital transformation is reshaping public-sector work and may alter how public servants evaluate their psychological contract with their employer. This research-in-progress examines how critical incidents associated with digital transformation disrupt psychological contracts and how ideological currency, the perceived commitment to valued societal causes or principles, shapes subsequent trajectories toward renegotiation, repair, or exit. The study uses a qualitative phenomenological design based on semi-structured interviews with 20 employees from five Dutch municipalities experiencing transformation-related changes. The Critical Incident Technique is combined with the dynamic psychological contract phase model to reconstruct disruption trajectories, while thematic analysis identifies recurring patterns across cases. Preliminary findings suggest that disruptions can accumulate over time, contributing to changed expectations, withdrawal, and soft-exit tendencies, while ideological currency may both amplify perceived breaches and buffer their behavioural consequences. The study contributes to understanding dynamic psychological contracts during digital transformation and highlights the importance of safeguarding public-service values.

High Technology and the Developing State: The Arrival of Supercomputers in India

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ABSTRACT

While India has made vast strides in information technology in the last few decades, its success is mainly attributed to its software, rather than its hardware sector. In fact, India's attempts at developing computer hardware that can match international standards have largely been unsuccessful. A notable exception is its development of a series of supercomputers that match and exceed many international standards. This paper looks at an interesting period in India's computing history – namely the 1980s and 1990s – focusing on its development of an indigenous supercomputer. During that period, supercomputers were thought to be the sole privy of technologically advanced nations. In what many experts see as a blessing in disguise, India began developing its own supercomputer primarily after it was denied a Cray supercomputer by the United States in 1987. The US decision was based on fears that it could be used for military purposes – i.e. to develop nuclear weapons. This paper focuses on India's development of an indigenous supercomputer, the political and economic circumstances under which it was developed, the main institutions and players that were involved, the technological decisions that were made, the reasoning behind them; and the research, development and learning that went into this endeavor.

SaaS as the Backbone of Digital Transformation: How AI Turned Cloud Software into Intelligent Enterprise Infrastructure

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ABSTRACT

Software-as-a-Service (SaaS) has become one of the most consequential delivery models of digital transformation because it lowers the cost, time, and complexity of adopting enterprise capabilities. At the same time, artificial intelligence (AI), especially generative and conversational AI, is extending SaaS from a software-delivery model into a more intelligent and adaptive operating layer that automates workflows, personalizes customer interactions, and supports data-driven decisions. This paper develops a conceptual synthesis of academic literature and publicly documented organizational cases to examine how SaaS shaped digital transformation and how AI is reshaping SaaS itself. Its contribution is a layered conceptual framework that separates the access SaaS provides from the adaptiveness AI adds, connects that distinction to established theories of IT-enabled transformation, and specifies the antecedents and boundary conditions under which the two layers produce transformation outcomes. The framework is illustrated through three telecommunications cases at different stages of maturity: Vero in Brazil, A1 Telekom Austria in Central Europe, and BH Telecom in Bosnia and Herzegovina. Because the cases rely on publicly reported evidence, their outcomes are treated as illustrative rather than independently verified. The analysis suggests that SaaS enables capability access while AI deepens capability adaptiveness, and that the strongest outcomes appear where organizations redesign operating models rather than digitize existing processes. Environmental efficiency and digital inclusion are framed as design potentials and directions for future research rather than as established results.

AI-Assisted Software Development and the Change of Organizational Rhythms

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ABSTRACT

Based on a qualitative study of a Danish NGO collaborating with an AI-enabled software vendor, this paper examines how the speed of AI-assisted software development challenges established organizational rhythms of evaluation and governance. The preliminary analysis suggests that AI-assisted development not only accelerates software production but also destabilizes established mechanisms for evaluation, responsibility allocation, and legitimation in software development projects.

The Nine-Block Pyramid: A Structural Framework for Cultivating an AI Adoption Mindset Culture at Enterprise Scale

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ABSTRACT

Enterprise artificial intelligence (AI) adoption is nearly universal in name but shallow in practice: a large majority of organizations now use AI in at least one business function, yet only a small minority have scaled it enterprise-wide, and leadership commitment rather than technology is repeatedly cited as the binding constraint. This conceptual paper argues that AI adoption is fundamentally a mindset-culture problem, not a tooling problem, and proposes a nine-block pyramid as a practical framework describing a sequencing heuristic, anchored in established organizational-behavior theory, for the cultural conditions an enterprise should build to sustain an AI adoption mindset: (1) Enterprise Vision, (2) Comfort Zone Redefinition, (3) Aligned Autonomy, (4) Collaboration and Inspiration, (5) Fostering Healthy Competition, (6) Balanced Recognition, (7) AI Adoption Integration into the Annual Development Review (ADR), (8) Sunset Policy for legacy processes and tools, and (9) Psychological Safety at the apex. The framework is developed by practice-informed conceptual synthesis of six source literatures: Kotter's change model, Rogers' diffusion of innovations, self-determination theory, growth-mindset theory, psychological-safety theory, and the Progress Principle. Each is reinterpreted for the identity-threatening character of AI-augmented work. The framework is then positioned within absorptive-capacity and organizational-learning theory, which recasts the nine blocks as the cultural conditions by which an enterprise converts potential into realized absorptive capacity for AI knowledge. The paper contributes: (a) a named, AI-specific synthesis that fills a gap between generic change-management models (Kotter, ADKAR) and AI-specific practitioner playbooks; (b) ten formally stated propositions that operationalize the framework as a research agenda; (c) a preliminary three-dimensional AI-adoption behavior construct distinguishing depth, breadth, and volition of use, with indicators drawn from enterprise telemetry; and (d) a set of practical implications and diagnostic questions for enterprise leaders.