International Institute for Applied Knowledge Management

Abstracts Proceedings - KM Conference 2025 – Siena, Italy

A Publication of the International Institute for Applied Knowledge Management

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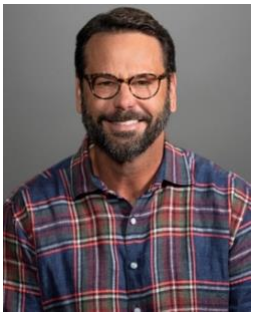
Industry Day
Wednesday, 25 June 2025
University of Siena, Italy
https://iiakm.org/conference/

Invited Keynote
Preparing for the Era of AI Regulation

Jeff Angle
Senior Director, Academic and Workforce Development, ISACA
https://isaca.org/

Abstract
As artificial intelligence (AI) transforms industries worldwide, regulatory frameworks are rapidly emerging to ensure safe and ethical deployment. The European Union (EU) AI Act represents the first comprehensive AI regulation, signaling a global shift as nearly 100 countries draft similar legislation. These frameworks converge on six key principles: AI risk ranking, high-quality data, continuous oversight, detailed logging, human oversight, and failsafe mechanisms. Formal AI audits, once voluntary, are becoming mandatory for high-risk systems, focusing on fairness, error rates, security, data governance, and robustness. The scope of auditing depends on system complexity and associated risk levels, with regulations categorizing AI systems into unacceptable, high-risk, and minimal-risk groups. Organizations must prepare for increasingly rigorous audits by embedding compliance and transparency into AI development and deployment processes. ISACA is helping both governments and companies with our efforts to build AI Governance, Risk, and Compliance (GRC) frameworks and credentials to audit AI.

About the Speaker
Jeff Angle is currently Senior Director of Academic and Workforce at ISACA, Chicago, USA. Jeff is a highly experienced executive focused on the education of the future workforce. He has help executive level roles with ETS, Pearson, HMH, and Arizona State University. Jeff has developed successful academic and workforce development programs throughout the US, Middle East and the LATAM areas focused on upskilling students in secondary and post-secondary education. In his spare time, Jeff is faculty at the W.P. Carey School of Business at Arizona State University.



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Invited Talk
The Motorsport Industry as a Unique Powerhouse of Consistent Innovation and Knowledge Transfer

Riccardo Paterni
Vice President Business Development – RPM (Italian Motorsport Network)
https://www.rpm-italia.org/

Abstract
The Industry Day will be dedicated to the Motorsport Industry. The industry started over 100 years ago in Europe (mainly the United Kingdom (UK) and Italy, then Germany and France) then it has developed in the United States (U.S.) (North Carolina, Indiana) and Japan. The industry has a relevant connection to knowledge management and knowledge transfer since it has always been and will always be human capital intensive within a relevant fast-changing technological framework. Historically by default, the industry is characterized by continuous innovation and consistent knowledge transfer.

- ***Innovation*** within the industry it has been proven that it is uniquely generated and accelerated in (in particular within the phases Feasibility to Demonstration of the innovation Index developed by NASA, the Technology Readiness Level (TRL)). The acceleration is a consistent offspring of two key factors: continuous investment in research and development (at a much higher rate of comparable companies in size) and unique ways to manage the human capital that focus on leveraging upon an empowering sense of passion and consistent skills training.
- ***Knowledge transfer*** from the industry to (and often from) other technology fields such us: automotive, aviation, aerospace, defense, biotechnology, virtual reality and others. Also in this case the leverage is on both the technological element as well as the organizational one relevant to people and talent management.

In many ways, the industry is and becomes a reference for key technological and managerial lessons on continuous improvement relevant to agility, flexibility and managing uncertain changing times that characterizes many other economic sectors. Within the industry day we will have presentations that focus on innovation development and knowledge transfer highlighting the increase of performance at the technological and human level, both are key aspects which interplay characterizes uniquely the industry itself.

About the Speaker


Riccardo Paterni is Co-founder, Vice President for Business Development and Manager of RPM - a formal Italian Motorsport Network. He has over 25 years of international organizational and business development experience that he utilizes on activities relevant to the international development of the Motorsport Industry in particular supporting the development and growth of SMEs with the key highlight on rapid innovation and knowledge transfer processes relevant to the industry. He is a university lecturer, public speaker, and book author on such topics. His research and business development interests concentrate in particular on empowering human performance within the Motorsport Industry and high-performance fields. He is the Chair of the Industry Day within the KM Conference 2025.

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Invited Talk
Pushing the Limits: Supercapacitor Innovation in Motorsport and Beyond

Alessandro Fabbri
Chief Product Officer – Novac
https://www.novacsupercap.com/

Abstract
Supercapacitors are emerging as a key enabler of high-performance, high-efficiency energy systems across multiple industries. This talk will introduce the fundamentals of supercapacitor technology—how it works, what makes it unique, and why it matters in the context of modern electrification challenges. We will dive into the world of motorsport, a demanding environment where power density, fast charging, and extreme reliability are non-negotiable. Through real use cases, we will explore how supercapacitors are being deployed for traction systems, torque filling, and auxiliary functions like electric power steering and regenerative braking support. Drawing from Novac's journey as a deep-tech startup, we will also discuss the role of agile innovation in driving the adoption of supercapacitors in automotive and motorsport applications. Particular focus will be given to the dynamic between startups and established OEMs—how we navigate technology validation, integration, and co-development processes within corporate innovation ecosystems. Whether you are part of a corporate R&D team, a startup founder, or simply curious about the future of energy storage, this talk will provide insight into how supercapacitors are helping shape the next generation of mobility.

About the Speaker


Alessandro Fabbri is the Chief Product Officer and co-founder of Novac, an innovative Italian startup specializing in shapeable supercapacitors. He holds a degree in Vehicle Engineering from the University of Modena and Reggio Emilia (UniMoRe) and brings a robust background in powertrain modeling, engine design, and fluid dynamics simulation. Prior to Novac, Alessandro worked for three years at HPE COXA, where he focused on internal and external engine simulations. At Novac, he leads R&D operations, customer and collaborator management, and product development. His multidisciplinary expertise, developed through years of technical work and refined during multiple acceleration programs, positions him at the intersection of advanced engineering and strategic business development.

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Invited Talk
The Rise of AI Edge in Motorsport

Luca Buscherini
Sales Director – System Electronics
https://www.systemelectronics.com/

Abstract
Unlike traditional cloud-based systems, Edge Artificial Intelligence (AI) enables real-time analytics by executing AI models directly on embedded hardware located in the vehicle or at the edge of the network. This local processing capability significantly reduces latency, ensures continuous operation regardless of network connectivity, and enhances data privacy and security.
In the motorsport context, Edge AI can be leveraged for a wide range of applications.
These include:
- real-time telemetry analysis for immediate feedback on vehicle performance,
- predictive maintenance by detecting anomalies in sensor data before component failure,
- adaptive race strategies that respond dynamically to changing conditions on the track.
- additionally, Edge AI facilitates advanced driver behavior analysis, contributing to improved safety and performance optimization.

By enabling high-speed, low-latency decision-making, Edge AI empowers racing teams to react instantly to critical events, refine their strategies on the fly, and gain a measurable competitive edge. This technology not only enhances the operational efficiency of racing teams but also paves the way for innovation in vehicle design, autonomous systems, and next-generation motorsport engineering.

About the Speaker
Luca Buscherini is a seasoned electronic engineer with over 30 years of management experience in executive roles at renowned international technology sectors as ICT, Telco, Power sectors and Automotive. His career includes significant roles at international technology companies such as Nokia, Siemens, AEG and Riello Industries. Since June 2024, Buscherini holds the position of Sales Director Electronics at COESIA - System Electronics, an international group specializing in advanced electronic industrial, commercial and automotive solutions.

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Invited Talk
Enhancing Human Performance: Innovation and Knowledge Transfer from Motorsport to High-Performance Organizational Settings

Lorenzo Baldassarri
Co-founder and Method Creator at MindUP Enhancement Psychology®
https://www.mindup.live/index.php?lang=en

Abstract
Motorsport puts consistently drivers to the test and improves their skills in high-pressure, extremely competitive, stressful contexts. The variables that lead to actual performance on track are many and depend on the complex delicate interplay between technology and human talents that are set to be expressed through skillful use of it. This complexity has been on the rise during the last few years due to the increase of technological complexities, relevant higher technical performances and Motorsport Industry dynamics that are overall ever more structured and demanding from pressures generated by media and all of the investments made and necessary to be part of Motorsport. For all these reasons the topic of mental training has been increasingly a relevant one. Integrated methods of mental training have been developed in Motorsport, put to the test, and developed in such demanding settings. During this presentation, an innovative method of integrated mental training will be introduced, data-driven and performance-focused, consistently developed through work in Motorsport and research knowledge and applied research knowledge will be then transferred to high-performance organizational settings. It has been possible to transfer and utilize this knowledge into other high-performance fields because the method, named Enhancement Pscyhocology ® goes to the foundations of character and personality from four perspectives: cognitive, emotional, physiological (connection to the autonomous nervous system), and muscular postural. The demands of Motorsport have allowed for the creation of a method and protocols that markedly and engineering-like support high-level strategic and operational performances in different fields suitable to be utilized by all of us.

About the Speaker


Lorenzo Baldassarri is involved in professional sport starting from the years of his specialization in Psychology and Functional Psychotherapy and completing his specialization in Sport Psychology and Coaching, becoming responsible for the 'mental' area of an international sports psychology center. He has worked with athletes of the highest level: Formula 1 drivers (he personally followed Charles Leclerc for 3 years), DTM Team BMW drivers, Serie A players, sailors, freedivers, tennis players, Olympic medalists and many young people adolescents initiated into the world of professional sport. He elaborated and developed a specific protocol of integrated mental training derived from his training in Functional Psychology, which was the subject of his specialization thesis entitled "Functional Protocol for the Sportsperson" in which he described objectives, methodology and process to be put into practice to improve the athlete's personal resources, so as to enrich and implement his performances. This protocol is the applied method that arises from the theory of Enhancement Psychology®.

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Invited Talk
Knowledge Transfer in Automotive and Motorsport: Empowering Gender Inclusion

Laura Tancredi
President Automotive Women Association
https://automotivewomenassociation.com/

Abstract
Women's involvement in automotive and motorsport at any technical and managerial level is progressively more active than ever. Women are demonstrating through dedication, openness, and flexibility to learn, to acquire knowledge and specific skills easily within traditional male-dominated contexts. They are also showing that are capable of matching male performances and even in many cases exceeding them mostly in contexts marked by change and uncertainty. Roles as mechanics, specialized technology workers, engineers, testers of high-performance cars, and even strategists during motorsport races are becoming a context for inclusion and professional growth mostly for young women.

About the Speaker
Laura Tancredi has an extensive experience in the organization of activities and events within the famed Italian Motorsport Valley. She is the former manager of Pagani Automobili Museumand Atelier that has contributed to create and organize. She has co-founded the Automotive Women Association in Italy together with Monica Zanetti herself an experienced mechanic who has worked at various level of technical and organizational expertise for Ferrari and Maserati.

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Invited Talk
Technology Transfer in Motorsport

Samit Satish Naik
International Business Development Consultant - Member of RPM- Italy and BCCI- Mumbai
https://www.synergypathways.net/

Abstract
Innovation in motorsport has always been heavily influenced by advancements from within and outside the sport, and this cross-pollination has had a significant impact on both the development of new technologies and the improvement of safety, performance, and efficiency in racing. Flexible Bladder Fuel tanks are one of them that are used in Formula 1, Rallies, and other track racing championships. This exchange of technology comes from aviation and has so far been one of the best safety equipment for carrying fuel in high-risk sports. M.E.R. in SRL has been a key global producer of flexible rubber tanks since 1994. Technologically advanced and highly innovative flexible and durable fuel tanks for modern-day utilizations are manufactured in-house as per requirements. Motorsports have been a key area that M.E.R. in SRL dominates. The concept of flexible fuel storage dates back to World War II. At that time, there was a need for fuel tanks that could be lighter and more adaptable than traditional rigid tanks, especially for military vehicles, aircraft, and other machinery. The goal was to create a tank that could be easily deployed, could expand or contract, and was durable enough for various environments. During World War II, the military required flexible, portable, and robust fuel storage solutions for vehicles, aircraft, and even ships. The U.S. military, in particular, began to develop "flexible fuel bladders" as an alternative to metal tanks. These rubber-based tanks were lightweight, and their design allowed them to be rolled or folded when not in use, making them easier to transport and deploy. The rubber materials used were often reinforced with fabric to enhance durability. Present Days Commercial Use: Flexible rubber fuel tanks started being used in civilian industries, including in aviation, motorsports, power, and the naval sector. For example, in aviation, flexible rubber fuel tanks are used in smaller aircraft and helicopters where weight and space constraints are significant. In modern applications, it's used in Civil and Military Drones more and more. The technology has also taken a big leap with the integration of the Self Sealing Technology that gives the Military and Security applications an upper hand in challenging - war and ambush situations.

About the Speaker
Mr. Samit Satish Naik is a Mumbai-Alibag based entrepreneur, director of foreign companies. He assists Italian small and medium-sized enterprises in navigating the Indian market. His expertise lies in bridging cultural and operational gaps between European and Indian business practices jointly working with his partner in business Riccardo Paterni, facilitating smoother market entry and expansion for his clients. He contributions to the business community have been recognized with accolades such as the Indian Achievers' Award in 2022, underscoring his impact and dedication to promoting international business collaborations.

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Invited Talk
From Track to Screen… and Back Again: The Two-Way Street of Motorsport and Sim Racing

Emanuele Canova
Lead Designer at CubeControls
https://www.cubecontrols.com/

Abstract
Once upon a time, sim racing looked up to motorsport like a younger sibling watching a world champion. Real-world racing was the gold standard—fast, fierce, and gloriously physical. Sim racing? It was the digital apprentice, learning the ropes. But fast-forward to today, and the relationship has flipped into something much more exciting: a two-way street. In this talk, we will dive into how motorsport shaped the evolution of sim racing, we'll explore how sim racing is now giving back. Today, top-tier racing teams are taking cues from the virtual world, especially when it comes to design quality, cockpit ergonomics, and driver feedback systems. We will look under the hood of real-world examples from giants like Mercedes and Honda, and explore how their involvement in both arenas is reshaping how we define "racing." This is a story about innovation, collaboration, and passion.

About the Speaker
Emanuele Canova currently holds the position of Lead Industrial Designer at CubeControls. He possesses a diverse background that integrates mechanical design, computational design, electronics, and sports innovation. Over the course of his 15-year career in industrial design, he has focused on 3D modeling, mechanical design, advanced ergonomics and electronics, contributing to more than 40 new product developments brought to market. His expertise has been cultivated through freelance work as well as collaborations with several prominent global brands, including Adidas, Jaeger-LeCoultre, Kering, VERTU, and Speedo.

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Invited Talk
Cybersecurity in Motorsport and Automotive: Protecting Performance and Data in the Digital Era

Omar Morando
Director of Cybersecurity OT, EY, Italy (Milano)
https://www.ey.com/

Abstract
In modern Motorsport and in the Automotive sector more broadly, in a hyper-connected environment, the convergence of mechanics, electronics, and software has made cybersecurity a strategic element in safeguarding competitiveness, data integrity, and operational safety. This presentation focuses on the specific cyber challenges these sectors face, with particular attention to the protection of telemetry communications, real-time control systems, in-vehicle networks (CAN, Ethernet), and the remote management of sensitive data. Through the analysis of real-world scenarios, potential attack vectors—ranging from digital sabotage to the manipulation of race parameters — will be highlighted, along with possible countermeasures. Emerging requirements in governance and technical compliance within the Automotive sector will also be examined, emphasizing how a robust cybersecurity strategy can become a true competitive advantage.

About the Speaker
Omar Morando is Director of Cybersecurity OT at EY. He is an OT cybersecurity expert, researcher, consultant and trainer. He has over 20 years of experience in the Industrial Automation OT/ICS (Industrial Control System) and Automotive domains. He is a trainer and speaker at international conferences on security and offensive techniques in the OT domain.

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Invited Talk
Software Engineering in the Automotive Industry: Car Mass Market and Motorsport

Luca Cecati
Software & Cyber Security Audit Manager, Stellantis, Italy (Turin)
https://www.stellantis.com/

Abstract
Automotive software is increasingly crucial in both the car mass market industry and the motor sport sector, despite their distinct differences in goals and environmental constraints. The primary challenge lies in abstracting and virtualizing the core hardware functionalities embedded in vehicle architecture into a software layer. However, the software development process follows different paradigms and methodologies for each sector. In the car mass market industry, challenges include varying country regulations (e.g., data privacy, cybersecurity, safety), budget constraints, and economies of scale. Modern vehicles are equipped with software-driven features that enhance safety, such as lane departure warnings and automatic emergency braking. Software also enables advanced infotainment systems, navigation, and connectivity features, improving the overall user experience. The development of autonomous vehicles relies heavily on sophisticated software to process data from sensors and make real-time decisions. The motor sport sector is characterized by specific conditions such as FIA regulations, a high degree of repeatability in race conditions, and professional drivers. In this sector, automotive software, through artificial intelligence and neural networks, primarily aims to optimize engine performance (hybrid or fully electric) and battery management. Knowledge transfer between these two worlds is fundamental to accelerating evolution and enhancing mobility in modern society.

About the Speaker


Luca Cecati is currently an Audit Manager within the Tech Audit Discipline, with global responsibilities for developing risk assessments and conducting multiple audits across regions, focusing on software and hardware components developed for vehicles in the mass market. My journey began at Stellantis (formerly FCA) in March 2016, where I held the role of Audit Manager. I leveraged my prior expertise acquired through PwC's risk assurance and consulting services, primarily in the Banking, Oil & Gas, and Telco sectors. I graduated with honors in Computer Science from the University of Bologna, with a degree thesis on "Project Management Office and The Earned Value Method." Today, my main areas of focus include compliance with UN R156 regulation through a Software Update Management System, Over-the-Air Software Updates, Agile Software Development, and Software Prioritization and Backlog Management.

International Institute for Applied Knowledge Management

KM Conference 2025
25 - 28 June 2025
Department of Information Engineering and Mathematics, University of Siena, Italy
Themes: Knowledge Management, Cybersecurity, Learning, and Information Technology
https://iiakm.org/conference/

Keynote Lecture
Augmented Intelligence: Designing Human-AI Dialogue for Knowledge Management

Professor Antonio Rizzo
Professor Cognitive Science and Technology
Università di Siena

Keynote Overview:

Artificial Intelligence (AI) and Machine Learning (ML) have become central to modern knowledge management systems. AI is being used to automate routine tasks such as content tagging, document sorting, and updating outdated information. This integration not only saves time but also ensures consistency and reduces human error. But there is more, following the visionary path of Vannevar Bush, Joseph Licklider, Doug Engelbart, we can design solutions for Augmented Intelligence. Yet, this requires a careful design of the interaction between Humans and AI Agents. At the core of this interaction, there is a dialogical approach. This presentation illustrates the foundation of the theory of dialogical thinking and how the theory can be applied to design solutions of Augmented Intelligence through the dialogue between humans and Large Language Models in Medicine and Manufacturing Industry.

About the Keynote Presenter:

Antonio Rizzo is a Full Professor at the Università di Siena, specializing in cognitive science, human-computer interaction, and artificial neural nets. His research focuses on human-centered design, cognitive ergonomics, and AI applications in industry and healthcare. He has served as the Chair of the European Association of Cognitive Ergonomics; as a member of the Scientific Committee Incitatif de Recherche sur l'Éducation et la Formation (PIREF) of the French Government; as a member of the WG30 NATO Human Factors and Human Reliability Group; and as Apple Inc. Liaison for the dissemination of the User-Centered Design process within the Apple Design Project, 1995-1997. Beyond academia, he has worked as a consultant for companies such as Philips Design, Siemens, FRANKE, Trenitalia, and MPS, applying cognitive science principles to technology development. He co-founded UDOO, a single board computer bridging microcontroller with microprocessor.

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Keynote Lecture

Future Skillsets for Digital Competencies, Cybersecurity, and Human AI Partnerships

Dr. Catherine Neubauer

Research Psychologist and Lead for Technologically Savvy Soldiers Program
USARMY DEVCOM Army Research Lab (ARL)

Keynote Overview:

In today's rapidly advancing digital world, the synergy between knowledge management, cybersecurity, learning, and information technology is transforming the human competencies needed for success. This keynote will explore the emerging skills required to effectively engage in digital ecosystems, secure critical information assets, and foster productive human-AI partnerships. As digital transformation reshapes the roles and responsibilities within organizations, individuals must develop a new blend of technical and cognitive skills to stay ahead. Drawing on real-world applications, including projects and examples from academia and defense, this talk will outline potential skillsets for navigating this new landscape. The focus on human-AI partnership, cybersecurity readiness, and adaptive digital skills will enable organizations to effectively harness technology's potential, anticipate future challenges, and achieve their strategic goals in an increasingly complex digital landscape.

About the Keynote Presenter:

Dr. Catherine Neubauer is a Research Psychologist in the Estimating and Predicting Human Behavior Branch in the Humans in Complex Systems Division (HCxS) at the Combat Capabilities Development Command (CCDC) Army Research Laboratory (ARL) and is currently supporting efforts related to Human Autonomy Teaming (HAT) and Technological Fluency. She earned her Ph.D. in Human Factors Psychology from the University of Cincinnati in 2014 under the mentorship of Dr. Gerald Matthews. She was also a 2012 Repperger Research Fellow at Wright Patterson Air Force Base and formerly a postdoctoral fellow at the University of Southern California's Institute for Creative Technologies. Dr. Neubauer's research focuses on the use of cognitive models and algorithms to assess human performance and decision-making within basic and applied settings. More specifically, her work has focused on autonomous driving, cybernetics, team cohesion, trust in automation, and automatic analysis of human emotion, state, and facial expressivity. Recently, she has spearheaded the launch of a new research program focused on the assessment and enhancement of technological fluency and adaptation. She has published in several major journals and is co-editor of the 2012 Handbook of Operator Fatigue. Her publications can be found at: https://www.researchgate.net/profile/Catherine_Neubauer

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Keynote Lecture
Adversarial Examples: Unavoidable Threat or Scarecrow?

Professor Mauro Barni
Professor, Department of Information Engineering and Mathematics
Università di Siena

Keynote Overview:

Since the discovery of adversarial examples, extensive research has been devoted to understanding the underlying vulnerabilities of deep learning models to carefully crafted inputs, and to developing effective countermeasures. Nearly a decade later, it is now clear that adversarial examples ubiquitously affect all types of deep learning models, regardless of their architecture or target task. However, the fundamental reasons for the existence of adversarial examples remain elusive. Significant efforts have also been directed toward designing defenses, most of which have ultimately been circumvented through minor adaptations of the attack algorithms. Nonetheless, attacking real-world applications is far from trivial, since leveraging adversarial examples outside controlled settings presents substantial challenges. By focusing on the case of binary decision networks, this talk aims to propose a possible explanation for why adversarial examples are particularly easy to craft and to shed light on the practical obstacles attackers must overcome to exploit these examples in real-world scenarios.

About the Keynote Presenter:

Mauro Barni is full professor at the University of Siena, where he funded the Visual Information Processing and Protection group (VIPP). In about three decades of activity, he has been studying the application of image and signal processing for security applications. His current research interests include multimedia forensics, adversarial machine learning and DNN watermarking. He published about 350 papers in international journals and conference proceedings. He has been the Editor in Chief of the IEEE Transactions on Information Forensics and Security for the years 2015-2017. He was the funding editor of the EURASIP Journal on Information Security. He has been the chairman of the IEEE Information Forensic and Security Technical Committee (IFS-TC. He was the technical program chair of ICASSP 2014. He was appointed DL of the IEEE SPS for the years 2013-2014. He is the recipient of the Individual Technical Achievement Award of EURASIP for 2016. He is a fellow member of the IEEE, EURASIP and AAIA.

International Institute for Applied Knowledge Management

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Conference Workshop

F(AI): Using AI to Beat FAI (Fear of Appearing Incompetent) in a Classroom

Dr. Julita Haber[1], Dr. Christiaan Maasdorp[2]

[1] Associate Clinical Professor, Fordham University, USA

[2] Senior Lecturer, Stellenbosch University, South Africa

Workshop Overview:

The KM Conference brings together experts in knowledge management, organizational learning, cybersecurity, and Information Technology together, many of whom are lecturers in these fields. The question is what can be done to ensure that students today are not afraid of speaking up, asking questions or participating in class. This year, we delve into the **Fear of Appearing Incompetent (FAI)—**a common challenge affecting student participation and confidence in academic settings—as we explore strategies and **AI (Artificial Intelligence) tools** to transform classrooms into psychosocially safe learning spaces. The workshop is designed to equip faculty with practical strategies and AI tools to address FAI. The workshop begins by exploring the root causes and behavioral signs of FAI. Participants will engage in meaningful discussions, share personal experiences, and engage in innovative thinking to reduce FAI. Participants will gain hands-on experience with AI applications and develop personalized action plans that integrate AI to foster psychological safety and growth mindsets in students. The session concludes with reflection activities, ensuring everyone leaves confident and prepared to implement AI and strategies for reducing FAI by creating supportive, growth-oriented class environments.

About the Workshop Facilitators:

Julita Haber, Ph.D. is an associate clinical professor in the Leading People and Organizations area at the Gabelli School of Business at Fordham University. Her current teaching includes principles of management, innovation and resilience, operations, and foundations of consulting. Her research interests focus on organizational behavior and pedagogy. In particular, she studies impressions of competency and the adverse effects of the fear of appearing incompetent in the workplace. Julita also implements innovative pedagogical methods. She developed a fitness-integrated learning (FIL) approach that engages students in physical exercise when learning in class. Prior to academia, her career spanned 20 years of experience in IT and business, including management consulting at Deloitte and PwC.

Christiaan Maasdorp, Ph.S. is a Senior Lecturer at the University of Stellenbosch, in South Africa, and study director of the postgraduate programs in Information and Knowledge Management. He lectures on Knowledge Management, Organization Theory, and the Information Society. His research interests are knowledge risk, conceptual aspects of knowledge management, and the role of knowledge and technology in organizations.

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A knowledge network perspective on the vulnerability of open-source projects

[Research-in-Progress]

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Abstract

Open-source knowledge networks, which have become vital for modern scientific collaboration and innovation, are built upon the fundamental principles of transparency and widespread community participation. This approach fosters a powerful culture of collective intelligence, where diverse perspectives and specialized expertise converge to accelerate discovery and development. However, the very characteristics that make these networks so beneficial also introduce significant security challenges. The open nature of these ecosystems, exemplified by robust communities such as Python, Java, and R, inherently creates vulnerabilities that can be exploited by malicious actors. This study undertakes a detailed investigation into the intricate ways in which the structural topology of these networks influences the potential impact of open-source software vulnerabilities. By analyzing the relationships between nodes and the flow of information within these networks, we aim to identify critical factors that contribute to the propagation and severity of security breaches. Understanding these dynamics is crucial for safeguarding the integrity and reliability of these essential scientific resources.

Keywords: Vulnerabilities, open-source software, network analysis, graph topology.

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Enhancing knowledge management in IT projects: Empirical insights from knowledge-intensive organizations in the research and education sector

[Complete Research]

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Abstract

Knowledge Management (KM) emphasizes the need for knowledge transfer and sharing among teams to innovate in the IT domain and is positioned among the key theories within IT project management research. The aim of this small-scale study is to explore which challenges arise for knowledge management in IT projects specifically for knowledge-intensive organizations in the Research and Education (R&E) sector, and how these are being addressed. Despite empirical proof that effective KM practices influence the performance of IT projects, existing research notes that their application in practice remains underexplored. The uniqueness and temporality of IT projects, the multiple information sources and individual communication preferences and perceptions within teams, often lead to knowledge fragmentation and siloing. Consequently, lessons learned are frequently people-tied under the "expert economics" logic or underutilized, which in turn, impedes organizational learning and intensifies the dependency on tacit knowledge. There is a particularly strong tension in the R&E sector regarding the preservation and dissemination of knowledge, which is related to team learning, organizational and social culture. Through exploratory case study research and inductive data-driven thematic analysis the authors connect theoretical concepts to real-life experiences and showcase the challenges faced by R&E organizations, contributing to the missing empirical evidence by providing solutions to the challenges faced.

Keywords: Knowledge management, organizational learning, IT project management, knowledge-intensive organizations, knowledge sharing, organizational challenges.

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Knowledge management model applied to new product development

[Complete Research]

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Abstract

The current competitive landscape demands shorter deadlines, lower prices, higher quality, and rapid innovation. This affects new product development, which must precisely meet market demands. This paper presents a knowledge management model for new product development. It includes a literature review and interviews with managers to understand how companies manage knowledge during new product development. The model ranks organizational knowledge and measures the impact of its absence or inadequacy. A questionnaire shows the model's adherence and innovation compared to current practices in organizations, helping to identify organizational gaps of knowledge management and new product development. The model's contribution includes analyzing the criticality of knowledge, a method not yet used by organizations. This innovative approach enhances the precision and effectiveness of new product development processes.

Keywords: Knowledge management, product development and knowledge competences.

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Expert panel validation of a phishing susceptibility risk index on mobile devices in the healthcare industry

[Complete Research]

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Abstract

Phishing emails on mobile devices pose significant risks to personal and organizational data, particularly in healthcare. Despite security awareness training, prior research has shown that healthcare professionals continue to fall victim to phishing attacks. Given their limited cybersecurity awareness and the increased use of mobile devices to access organizational emails, there is a critical need for improved phishing detection on mobile devices. Healthcare data is highly valuable, making healthcare professionals prime targets for sophisticated phishing schemes. Prior research highlighted a healthcare worker's vulnerability to phishing and social engineering, especially when accessing organizational emails on mobile devices, but lacks an assessment of the magnitude of the risk. This study reports on the results of a group of 22 Subject Matter Experts (SMEs) that validated key phishing indicators for healthcare professionals in an attempt to develop a Healthcare Workers Email Phishing Susceptibility Index (HWEPSI). The paper ends with discussions about the implications of these findings for future research.

Keywords: Phishing mitigation, healthcare cybersecurity, Security Education, Training, and Awareness (SETA) programs, phishing on mobile devices, email deception and persuasion.

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Analyzing IoT vulnerabilities: A longitudinal study of CVE disclosures and exploitability trends

[Research-in-Progress]

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Abstract

The rapid proliferation of Internet of Things (IoT) devices has introduced significant cybersecurity challenges, with vulnerabilities increasingly exploited due to weak authentication mechanisms, inadequate encryption, and delayed patch deployment. This study aims to analyze IoT vulnerability trends, assess the time gap between CVE disclosure and real-world exploitation, and develop a machine learning-based framework for automated vulnerability classification. A longitudinal analysis of IoT-related vulnerabilities from the National Vulnerability Database (NVD) over the past decade will identify patterns in vulnerability severity, exploitability, and disclosure rates. Additionally, the research will integrate threat intelligence feeds (e.g., CISA KEV, VirusTotal, IBM X-Force Exchange) to track how vulnerabilities evolve. Supervised models such as Support Vector Machines (SVM) and BERT-based NLP will be used to predict the likelihood of exploitability. At the same time, unsupervised learning techniques like K-Means and DBSCAN will help prioritize high-risk vulnerabilities. The study's findings will provide actionable insights into IoT security risks, highlight device categories most vulnerable to cyber threats, and offer recommendations to improve Coordinated Vulnerability Disclosure (CVD) frameworks. By integrating machine learning, longitudinal data analysis, and threat intelligence, this research aims to enhance IoT security resilience and advance the automation of cybersecurity risk assessments.

Keywords: IoT, security, vulnerabilities, common vulnerabilities and exposures (CVE), machine learning, threats, exploits.

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One for all or the more the better? A survey of ready-to-use AI tools for literature review

[Complete Research]

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Abstract

Driven by the recent progress in artificial intelligence (AI) technologies, a remarkable number of specialized software tools for automating academic literature reviews with the help of AI have emerged. The functional characteristics of these tools differ widely, ranging from rather simple search tools to interactive literature maps to complex solutions for whole systematic literature reviews. This paper presents a systematic overview of the current landscape of ready-to-use AI-based tools for literature review based on functional characteristics and implemented AI methods. Based on 56 tools collected through a multivocal review complemented by a web search, we developed a conceptual framework and a functional classification with six categories. Our results reveal both competing and complementary tools along the review process and show the potential usefulness of a structured tool selection approach.

Keywords: Artificial Intelligence, systematic literature review, automation, research tools.

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Adopting AI in organizations from a managerial perspective: Readiness and success factors

[Research-in-Progress]

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Abstract

This paper examines the integration of artificial intelligence (AI) into management and discusses the necessary steps to achieve AI readiness, including data, culture, skills, infrastructure and budget readiness. It also highlights success factors such as top management support, collaborative organizational models and fostering cultural change. The goal is to help organizations, especially companies, effectively integrate AI into their managerial processes and gain competitive advantage. Finally, the benefits, limitations, and ethical implications of AI-assisted decision-making are presented. The importance of data quality, cultural acceptance and continuous performance evaluation, but also appropriate knowledge management within and across organizations with respect to the organizational and IT skills, guidelines or existing infrastructure, for successful AI implementation, are emphasized.

Keywords: AI, strategic management, AI strategy, success factors.

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Knowledge representation and querying with tensors for a class of practical test problems

[Research-in-Progress]

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Abstract

We further promote the idea of quantum inspiration and propose to equip cognitive systems not only with tensors for data representation but also for operation representation and querying. We discuss ideas from information retrieval and translate them into our method of behavioral control. We formalize the method with tensor algebra and discuss its extensions to learning. At the example of the problem of N-dimensional aiming, we visualize the transfer of our stated theoretical foundation to a class of practical test problems.

Keywords: Knowledge representation, cognitive agents, tensor algebra, quantum inspiration.

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How do bureaucrats whisper? Towards a low-resource system for meeting minutes in public administration

[Research-in-Progress]

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Abstract

To ensure legally compliant documentation of authority measures and decisions, the results of a meeting must be recorded, though manual documentation is time-consuming. Officials are usually involved in discussion, i.e., not available for writing minutes, and additional staff is uneconomical. Artificial intelligence (AI) methods facilitate automation and optimization of business processes in public authorities. We use pre-trained large language models (LLM) for speech transcription, whereby administration-specific content exhibits higher word error rates (WER), compared to the transcription of standard speech. Retrained LL models and additional knowledge sources enable domain-specific adaptation, e.g., through retrieval-augmented generation (RAG) or a multi-agent framework (MAF). First experiments show the potential of authority-specific training data, system configurations and evaluation. The concept is geared towards easily implementable, cost-effective open-source components for small authorities, and supports the protection of sensitive data.

Keywords: Digital authority, meeting minutes, language model, retrieval-augmented generation.

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Student knowledge and perceptions of AI usefulness

[Complete Research]

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Extended Abstract

Artificial Intelligence (AI), specifically large language models (LLMs) such as ChatGPT, have triggered a major shift in the educational industry with market size tripling in the past two years and expected to grow as much as tenfold over the next decade. For educators, AI has greatly improved routine tasks and allowed individualized support at scale. For instance, AI has been used to predict at-risk students to intervene early and improve student retention, offer digital library services, automate administrative tasks and personalize academic support. Student engagement with AI has been less clear, perhaps due to prohibitions imposed by worried educators to avoid misuse or just general lack of awareness of how AI might improve motivation and learning efficiency. That is, students may be less likely to reveal their use of these tools in educational settings.

With the massive rise in students using generative AI and LLMs, it is only natural that concerns would arise along with it. While some worry that AI could pose a threat to the quality of education, AI is a tool that will become a regular part of our lives, and we must integrate it properly and effectively into higher education. Banning AI tools would be like trying to ban calculators or the internet in education.

Educators and students need to have clear ideas about the productive uses and potential drawbacks of the use of AI. A recent study found that students using AI in the United States more frequently had stronger comprehension of the benefits of AI, yet little is known about the link between use of AI and understanding productive use of AI in education outside the U.S. research found that students believe using AI in coursework reduced anxiety, increased confidence and efficiency in completing work, and helped with language skills. We add to the literature by exploring students' understanding of disadvantages of AI in education, not just advantages. Our study also expands this field of inquiry by extending the work to an international student body. Both positive and negative perceptions matter, as AI adoption and continued use, with or without permission of educators, will impact the educational landscape in this accelerated the AI trajectory. Overall, our findings indicate the more students 'know' the more they will describe the technology as 'useful.'

Keywords: AI in education, AI student perceptions, AI student knowledge, AI student usefulness.

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Information security awareness: Lesson learned from the public healthcare sector

[Complete Research]

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Extended Abstract

Information Security Awareness (ISA) is widely recognized as a critical tool for handling cybersecurity challenges effectively. The CAPSULE (Cybersecurity Awareness and PreparedneSs evalUation in digitaL hEalth) project is a comprehensive quali-quantitative analysis of ISA in the Tuscan public healthcare sector, where cyber incidents are increasingly disruptive.

The qualitative analysis was aimed at investigating ISA dimensions. We involved four focus groups composed of administrative and health employees. Data analysis was conducted using the NVivo 14 software package following thematic analysis principles. Results showed healthcare personnel engaging in risky behavior, where password management and instant messaging emerged as the most critical ones to comply with. Positive influencing tools such as training and information security policy (ISP) were severely undermined by a broad focus on privacy issues.

The quantitative analysis aimed at assessing the relationship between knowledge and behavior for ISA dimensions. Additional questions focused on training and ISPs. An online survey based on prior literature resulted in 1.828 usable questionnaires. We adopted a linear regression model, which is statistically significant and yields a satisfactory R^2 value, demonstrating that knowledge significantly impacts cybersecurity behaviors among healthcare employees.

This research broadly assesses the critical dimension of ISA, validating the knowledge-behavior relationship. Results provide theoretical and managerial contributions. The former is an advancement in understanding the widely acknowledged yet scarcely empirically validated relationship between being informed about cybersecurity policy and procedure and employees' behaviors. The latter refers to critical ISA dimensions for healthcare employees, thus giving managers insights into actionable tools to untie criticality and enhance employee ISA.

Keywords: Information security awareness, public healthcare sector.

Support: This work is supported by the University of Pisa under the "PRA – Progetti di Ricerca di Ateneo" (Institutional Research Grant) – project no. PRA_2022_87.

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Initial validation of a metric to assess cybersecurity competencies through human-generative artificial intelligence (GenAI) teaming

[Research-in-Progress]

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Extended Abstract

The increasing complexity of cyber threats, combined with a critical shortage of skilled professionals and rising burnout among practitioners, highlights the urgent need for innovative solutions in cybersecurity operations. Generative Artificial Intelligence (GenAI) offers promising potential to augment human analysts in cybersecurity, but its integration requires rigorous validation of the fundamental competencies that enable effective collaboration of human-GenAI teams. This research-in-progress study employs a mixed-methods research project designed to evaluate human-GenAI teams, emphasizing the role of expert consensus in shaping the experimental framework. During the first phase of this study, researchers engaged approximately 25 Subject Matter Experts (SMEs) in the validation of fundamental cybersecurity Knowledge Units (KUs), Skills (Ss), and Task Completion (TCs). This expert panel refined the cybersecurity scenarios and experimental procedures used in hands-on simulations, ensuring they align with current standards outlined in the United States (U.S.) Department of Defense (DoD) Cyber Workforce Framework (DCWF) (n.d.). The validated scenarios and experiments will guide subsequent research phases, which involve assessing novice participants' task performance and adversarial threat detection with and without GenAI support (i.e., ChatGPT). By establishing the baseline for competency assessment in this research-in-progress, the SMEs' feedback contributes to advancing cybersecurity workforce development and provides critical insights for integrating GenAI into collaborative cybersecurity human-GenAI teaming operations.

Keywords: GenAI, ChatGPT, DCWF, NICE, fundamental competencies, human-GenAI teaming, adversarial GenAI.

Reference:

United States (U.S.) Department of Defense (DoD) (n.d.). *The DoD cyber workforce framework (DCWF).* https://dodcio.defense.gov/Cyber-Workforce/DCWF/

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Evaluating the impact of key events on mortality trends: A time-series analysis using ARIMAX models

[Research-in-Progress]

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Extended Abstract

Healthcare systems have evolved due to technological advancements and policy reforms, but their impact on mortality rates remains debated. This study uses a time-series approach to examine how electronic health records (EHRs), telemedicine, and governmental health policies have influenced mortality trends.

We analyze daily mortality data from 2010 to 2022, sourced from TIMNA, Israel's national health database. The ARIMAX model captures the effect of key interventions on mortality trends, incorporating seasonal dependencies and exogenous variables.

Our findings indicate interesting mixed effects. The introduction of the technological change of robotic systems in 2009 showed no significant impact. The 2018 nationwide digital health reforms were associated with an initial rise in mortality ($p<0.001$), potentially due to transitional challenges. The 2020 surge in telemedicine significantly reduced mortality ($p<0.001$), underscoring its role in maintaining healthcare access during COVID-19 but mainly also afterwards as a medical treatment revolution in progress.

A visual analysis of the time series supports the model's conclusions, showing a steady downward trend in daily mortality between 2010 and 2022, punctuated by clear shifts at key intervention points. Around the time of the 2018 digital health reforms, a temporary uptick in mortality is visible, corresponding to the significant positive coefficient observed in the ARIMAX model and suggesting possible transitional disruptions during policy rollout. Conversely, the 2020 surge in telemedicine coincides with a marked decline in mortality, highlighting the effectiveness of remote care strategies during the COVID-19 pandemic. These visual inflection points, aligned with the estimated effects from the model, illustrate the ability of the ARIMAX framework to detect and quantify structural changes in health outcomes triggered by major interventions. The fitted values closely track the observed mortality rates across the study period, underscoring the model's strong predictive performance and enhancing confidence in its findings.

Our analysis highlights that major healthcare interventions can have both short-term disruptions and long-term benefits. While policy reforms may introduce transitional mortality increases, telemedicine has proven effective in crisis management. These findings emphasize the importance of assessing healthcare innovations' real-world impact on patient outcomes.

Keywords: Healthcare interventions, mortality trends, ARIMAX, health policy.

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Business model innovation based on artificial intelligence: A ChatGPT integration approach

[Research-in-Progress]

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Extended Abstract

There is a broad consensus that companies' long-term success depends on their ability to develop innovative business models. However, the nature of business model innovation (BMI) remains inherently complex and requires creativity and divergent thinking. In the past, it was assumed that this creativity could only be achieved by humans. However, recent advances show that AI has the potential to even tackle aspects of innovation management, such as the development of completely novel ideas.

Generative AI (GenAI) models, such as ChatGPT, create new data samples based on learned patterns (Feuerriegel et al., 2023). This presents a significant opportunity for using GenAI for BMI, as it can learn similarities in business models, known as business model patterns, which include characteristics, arrangement of building blocks, and behaviors (Osterwalder & Pigneur, 2010).

This paper seeks to answer the research question, how AI assistants, particularly ChatGPT, can be configured to utilize business model patterns for developing innovative business models across industries. The research methodology of design science is applied, and a ChatGPT-based prototype is developed to create business models by recombining industry-independent business model patterns.

This study uses cases from various industries to demonstrate the configured chatbot and evaluate its ability to adapt to different industry contexts and provide customized, innovative business models. One case study has already been conducted with promising results. The findings were used to refine the prototype, demonstrate its capabilities and evaluate the results. The assessment of the usability and performance of the AI assistant indicates the enormous potential of the prototype. Furthermore, this study shows that the exploratory configuration process can serve as a blueprint for all researchers and practitioners who wish to develop innovative business models.

Keywords: AI, business model, business model innovation, chatbot, ChatGPT.

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Machine learning models for predicting pediatric hospitalizations due to air pollution and humidity

[Complete Research]

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Extended Abstract

Exposure to air pollution and meteorological conditions, such as humidity, has been linked to adverse respiratory health outcomes in children. This study aims to develop predictive models for pediatric hospitalizations based on both environmental exposures and clinical features. The topic highlights the integration of machine learning techniques in Knowledge Management (KM) for public health, demonstrating how data-driven decision-making can enhance healthcare resource allocation and emergency response.

This study is based on a retrospective analysis of 2,500 children (aged 1-18) who presented with respiratory symptoms at an emergency department during 2016-2017. Air pollution data, including Nitrogen oxides (NOx) and Nirtogen dioxide (NO_2) concentrations, and relative humidity (RH), were collected from nine monitoring stations and cross-referenced with the children's residential locations to assess exposure levels. Statistical tests, including Chi-square and Wilcoxon tests, were used to analyze the data. Machine learning models, specifically Random Forest (RF) and eXtreme Gradient Boosting (XGBoost), were developed to predict hospitalizations.

Findings revealed that boys were more likely to be hospitalized than girls (60.6% vs. 39.4%, p=4.31e-06), and hospital visits peaked during winter (p = 3.56e-37). Increased emergency room visits were significantly associated with highly polluted days (p=0.038). Hospitalized children were exposed to lower RH (median 64.9%) compared to non-hospitalized children (median 69.4%, p=0.005). The RF and XGBoost models demonstrated high reliability, with accuracy rates of 0.84-0.94, F1 scores of 0.82-0.93, and AUC scores of 92%-100%. Key predictors included temperature, NOx levels, RH, and clinical diagnoses. These findings highlight the role of machine learning in improving public health decision-making. By leveraging environmental data, predictive models can enhance hospital resource management, inform policy-makers, and enable early intervention strategies to mitigate the impact of air pollution on pediatric respiratory health (i.e., establish air-pollution free zones). This study highlights the relevance of KM in public health by illustrating how structured data analysis, predictive analytics, and machine learning-driven insights can be effectively utilized to optimize emergency care and healthcare preparedness. This research contributes to the growing body of knowledge on the intersection of artificial intelligence, environmental health, and hospital management, showcasing a framework that can be extended to other domains where proactive decision-making and risk mitigation are critical.

Keywords: Predictive modeling, respiratory disease, air pollution, machine learning, public health.

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Bridging organizational culture and AI adoption: A dual-perspective framework for successful integration

[Complete Research]

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Extended Abstract

Artificial Intelligence (AI) is rapidly transforming business models, decision-making processes, and knowledge management practices. However, while the technological potential of AI is widely acknowledged, many organizations remain stalled in the pilot phase of adoption. This study explores the role of organizational culture in shaping employee readiness and engagement with AI systems.

To ground the investigation, a bibliometric analysis of 3,417 academic articles using VOS viewer was conducted to map the intellectual structure of AI research. The analysis identified key thematic clusters—most notably the intersection of AI adoption with organizational culture and knowledge management—highlighting a growing scholarly consensus around the importance of human-centric and cultural variables in successful implementation.

Building on this insight, the study employs a mixed-methods approach, combining survey data from 115 employees with semi-structured interviews with organizational leaders in the German consultancy sector. The quantitative findings reveal that employee empowerment and innovation culture are strong predictors of positive attitudes and willingness to adopt AI technologies. The qualitative data further underscore the importance of leadership style, training and cross-functional collaboration as cultural enablers of AI integration. In contrast, financial or extrinsic incentives showed minimal long-term impact on behavioral change. Importantly, the research uncovers that resistance to AI is deeply embedded in cultural misalignments—including a lack of trust in AI systems, perceived threats to job security, and generational differences in digital fluency. These cultural frictions often undermine even well-funded AI initiatives, signaling that technological readiness alone is insufficient.

Keywords: Organizational culture, AI adoption, dual perspective.

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Winds of generative AI: Research trends of digital humanities in computer science publications

[Complete Research]

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Extended Abstract

Digital Humanities (DH) represent a pivotal evolution in the integration of current technologies, especially Artificial Intelligence (AI) and particularly Generative AI (GenAI), within humanities research. Due to its interdisciplinary nature and interfaces with computational methods, this paper examines the penetration of DH into Computer Science (CS) publications over the years. This research applied a culturomics approach, using specific search queries in the dblp (computer science bibliography) database to track the emerging trends of DH-related terms in CS research publications from 1990 to 2024. Findings show Cultural Heritage (CH) is being dominant compared to all other DH terms since 1994, while DH have a consistent rising trend since 2006 within CS publications. The study reflects the need for knowledge sharing and joint expertise between researchers to create new knowledge. The implications of this study encourage greater openness of academia to cross-disciplinary publications that may lead to broader understanding of complex societal and cultural issues.

Keywords: Digital humanities, DBLP (computer science bibliography), cultural heritage, generative artificial intelligence (GenAI), culturomics, interdisciplinary research, emerging research trends.

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Integrating neurodivergent talent to address the cybersecurity skills gap

[Research in progress]

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Extended Abstract

The increasing demand for cybersecurity professionals has increased the demand for innovative strategies for talent acquisition and skill development. Neurodivergent individuals—those with cognitive differences such as autism, ADHD, and dyslexia—exhibit unique strengths like problem-solving, attention to detail, and systematic thinking (Márquez et al. 2024). These traits align closely with key cybersecurity competencies including incident response, threat analysis, digital forensics, and vulnerability assessment, making them particularly well-suited for roles across the cybersecurity field (Wiederhold, 2024). Despite the alignment between neurodivergent strengths and cybersecurity roles, few organizations have implemented effective inclusion strategies. Those that have succeeded often offer adjustments like remote work, flexible schedules, and distraction-reduced environments to enhance productivity.

This research explores the intersection of neurodiversity and the cybersecurity workforce, with the aim of addressing the sector's skills gap. It draws insights from existing academic literature, industry reports, and case studies to inform the analysis. The study employs the NIST NICE Cybersecurity Workforce Framework and the European cyber security Framework (ECSF) to systematically align neurodivergent traits with the competencies and responsibilities required for defined cybersecurity roles. As a key contribution, the research presents a conceptual integration framework that draws on the mapping of neurodivergent cognitive traits to defined cybersecurity roles and competencies. This framework outlines practical strategies for inclusive recruitment, strengths-based alignment of individuals to specific job functions, and tailored support mechanisms. Together, these strategies aim to enhance the participation, retention, and performance of neurodivergent professionals, thereby contributing to a more resilient and inclusive cybersecurity workforce.

Keywords: Neurodiversity, cybersecurity, inclusive hiring, workforce development.

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Artificial intelligence in space: A new frontier for astronauts' physical and mental health

[Research-in-Progress]

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Extended Abstract

Recent advances in space medicine have transformed astronaut healthcare through real-time video consultations, specialized biomedical devices, and virtual or augmented reality tools. However, human space exploration is advancing faster than these innovations, creating challenges in communication, data security, and ethical concerns that could jeopardize both missions and astronaut health. Alongside technical issues, astronauts also face physical risks like microgravity and radiation, as well as mental health concerns from isolation, poor sleep, and anxiety.

Artificial intelligence (AI) technologies have emerged as a vital tool in addressing these health concerns. AI agents and chatbots capabilities extend beyond physical health management, assisting in diagnosing and treating conditions in collaboration with medical professionals. More recently, AI has also been utilized to address mental health issues, demonstrating significant benefits in both realms. Specifically, AI has been advancing to the point of human-like interactions, on-demand assistance, and a stigma free environment for the user to discuss their mental health. This study details the successes of AI in enhancing both the physical and mental health care provided in the field of medicine.

This research explores the integration of AI agents and chatbots into space medicine to support astronaut health during long-term missions. Given the challenges of microgravity and other space environment conditions, continuous physical and mental health monitoring is vital. This study combines an exploratory data analysis based on a convenience survey distributed via social channels, and an exploratory literature review on space medicine, AI healthcare tools, and environmental stressors. These findings highlight the potential for AI to assist in monitoring, diagnosing, and managing health issues in space, while also addressing the ethical and security concerns associated with their deployment.

Keywords: Artificial intelligence, mental health, artificial intelligence agents, artificial intelligence chatbots, physical health, space medicine.

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Navigating socio-technical challenges of quantum transformation

[Research-in-Progress]

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Extended Abstract

Quantum science and technology is a key scientific field of the 21st century. By bringing information generation, acquisition, processing, and transmission to a new technological level, quantum technologies will revolutionize multiple industries. According to the literature, the impact of breakthrough technologies such as quantum computers, quantum sensors, and quantum communication is expected to become as dramatic as the invention of transistors and integrated circuits that serve as the basis of modern electronics and telecommunications (Purohit et al., 2024).

Quantum transformation represents a fundamental shift from an existing evolutionary stage and socio-technical systems to new ones. Because quantum technologies constitute a radical change compared to conventional calculation, measurement, and information security paradigms, quantum transformation goes beyond technological novelty. It involves multidimensional transformation requiring reconstruction of core elements in socio-technical systems, including social actors, institutional structures, knowledge, and resources (Geels, 2004).

However, the modern concepts of socio-technical transition were developed during the era of the deterministic binary worldview and do not account for the unique characteristics of quantum technologies, such as probabilistic computations, revolutionary sensing, and cryptographic capabilities. One problem is that there is still an evident lack of literature discussing how quantum technologies will affect modern socio-technical systems. Furthermore, it remains unclear how these technologies will affect our understanding of the very nature of socio-technical transitions.

To address identified gaps in the literature, this research-in-progress explores the specific socio-technical challenges posed by quantum transformation. Building on interview-based insights from policy and decision-makers, potential customers, and industry leaders, this study offers practical recommendations for preparing stakeholders to harness opportunities, mitigate risks, overcome resource and knowledge deficits, support quantum ecosystem maturation, and foster cross-sector collaboration to realize the quantum revolution.

Keywords: Quantum technologies, disruption, socio-technical transition, knowledge management.

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Digital differentiated instruction in higher education: A case study in advanced programming course

[Research-in-Progress]

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Extended Abstract

Differentiated Instruction (DI) is a teaching approach that involves tailoring the instruction to meet the diverse learning needs of students. This method aims to ensure that all students, regardless of their starting point, can achieve academic growth. Educators can implement DI by adjusting the four components: content, process, product, and environment, based on students' readiness, interests, and learning profiles (Yuen et al., 2023).

Implementing DI has shown positive results in K-12 education. However, it is less researched and practiced in higher education, due to challenges and logistical constraints such as large class sizes, limited contact hours and time restrictions. There is an agreement that further research is needed, as diversity is increasing in higher education (Turner et al., 2017). The COVID-19 pandemic has significantly influenced educational practices, including the implementation of DI. While the pandemic introduced various obstacles, it highlighted the necessity for adaptable teaching methods to meet diverse student needs. In addition, the pandemic opened opportunities for new approaches utilizing digital tools (Yuen et al., 2023).

This research-in-progress is conducted as part of an advanced programing course, that includes students with diverse experience and abilities. We present a new Digital Differentiated Instruction (DDI) strategy tailored for academy, which addresses diverse learning alternatives, levels, styles, products, and environments. This method overcomes most of the challenges mentioned in literature by leveraging technologies and developing teaching tools. One of the key tools is a dynamic digital textbook, that enables the instructor to perform knowledge management and gather diverse materials. The initial results collected from a survey conducted with 46 students indicated a positive impact and favorable responses to the implementation of the DI method.

Keywords: Differential Instruction (DI), higher education, teaching strategies, student's needs.

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Yuen, S. Y., Luo, Z., & Wan, S. W. Y. (2023). Challenges and opportunities of implementing differentiated instruction amid the COVID-19 pandemic: Insights from a qualitative exploration. *Education Sciences*, *13*(10), 989.

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The good, the bad, and the ranking: Comparing LLMs' evaluations to humans

[Research-in-Progress]

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Extended Abstract

The launch of the Large Language Model (LLM) chatbot, ChatGPT, led to an intense industry and academic focus on analyzing LLM's capabilities and exploring the best way to obtain optimal results, in a variety of tasks, such as problem solving, questions answering, planning, artistic content creation and more. The increasing integration of LLMs into various domains necessitates a thorough understanding of their evaluation capabilities, particularly in comparison to human judgment.

This work-in-progress explores the alignment between human evaluators and several Large LLM chatbots in assessing the quality of ranked answers from several Q&A Stack Exchange communities. Our study aims to evaluate the efficacy of a Multi-Agent LLM chatbots in replicating human judgment within the context of Q&A platforms. By comparing scores and rankings assigned by humans using the crowd-wisdom mechanism and those generated by the LLM chatbots, we seek to determine the extent to which AI-based evaluations correlate with human assessments on answers in different topics.

Our methodology incorporates selecting a diverse set of thousands of ranked Q&A from three different Stack Exchange Q&A sites. Each question is accompanied by multiple answers, which have been previously evaluated by the Stack Exchange community members. These rankings serve as our benchmark for the evaluation judgments of three leading LLM chatbots: GPT, Gemini & Claude. The output of this comparison will be a 3X3 matrix, showing the correlation between human rankings and score for the different Q&A sites and different LLM chatbots. Since it is very likely that LLMs' were exposed to Stack Exchange data during their training phase, we will compare results of rankings and scores alignment before and after the LLMs' release date.

Potential practical implications: Automated content evaluation is crucial in different tasks which require judging human or AI generated content. This research will provide evidence to the level of which LLM's judgment is aligned with human evaluation. Discrepancies between the answers' evaluations which this study may expose, in general or in specific domains, may be instrumental for understanding the current limitation of LLM evaluations. It can also instruct AI developers to address these discrepancies during the LLM's different training stages, with the goal of reducing these discrepancies.

Keywords: LLM, automatic content evaluation, multi-agent, Q&A evaluations, stack exchange.

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From data to decision: Accountability in GenAI-driven knowledge management

[Research-in-Progress]

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Extended Abstract

Growing usage of Generative Artificial Intelligence (GenAI) in Knowledge Management (KM) processes is reshaping the way of decision-making withing organizations. While GenAI offers significant efficiency, its possibility of hallucinations challenges traditional structures of accountability for decisions based on data generated by AI. Following the publication of a qualitative study which explored senior managers' perceptions of accountability in the context of GenAI-supported decisions, this research in progress introduces a quantitative investigation aimed at formulating practical, based on empirical data, recommendations for the responsible and trustworthy implementation of GenAI in knowledge management.

Based on previously identified categories of responsibility, a structured questionnaire was built. The survey explores managerial attitudes toward accountability, trust in GenAI-generated data, self-assessed familiarity with GenAI tools, and the presence of organizational safeguards and internal policies. Additional variables include the level of management, company size, and the declared mode of GenAI use (formal or informal).

Data collection is currently underway through online survey and is in the pilot stage. The planned sample is 250-300 respondents, including managers from lover, middle and senior levels, working in both domestic companies and Polish branches of international organizations.

The analysis will involve descriptive statistics to identify general trends, ANOVA to examine differences across management levels, and multiple regression to determine predictors of trust and responsibility attribution. The results will be compared with the previous qualitative insights to identify areas of convergence or divergence. Four hypotheses are being tested, focusing on the relationship between accountability attribution, trust in GenAI, presence of internal procedures, and the mode of GenAI use.

The findings will support organizations in clarifying responsibility structures, developing verification practices, and strengthening managerial readiness for GenAI-supported decision-making.

Keywords: Generative artificial intelligence, knowledge management, managerial accountability, data-driven decision-making, trust in AI, verification procedures, GenAI implementation in organizations.

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Leveraging AI and human expertise to identify knowledge gaps in medical practice

[Research-in-Progress]

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Extended Abstract

In the evolving landscape of healthcare and artificial intelligence, the integration of deep learning (DL) models, large language models (LLMs), and human expertise presents a promising approach to knowledge discovery. This study introduces a novel framework for identifying knowledge gaps by comparing classification performance between AI models, expert physicians, and medical interns. The study cohort consisted of 202 consecutive patients (42.6% female) who underwent electrocardiography (ECG) and echocardiography (ECHO) to assess left ventricular ejection fraction (LVEF). To classify LVEF ≤ 35% (a critical value), we developed two AI models: a DL model designed in-house in a previous study at the hospital and a fine-tuned large language model (LLM) based on GPT-4o. True labels were determined using ECHO, and predictions were obtained by applying the DL model to the cohort, obtaining LLM-based classifications by querying four GPT-4o instances and averaging their results, and collecting human labels from three interns and one expert cardiologist. Model performance was evaluated in comparison to human classifications, with the DL model achieving the highest predictive performance (Balanced Accuracy = 84.8%), followed by the LLM (76.9%), the expert (74.9%), and the interns (69.5%). Further analysis identified 15 cases where the expert, DL model, and LLM correctly classified LVEF > 35%, while the interns misclassified them. These cases were selected as key indicators of potential knowledge gaps. To refine our understanding of these gaps, the expert cardiologist reviewed the misclassified cases to determine systematic patterns in intern errors. Notably, AI-driven methodologies, particularly with the ease of deploying and scaling LLMs, significantly reduce reliance on multiple expert annotations. LLM-generated outputs serve as an efficient intermediate reference to help identify and categorize systematic errors. This study demonstrates that AI models, particularly when validated by expert clinicians, can systematically detect and address knowledge gaps among medical trainees. By identifying and addressing these gaps, AI-driven insights can contribute to enhancing medical education and improving clinical decision-making.

Keywords: Artificial intelligence, cardiology, knowledge discovery, large language models (LLMs), deep learning, electrocardiography, left ventricular ejection fraction.

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Using GenAI to augment cybersecurity management tasks

[Complete Research]

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Extended Abstract

Cyber-attacks and data breaches are consistently increasing, coupled with a persistent shortage of cybersecurity professionals. Despite efforts to increase the workforce, demand exceeds supply, worsened by technological advancements, which have enhanced cyber-attack complexity. Many nations lack experienced cybersecurity professionals, especially in managerial roles, where tasks can be time-consuming and repetitive. While initiatives to graduate more cybersecurity experts are underway, they are inadequate alone, particularly in managerial roles. Research shows that Artificial Intelligence (AI) capabilities are often integrated into tools focusing on cybersecurity technical tasks rather than managerial tasks, highlighting the need for continued human involvement in cybersecurity management. Generative AI (GenAI) is promising in enhancing human abilities by overcoming repetitive tasks and reducing human error. This experimental research study aimed to examine five GenAI platforms' ability to generate a real-life scenario and guidelines for cybersecurity managers associated with managerial cybersecurity tasks, according to the DCWF Information Systems Security Manager (Work Role ID: 722), and specifically for Task ID 790: "Prepare, distribute, and maintain plans, instructions, guidance, and standard operating procedures concerning the security of network system(s) operations". The scenarios were cross-evaluated and scored by all five GenAI platforms, including the one that generated the scenario, according to guidelines following predetermined metric measures of Relevancy, Accuracy and reliability, Completeness, and Clarity. The scenarios were injected anonymously into the GenAI platforms, where the GenAI platforms did not know if the scenarios were generated by a human, by itself, or by another GenAI platform. Results indicated that Claude achieved the highest overall average score (9.3), followed by Gemini (9.0), MetaAI (8.9), ChatGPT (8.7), and CoPilot (8.5), with Claude consistently performing well across all metrics. The scenarios showed that they greatly help compile policies following standards and frameworks common in the industry. Cybersecurity managerial personnel can use the same prompt to query different GenAI models and then merge the relevant answers to get the most complete policy. We believe that integrating GenAI into AI-augmented solutions offers a strategic roadmap for effectively communicating with the C-suite while navigating the complexities of modern cybersecurity.

Keywords: Cybersecurity management, human-GenAI teaming, managerial cybersecurity tasks, self and cross-evaluation of GenAI.

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Cybersecurity workforce readiness: Analyzing the impact of academic programs

[Research-in-Progress]

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Extended Abstract

Experiential learning activities play a vital role in preparing students for careers in the field of cybersecurity. While some graduates openly share their career journeys and the impact of their education, others transition into their careers providing faculty with little feedback about their post-program completion outcomes or the influence of their academic experiences. The 2025 Cybersecurity Workforce Study by NCyTE (NSF Award #2054724) investigates the career trajectories of higher education cybersecurity graduates (NCyTE, 2024). The findings of the study highlight the increasing impact of these programs in addressing workforce shortages and aligning graduates with the NICE cybersecurity work roles.

The study collected responses from over 280 alumni who had completed various levels of higher education in cybersecurity programs across the United States, including associate, bachelor's, master's, and doctoral degrees. The study explored the impact of extracurricular activities, such as mentor advising, internships, and participation in cybersecurity competitions, in enhancing their practical knowledge and employability. The data highlights alumni perspectives on their career paths, detailing the types of roles they have pursued, the typical responsibilities they handle in their jobs, and the extracurricular activities they consider essential to gaining employment in the cybersecurity and technology sectors.

What sets this study apart is its specific focus on the contributions of 37 Centers of Academic Excellence cybersecurity programs from across the U.S. in addressing the global shortage of cybersecurity professionals. The results of this study highlight current trends and identify potential opportunities for cybersecurity education programs to optimize extracurricular offerings and to integrate new materials into their curriculum. The findings emphasize the role of academic programs in equipping graduates with the necessary expertise and credentials to secure positions in cybersecurity or related technology fields, offering valuable insights for educators, employers, and aspiring professionals.

Keywords: Centers of Academic Excellence, alumni employment outcomes, cybersecurity

Reference:

NCyTE Center. (2024). *Workforce study: Cybersecurity alumni. Where are they now?* https://www.ncyte.net/academia/faculty/faculty-resources/2024-workforce-study-community-college-cybersecurity-alumni

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Towards a framework for choosing assistive technologies for people with autism

[Research-in-Progress]

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Extended Abstract

Autism Spectrum Disorder (ASD) is a neurological and developmental disorder having two aspects: Difficulties in social communication and interaction, such as eye contact, understanding social cues, and emotional intelligence; Repetitive behavioral patterns and restricted interests, e.g., inflexible routines, difficulties in coping with change, and unusual sensory responses. As a heterogenic disorder, ASD symptoms are dispersed in a wide spectrum. Hence, there is a need for personalized support and interventions. Current Assistive technologies (ATs) aim to promote social, communicative, and functional capabilities, to improve the quality of life and independence of autistic people. ATs include: Augmentative and Alternative Communication (AAC); Speech-Generating Devices (SGDs); Socially Assistive Robotics (SARs); wearable technologies for sensory processing; and immersive technologies, such as virtual reality (VR), for practicing adaptive responses to social scenarios. Along with their extensive support of daily functioning, ATs, as well as general Information and Communication Technologies (ICT), hold potential risks for autistic people (Hassrick et al., 2021), e.g., failure to regulate online behavior; excessive use; cyberbullying; susceptibility to deceptions; physical inconvenience risks arising from ASD traits. Within the broad field of Human-Computer Interaction (HCI), the purpose of this research-in-progress is to examine attributes of AT for people with ASD, through a systematic literature review, and to suggest a holistic framework that will address specific disorders and systematically encompass the diverse considerations for choosing an AT. These insights will contribute to a better understanding of personalized adaptation considerations based on specific individual sensory, communicative, and emotional profiles. On a systemic level, this framework may support the development of 'autistic friendly' technologies, promote interventions for reducing risks of ICT use, and improve community education on identifying vulnerabilities of autistic people in cyberspace.

Keywords: Assistive Technologies (ATs), Autism Spectrum Disorder (ASD), technology risks among people with ASD, personalized adaptation, Human-Computer Interaction (HCI).

Support: This research was supported by The Open University of Israel's Research Fund (grant no. 515569).

Reference:

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Evaluating the Dutch Societal Innovation Hub (DSIH) and its evolving role in mission-driven knowledge innovation via AI

[Research-in-Progress]

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Extended Abstract

Executing the DSIH program, within the context of the Digital Europe Program (DEP), we encountered a firm packing list of instructions and demands from our EU co-funding agency (European Commission, 2023). Our challenges were how do we learn and adapt to meet our goals in a multi-level governance consortium, and how do we evaluate efficacy and impact? Pursuing our methodical ambition to benefit from the boundary objects set in the different mission-oriented arenas (Janssen et al., 2023), we collected our data via multiple dialogue tables and found out that there are three meta-signals: confusion, conflict and lack of viability. These are at the root of the limitations of achieving our multi-level goals. Designing an interactive art installation considering the importance of multiple perspectives, inclusive language and empathic feedback, we used large language models (LLM) to shape and design this interactive AI medium. To use it in an EU-wide context, we are analyzing the results for another iteration to conclude our study of the mission-oriented arenas by opening an innovative pathway for double loop learning using the New European Bauhaus (NEB) value set. Creating this visual learning medium based on *CreaTures* (Creatures Framework, 2024) explores nuances in the complexity of our working field. This helps us to learn and adapt to meeting our goals in a multi-level governance consortium and to evaluate efficacy and impact.

Keywords: Multi-level governance, knowledge innovation, New European Bauhaus (NEB), mission-driven approach, double loop learning, LLM, AI.

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Janssen, M. J., Wesseling, J., Torrens, J., Weber, K. M., Penna, C., & Klerkx, L. (2023). Missions as boundary objects for transformative change: Understanding coordination across policy, research, and stakeholder communities. *Science and Public Policy 50*(3), 398–415. https://doi.org/10.1093/scipol/scac080

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Knowledge preferences in e-learning units - Avatars vs. real teachers

[Research-in-Progress]

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Extended Abstract

This study investigates the preference and engagement levels of students when exposed to a real teacher versus an avatar in e-learning. The study was conducted across three different educational levels—university (72 students), grade 10 high school (63 students), and grade 3 elementary school (68 students)—to examine how students of varying ages engaged with real teachers versus avatars. All participants were presented with an online learning unit featuring interactive videos. One video featured a real teacher, while another video retained the teacher's voice but replaced their visual presence with an animated avatar (either a friendly fox or dog). After viewing both videos, students were asked to express their preferences and engagement levels through questions embedded within the learning unit. The students' responses were analyzed to identify trends in preferences and engagement based on their age and educational level.

The use of avatars in educational content delivery raises questions about student engagement, interaction, and the potential for avatars to replace or complement human teachers. The study aimed to explore how different student age groups respond to virtual avatars compared to real teachers in terms of learning preference and engagement. Results indicated varied preferences, with younger students more inclined to prefer avatars due to their playful nature, while older students favored real teachers for their perceived authority and trustworthiness. The study's findings suggest that avatars may be an effective tool for engaging younger students, particularly in primary and secondary education, where novelty and interactivity are crucial for maintaining attention. However, older students may still prefer the authority and emotional connection provided by real teachers, especially in higher education settings. These results have implications for the future use of avatars in digital learning platforms, highlighting the need to tailor educational tools to the specific age and learning needs of students.

As technology becomes more prevalent in education, understanding how students respond to avatars versus real teachers is essential for designing effective learning environments. The use of avatars in educational content delivery raises questions about student engagement, interaction, and the potential for avatars to replace or complement human teachers. Understanding these dynamics can help KM professionals design better digital learning environments and improve educational technology effectiveness. Moreover, this study contributes to the broader conversation on how technology can be leveraged to enhance knowledge transfer and engagement, key components of knowledge management.

Keywords: Avatars, student engagement, learning preferences, virtual teachers, educational content delivery.

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Guess what? You appear more self-confident than you think: Uncovering the fear of appearing incompetent

[Research-in-Progress]

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Extended Abstract

The fear of appearing incompetent (FAI) is a common, yet underexplored emotional experience in social settings and research despite an increasing emphasis on competence in today's knowledge-dependent economy. FAI, defined as a worry about being perceived as inadequate, in terms of knowledge, skills and ability, is often a suppressed emotion at work. Limited research on FAI has linked it to the Big 5 traits, gender, negotiations, and competency pressures (Parlamis et al., 2020). To address this research gap, our study measures the discrepancy between self-perceived FAI and external evaluation of FAI by others. People often restrain their display of FAI, making it less cognitively accessible to external observers. Grounded in social comparison theory (Festinger, 1954) we propose that individuals compare their internal insecurities to others' outwardly confident appearances, resulting in distorted self-perceptions and mistaken beliefs that others experience less fear. Using a cross-sectional survey we assessed self-reported FAI and peer-evaluations of FAI (on a 7 point Likert scale) among 99 individuals across 17 teams, each comprising of 5-6 members, 565 assessments. We found a significant discrepancy where individuals rated their own FAI significantly higher (M = 3.11, SD = 1.34) than their peers did (M = 2.30 with SD = 0.66). Women not only reported higher self-perceived FAI than men, but also judged their peers as more confident (lower FAI) than men did. The findings carry implications for workplace dynamics, knowledge sharing, training, gender disparities, and for KM and IT scholars, who could examine how digital platforms, collaborative tools, and AI systems either amplify or mitigate FAI-related behaviors. To overcome the study's limitations of social desirability bias when measuring perceptions, future research with longitudinal, experimental and qualitative design across remote and hybrid environments would further enrich the understanding of how FAI manifests in daily knowledge exchange.

Keywords: Fear of appearing incompetent, social comparison theory, gender, knowledge exchange

References:

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Analysis of the impact of GenAI on team working and knowledge sharing – An international comparative study

[*Research-in-Progress*]

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Extended Abstract

Knowledge Management (KM) processes in organizations are vital for value creation and innovation. Collaborative knowledge creation, facilitated by teamwork, significantly enhances Human Capital development and fosters innovative behaviors. Creating new knowledge as the basis for meaningful exchanges to encourage innovative practices relies on a sound infrastructure, IT systems and an organizational culture of knowledge sharing. In the current era GenAI has become more accessible, and organizations are encouraging their use to increase efficiency. The extent to which organizations systematically monitor and evaluate the impact of GenAI on teamwork and innovation practices is currently unclear. The UTAUT model (Venkatesh, 2022) is helpful to understand GenAI acceptance and use behaviors in enterprises. The UTAUT theory is applied to this research to explore the various characteristics that may contribute to the use of GenAI tools in team working contexts. Moreover, current research shows that GenAI use varies significantly across countries. This research uses a quantitative research approach to capture responses from employees in medium to large sized organizations in countries, and identify team working behaviors, GenAI concerns and challenges. The data collection method will involve the design of an online survey posted on professional social media networks to capture responses from enterprises in any country. The findings aim to provide empirical insights into the impact of GenAI on teamwork, knowledge exchange behaviors, addressing a recognized gap in current research.

Keywords: Impact of GenAI, group working behaviors, knowledge exchange.

Reference:

Venkatesh, V. (2022). Adoption and use of AI tools: A research agenda grounded in UTAUT. *Annals of Operations Research, 308*, 641–652.

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The ontology for SOC creation assistance and replication

[Complete Research]

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Extended Abstract

A Security Operations Center (SOC) is an indispensable tool for any modern organization or enterprise to secure its digital data and information assets. Developing SOCs and SOC capabilities to meet organizational needs in today's threat environment is an often laborious, time-consuming, and expensive task that (if not done correctly) may leave organizational needs unfulfilled. This is due to the fact that the set of SOC requirements and capabilities may vary widely from one organization to the next, reflecting the overall goals or mission of the organization. As a result, each deployment of a SOC capability will be different from all others, a reality which can make SOC development difficult. There is no one-size-fits-all solution, no single blueprint, and no 'SOC in a Box' which can meet the needs of organizations with different goals, budgets, and threat profiles. However, we can frame SOC requirements and capabilities as a unique domain of knowledge, which is not duplicated by any other domain. By framing it as such, we can say that this unique knowledge can be organized into a structured set of concepts and relationships, which is to say, an ontology.

In this paper, we introduce the Ontology for SOC Creation Assistance and Replication (OSCAR), which organizations can use to aid in developing SOCs and in planning and evaluating SOC capabilities. We developed OSCAR using a purpose-built dataset created by extracting the knowledge of a number of SOC expert practitioners; it therefore contains robust, real-world insights into the SOC knowledge domain. OSCAR is organized into a knowledge hierarchy that includes people, process, and technology classes, but also emphasizes planning and functional considerations. OSCAR accomplishes two things: First, it fills a gap in existing cyber ontology literature by including classes on the initial development of SOCs in addition to those for security operations capabilities. Second, its domain-specific knowledge is derived from a unique dataset gathered directly from experts working in the field. Taken together, these unique traits make OSCAR an ideal tool for planning, building, and evaluating SOCs as well as for developing practical approaches and methodologies for SOC operations.

Keywords: SOC, security operations center, cybersecurity, CSIRT, ontology, framework.

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Slack resources as inducers of exploitative and exploratory innovation

[Complete Research]

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Extended Abstract

Slack resources are excessive utilizable resources (i.e. financial and human resources) firms possess for innovation, and they are important inducers of exploratory and exploitative innovation as any innovation activity is resource intensive. Therefore, firms need to have slack resources to pursue innovation. Previous studies are inconclusive on the relationship between slack resources and exploratory as well as exploitative innovation (Hu et al., 2023), thus this study aims to deliver insight into how innovation is determined by firm's slack resources.

This is a quantitative study that targets respondents from large and innovative entities in Poland. In total, 259 questionnaires were collected from 7th to 16th November 2023. The research sample consists of manufacturing (41.3%) and service firms (58.7%); more than half of firms have been on the market for over 26 years (55.6%), while 44.4% are younger firms. Slack resource (Sok & O'Cass, 2015) is an independent variable, while exploration and exploitation innovations (Jansen et al., 2006) are dependent variables. We also used three control variables: (1) firm age (2) type and (3) size. All scales applied in the study have a good reliability and they passed the construct and discriminant validity tests. Moreover, the common method bias is in control.

The correlation analyses show the positive and significant correlations between slack resources and exploratory as well as exploitative innovations. Moreover, it is confirmed by the regression analyses – slack resources positively impact exploitative (β=0.428, $p<0.01$) as well as exploratory innovation (β=0.480, $p<0.01$). This study confirms that firms need slack resources to pursue exploratory as well as exploitative innovation.

Keywords: Exploratory innovation, exploitative innovation, slack resources

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Cybersecurity in the age of AI: A knowledge management perspective for academia and industry

[Research-in-Progress]

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Extended Abstract

This research-in-progress investigates the evolving intersection of artificial intelligence (AI), cybersecurity, and knowledge management (KM), with a focus on how AI-enhanced cybersecurity strategies are being applied to safeguard KM systems. As AI becomes deeply embedded in KM platforms—automating data processing, enabling predictive analytics, and improving knowledge retrieval—it also introduces new vulnerabilities, including adversarial attacks, misinformation, and algorithmic manipulation. These challenges are particularly pressing in academic and industry settings, where organizational knowledge is a strategic asset.

Guided by the exploratory question, how are organizations leveraging AI-powered cybersecurity tools to protect KM systems while balancing efficiency, trust, and data integrity? This study analyzes emerging AI-based cybersecurity frameworks—including machine learning-driven threat detection, automated access control, and AI-enhanced encryption. Using a comparative case study approach across higher education, healthcare, and finance sectors, the research draws on socio-technical systems theory to assess how contextual factors shape implementation outcomes and risk governance practices.

Preliminary findings suggest that while AI-driven security solutions offer improvements in real-time threat response and automation, they also pose challenges related to transparency, ethical accountability, and organizational readiness. These insights are particularly relevant for institutions navigating the tension between digital transformation and information security. The study contributes practical and theoretical insights for knowledge managers, cybersecurity professionals, and decision-makers, offering a roadmap for developing resilient, ethical, and adaptive KM systems in an increasingly AI-integrated environment.

Keywords: Cybersecurity, artificial intelligence, knowledge management, AI security risks, digital knowledge protection, secure AI integration.

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Secrets in the shadows: Unmasking knowledge hiding and hoarding through the lens of trust

[Complete Research]

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Extended Abstract

Knowledge Hiding (KHi) is the intentional withholding of knowledge from colleagues, often driven by a lack of trust. It manifests as rationalized hiding, evasive hiding, or playing dumb; the latter two are particularly detrimental to workplace trust. Organizations invest in promoting Tacit Knowledge (TK) and Explicit Knowledge (EK) sharing to enhance teamwork, problem-solving, and workplace relationships. Recent studies emphasize the importance of understanding the characteristics of TK and EK, as well as the motivations behind KHi and Knowledge Hoarding (KHo). This study aimed to identify key factors influencing individuals' decisions to share TK or engage in KHi and KHo.

Using an 11-stage Survey Design methodology, data was collected from 285 Knowledge Management professionals across five countries in North America and Europe. Participants represented a diverse range of industries and organizational sizes, providing a broad perspective on knowledge behaviors. Results indicated participant awareness of and engagement in KHi, KHo, and Knowledge Sharing. They recognized that TK holders made deliberate sharing decisions based on factors like trust, sincerity, and expertise. Additionally, organizational culture, incentives, and perceived risks played a role in these decisions, with some respondents highlighting the impact of competitive environments and personal career advancement. The study highlighted the need for future research to include leadership influences on KHi, KHo, as well as trust and distrust in the workplace

Keywords: Knowledge hiding, knowledge hoarding, knowledge sharing, tacit knowledge, behavioral intention, trust.

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The 4 P's of AI in healthcare: People, processes, performance, and policy

[Research-in-Progress]

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Extended Abstract

Artificial Intelligence (AI) is a transformative force in the healthcare industry, but its implementation presents several challenges. One of the main obstacles is the fragmented and complex nature of healthcare data systems, especially in patient triaging, which complicates the data collection, storage, and analysis. Additionally, interoperability and data privacy concerns pose significant barriers to AI implementation.

For successful implementation, it is essential to establish frameworks and guidelines. This study aims to create detailed implementation frameworks based on the 4 P's:

1. People: Prioritizing stakeholders and understanding their needs and concerns.
2. Process: Ensuring data integration and interoperability among healthcare systems.
3. Performance: Focusing on testing, evaluation, training, and education.
4. Policy: Addressing compliance, monitoring, and improvement.

A sequential explanatory mixed-methods design will be used to identify current frameworks related to AI in healthcare. Then, the information will be categorized and analyzed based on the 4 Ps. This review will outline the shortcomings of existing frameworks, highlighting areas of promise and potential pathways for future research. The research will divide the stakeholders into groups of doctors, nurses, and administrators.

Keywords: AI, healthcare, implementation, people, processes, performance, policy

Reference:

Nair, M., Svedberg, P., Larsson, I., & Nygren, J. M. (2024). A comprehensive overview of barriers and strategies for AI implementation in healthcare: Mixed-method design. *Plos one, 19*(8), e0305949.

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Diving into the depths: The influence of industry experience on student motivation

[Research-in-Progress]

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Extended Abstract

It has been long since the industry and academy acknowledged the significance of soft skills for Information Systems (IS) professionals. Some employers consider the ability to interact, communicate, manage time, negotiate, and solve problems more important than technical skills for their junior position candidates. However, the gap between the skills and knowledge gained within undergraduate studies and industry needs and expectations is challenging. While the technological gap is relatively easy to bridge through curricula updates, soft skills development is more complicated to integrate into undergraduate studies. Academics broadly discussed on integrating industry experience into academic curricula, however, since it is difficult to mimic the authentic, real-world organization environment, those discussions are mostly theoretical. To overcome this challenge, we developed a practical course "Introduction to Open Source"- an academic course provided in industrial settings focused on training soft skills and enhancing the preparedness of undergraduate students for real-world industrial environments.

This study examines changes in student motivation during a practical course in industrial settings. In the first course iteration, we utilized qualitative methods to explore student perceptions, with 12 interviewees, while in the second course iteration, we applied the Science Motivation Questionnaire II (SMQII) (Glynn et al., 2011) to assess changes in motivation of 14 students.

The results indicate a general decrease in students' motivation during the course, followed by a partial recovery. It also emphasizes the need for continuous support and realistic feedback to keep students motivated. Our study expands previous studies on how industry-focused courses motivate students. Real-world settings improve learning and prepare students for professional situations in these courses. Maintaining students' motivation requires appropriate course design followed by congruous support.

Keywords: Industrial setting, motivation, practical course, soft skills, teamwork quality, undergraduates

Reference:

Glynn, S. M., Brickman, P., Armstrong, N., & Taasoobshirazi, G. (2011). Science motivation questionnaire II: Validation with science majors and nonscience majors. *Journal of Research in Science Teaching, 48*(10), 1159-1176.

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A review on cost-effectiveness of telemedicine solutions

[Research-in-Progress]

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Extended Abstract

Leading health organizations, including the World Health Organization, recognize the potential of telemedicine applications to enhance patient health, particularly for managing chronic diseases affecting billions worldwide. While telemedicine solutions show promise, insufficient clinical evidence fully supports their use in public health surveillance and home-based care, making it difficult to draw definitive conclusions.

This study assessed the cost-effectiveness and utilization of telemedicine solutions for chronic patients by reviewing existing literature using the PRISMA method. The review analyzed studies that checked cost-effectiveness, usage patterns, and the implementation of telemedicine in chronic disease management.

This paper reviewed English-language publications from the recent fourteen years. The insertion condition of documents focused on studies examining telemedicine tools used for chronic patients, specifically those assessing cost-effectiveness. Relevant papers were identified through searches in databases such as PubMed-MedLine, Scopus, Web of Science, and ProQuest Central.

Most of the studies (78%) were conducted in Europe, with about 50% of the papers featuring a sufficiently large sample size and following patients prospectively over an adequate period. Distance monitoring was the most frequently utilized telemedicine method, whereas only a few studies incorporated home visits or phone consultations as part of their patient care. The monitored parameters involved clinical indicators and other key physiological indicators. Universal statistical analyses and regression analyses were the most commonly employed analytical approaches. At the same time, only some studies combined Markov models to evaluate long-term outcomes, cost-effectiveness, and the broader impact of telemedicine interventions on chronic disease management.

Most studies found that telemedicine tools significantly improved cost-effectiveness or resulted in notable cost savings. These encouraging results underscore the growing position of telemedicine in chronic disease management and emphasize the need for further research to refine its employment, assess its long-term benefits, and explore its full economic and clinical potential.

The main limitation of this review is that the literature search focused only on publications in English. Appropriate papers in other languages may have been overlooked, further restricting the generalizability of the results.

Keywords: Chronic patients, distance monitoring, telemedicine, cost-effectiveness.

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The epistemology of knowledge management in the age of artificial intelligence: A conceptual analysis

[Research-in-Progress]

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Extended Abstract

Data analytics, machine learning (and its sub-specialization generative large language models), and algorithmic decision-making are now finding real-world applications in the management of a wide variety of organizations and are changing knowledge-intensive work. The paper presents a conceptual analysis of how these developments challenge the human-centered epistemology of mainstream knowledge management by shifting the division of labor between humans and machines.

Drawing on the three levels of communication proposed by Shannon & Weaver (1949), it is argued that data analytics and machine learning blur the technical and semantic levels, while algorithmic decision-making bleed into the pragmatic level. These higher levels were previously thought to be the preserve of the knowledgeable human expert, who could combine their tacit knowledge with explicit knowledge provided at the technical level. This blurring calls into question the mainstream knowledge management distinctions between data, information, and knowledge. As a result, the conventional knowledge management notions of knowledge—as content that is not yet captured as information, as an interpretive framework for making sense of new information, and as the capacity to act—become unstable, which makes it harder to distinguish between knowledge processes that knowledge management tries to support, such as knowledge discovery, sharing, integration, and application. The paper concludes that these technological developments require a reconceptualization of knowledge and how it is managed in organizations.

Keywords: Epistemology, knowledge management, knowledge processes, artificial intelligence, machine learning, algorithmic decision making

Reference:

Shannon, C. E., & Weaver, W. (1949). *The mathematical theory of communication*. University of Illinois Press.

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Post-quantum cryptography for secure satellite communications

[Research-in-Progress]

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Extended Abstract

Satellite communication networks are critical to global infrastructure, military operations, and scientific research. However, the rise of quantum computing threatens the viability of traditional cybersecurity methods, as traditional cryptographic schemes have been shown to be vulnerable to quantum-enabled attacks. This study investigates the use of post-quantum cryptography (PQC) authentication and encryption methods to secure satellite communications from emerging quantum threats. By exploring algorithms standardized by the National Institute of Standards and Technology (NIST), the research evaluates the effectiveness of quantum-resistant cryptographic solutions in protecting the integrity and confidentiality of satellite data.

This study is grounded in an in-depth analysis of current satellite security vulnerabilities in the context of quantum computing. It evaluates PQC algorithms useful for authentication and encryption in satellite communication networks, including lattice-based, hash-based, and code-based cryptographic techniques. The study benchmarks algorithm performance under satellite-relevant constraints such as execution time, key and ciphertext size, and runtime variation and consistency metrics. Initiatives such as QuSecure's quantum-resilient communication links and the European Space Agency's PQC Algorithms for Satellite Telecommunication Applications (ASTrAL) project indicate growing relevance and effort in PQC adoption and highlight the applicability of this research to operational satellite systems.

This study underscores the need for timely implementation of post-quantum cryptographic mechanisms in satellite networks. The results provide a foundation for the selection of viable PQC algorithms suited to mission-specific resource constraints and inform cryptographic transition strategies for satellite communication platforms. This research contributes to the broader discussion on post-quantum cybersecurity and offers foundational insights for strategizing and implementing secure communication protocols in space-based systems.

Keywords: Post-quantum, quantum key distribution, quantum-resistant encryption, satellite communications, satellite cybersecurity.

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Cyberslacking in the classroom: Comparison between students in Poland and Puerto Rico

[Research-in-Progress]

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Extended Abstract

The use of laptops and electronic devices in higher education is debated, as they can enhance learning but also lead to cyberslacking. Cyberslacking in the classroom refers to the time students spend engaging in personal activities on the Internet that are unrelated to class content (Simanjuntak et al., 2019; 2022). Students fall victim to several activities such as social media use, net- chat, gaming, cybersurfing, and online shopping during studies (Koay & Poon, 2023).

Classroom distractions can hinder student focus and harm academic performance. Cyberslacking may be influenced by self-regulation, multitasking ability, engagement, and institutional policies. Understanding these influences is key to creating effective, focused learning environments. This study will examine the cyberslacking activities of medicine dental students from Puerto Rico and business students from Poland, comparing the academic success differences between those that admit their cyberslacking versus those that were not doing it. Moreover, we would like to determine which factors influence less involvement in cyberslacking activity during the classes. Our initial research results point out that dental students are less involved in cyberslacking due to more engaging classes being offered at the Dental School and more assignments pending. This may also stem from awareness of potential harm to future patients. This study advances cyberslacking research and promotes strategies to reduce classroom distractions.

Keywords: Cyberslacking, physical environment, cyberslacking activities.

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Human center cybersecurity preparedness - CEO responses to multipolar world

[Research in progress]

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Extended Abstract

Cybersecurity has become part of the arsenal in geopolitical conflicts, and attacks are already increasing in terms of their sophistication and persistence. Any serious disruption to the operation of cyberspace affects not only citizens, but also security of private businesses and the efficiency of public sector institutions. Therefore, fighting security threats with only a local view is inherently difficult, and likely ineffective.

Dramatic changes such as pandemics, global warming, and severe warfare can pose threats to organizational data protection and cybersecurity becomes of paramount importance to minimize the risks related to the aforesaid changes. In recent and ongoing wars in Eastern Europe and Russia as well as the Middle East, cyber-attacks have been deployed as a tactical war weapon to disrupt businesses and their operations (Schmitz-Berndt, 2023). Boards and CEOs must plan for a stepped-up response commensurate to the much riskier cyber environment associated with a geopolitical event, especially when such events may involve allies. The situation is much riskier because there are no norms that govern cybersecurity globally — and this new environment would challenge what few self-imposed protections exist because it changes incentives for defenders.

The objective of this paper is to give an overview how companies should be prepared to cyber attacks from the point of view of an individual enterprise that operates globally. Cybersecurity preparedness is an ongoing process. The key to going from a strategy that exists only on paper to a whole-of-enterprise motion is to bring people together as well as put in place the conditions for them to build trusted relationships with each other across organizational layers and silos so that there is a clear sense of solidarity and 'shared fate.'

Keywords: Cybersecurity, collaboration defense, cybersecurity response, cybersecurity incidents,

Reference:

Schmitz-Berndt, S. (2023). Defining the reporting threshold for a cybersecurity incident under the NIS Directive and the NIS 2 Directive. *Journal of Cybersecurity, 9*(1), 1–17.

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From transparency to innovation: The role of open government data

[Complete Research]

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Extended Abstract

This study investigates how open government data (OGD) contributes to innovation in digital public services, with a particular focus on sustainable urban mobility. The paper explores the evolving role of OGD beyond transparency, emphasizing its function as a strategic enabler of value creation in the public and private sectors. While previous literature has extensively discussed the legal and ethical foundations of OGD, this research moves the debate toward practical implementation and ecosystem impact.

A case study of the Jakdojade application, Poland's leading public transport planner, illustrates how structured and partially open data can support advanced mobile services. The paper examines the integration of OGD sources such as real-time vehicle tracking, geolocation, and timetable data to enhance travel planning and promote environmental sustainability. It also analyzes the business model of the application provider, showing how open and proprietary data can be combined to achieve financial viability through multiple revenue streams, including advertisements, ticket sales, and data monetization.

The study introduces an extended typology of data collaboration models (e.g., G2B2C, G2N2C) and applies the five-star open data maturity model to assess limitations and development potential. Findings indicate that although Jakdojade operates with structured, machine-readable data (★ ★), it falls short of higher maturity levels due to restrictive licensing, limited use of URIs, and lack of semantic data integration. The paper concludes by discussing steps necessary to unlock the full innovation potential of OGD and support broader sustainable development goals.

Keywords: Open government data, smart mobility, sustainability, data reuse, digital services, Jakdojade, business models.

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Leveraging assistive artificial intelligence to enhance cybersecurity awareness responses in gamified cybersecurity tabletop exercises

[Research-in-Progress]

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Extended Abstract

Cybersecurity threats pose significant challenges to maintain information security and cybersecurity. Traditional tabletop exercises and virtual cyber ranges serve as invaluable tools for assessing and enhancing cybersecurity preparedness. However, the dynamic nature of cyber threats demand innovative human and machine learning approaches to bolster response capabilities, strengthen defenses, increase strategy retention, and expedite decision making. The integration of Artificial Intelligence (AI) GPT's (Large Language Model (LLM) based on the Generative Pretrained Transformer Architecture (GPT)) as intelligent advisors/assistants, GPT's as tabletop exercise adversaries, interactive gamification strategies, interactive team decision communication, and interactive team discussion during tabletop exercises introduces several benefits to cybersecurity tabletop exercises. This mixed-methods exploratory multiple case study with both quasi-experimental and qualitative components observed volunteers studying information security and cybersecurity during a series of gamified tabletop exercises. Gamification – through elements such as dice rolling, unexpected issues, and game challenges enhance participant motivation and retention by making learning enjoyable and immersive. When GPTs are integrated as part of the game mechanics – cush as advisors, assistants, or adversaries they add a layer of realism and responsiveness. This fusion allows exercises to simulate real-time cyber threats and decision making effectively, encourages critical thinking, and fosters team collaboration. Ultimately, gamified tabletops in conjunction with GPTs and team collaboration transform tabletop exercises into scalable, flexible, and highly engaging learning tools that better prepare participants for the complexities of modern cyber defense.

Keywords: Cybersecurity, gamification, artificial intelligence, large language models, information security communication, tabletop exercise, user experience, knowledge sharing.

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Medical expert panel validation of an instrument to assess physician's perceptions of wearable medical devices data in precision patient care medicine

[Complete Research]

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Extended Abstract

This study explores the innovative role of wearable medical devices (WMDs) in advancing precision medicine within healthcare. It examines physicians' perspectives on data security, confidentiality, and satisfaction with the accuracy of WMD-generated data. Employing a five-round Delphi Method, the research engaged 19 medical expert panelists through surveys and semi-structured interviews to refine survey items before conducting a broader physician survey. Wearable medical devices offer valuable real-time data by continuously tracking vital signs such as ECG, blood oxygen levels, movement, and sleep, which are key for managing chronic conditions and promoting healthier lifestyles. However, despite acknowledging their potential, physicians expressed concerns about patient data confidentiality and integrity, citing a lack of transparency from manufacturers regarding risks and incidents like device hacking.

The findings indicate that for broader adoption of WMDs in healthcare, manufacturers and regulators must focus on enhancing data security and transparency. Improving data accuracy and clearly communicating protective measures can build physician trust and support the integration of WMDs into routine care, particularly for chronic disease management.

This study offers original insights into the underexplored area of physicians' views on WMDs, particularly concerning data integrity and security. It highlights the critical role of physician trust in data accuracy and device transparency as key factors driving adoption, providing valuable direction for developers, policymakers, and healthcare institutions aiming to advance precision medicine through WMDs.

Keywords: Wearable medical devices, value of data, precision medicine, data confidentiality, satisfaction with data accuracy.

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Comparing the HIPAA security rule with the newly proposed 2025 2.0 for healthcare organizations to enhance risk mitigation compliance

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Extended Abstract

On January 6, 2025, the United States Department of Health and Human Services Office for Civil Rights (OCR) proposed to modify the Security Standards for the Protection of Electronic Protected Health Information Security Rule under the Health Insurance Portability and Accountability Act of 1996 (HIPAA) and the Health Information Technology for Economic and Clinical Health Act of 2009 (HITECH Act). HIPAA is a United States regulation enacted in 1996. It establishes national standards for the protection of sensitive health information, ensuring that such information is not disclosed without the patient's consent. The U.S. Department of Health and Human Services (HHS) is responsible for implementing and enforcing HIPAA through the Privacy and Security rules, which sets guidelines for the use and disclosure of protected health information by covered entities. The proposed amendments aim to significantly strengthen the confidentiality, integrity, and availability of electronic protected health information (ePHI). Thus, the newly proposed security requirements far surpass all previous legal mandates from OCR and likely set the highest bar in the United States for securing ePHI. While HIPAA itself is a U.S. regulation, its principles have been adopted and adapted by other countries to enhance their own healthcare privacy and security frameworks. For example, the European Union's General Data Protection Regulation (GDPR) shares similarities with HIPAA in terms of protecting personal data and ensuring patient privacy. Additionally, many countries look to HIPAA as a benchmark when developing their own regulations to safeguard health information.

This research study will explore how the proposed amendments are aligned with reducing the risk of compromising ePHI. The experimental methodology focuses on the key differences between the 2013 HIPAA Security rule and the newly proposed 2025 HIPAA 2.0 security rule by using qualitative information obtained during two meetings held by the national Healthcare Information and Management Systems Society (HIMSS) Healthcare Cybersecurity Community as well as a set of analysis generated by an AI tool (ChatGPT) to evaluate the potential risk mitigation. The results demonstrate that the proposed 2025 HIPAA 2.0 security rule amendments are aligned with some of the risks. Recommendations for the best practices and future direction of research will be provided.

Keywords: The United States Department of Health and Human Services Office for Civil Rights (OCR), HIPAA Security Rule 2013, proposed HIPAA Security Rule 2.0 2025, healthcare technical safeguards, healthcare administrative safeguard, healthcare physical safeguard, electronic protected health information (ePHI).

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Experiments with a living lab in public administration: New insights and implementation

[Research-in-Progress]

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Extended Abstract

Within the 4transfer joint project, partners from science, business, administration, and society prove the interdisciplinary research concepts, innovative ideas and novel processes through knowledge and technology transfer between the various sectors (Jokisch et al., 2024). They address current challenges such as energy transition, resource scarcity, scientific skepticism, and anti-democratic tendencies through increased exchange and education. With different methodological approaches, the partners develop sustainable, socially acceptable solutions for complex scenarios. The implementation of a living lab creates a protected space to test new solutions, services and network structures and promotes innovation through a collaborative platform (Blei et al., 2024). In our project course so far, we have laid methodological foundations for living lab formats, and we are currently implementing the first labs. The 4transfer partner TU Bergakademie Freiberg is investigating a lab through researching a mining heap and practical solutions for resource recovery and re-naturalization. The Cooperative State University of Saxony creates a lab on the permitting procedures for the construction of novel timber buildings. Both examples address sustainability and limited resources, whereas our university focuses on human resources in public administration: knowledge and competency. We build a collaborative platform for the department of structural, economic and international-relation development of Goerlitz County, Free State of Saxony and their agile administration for both internal and external processes, supported by the living lab. We are transferring newly developed solutions to similar (supra-regional) environments, also to foster transparency, authenticity and an insightful culture of error during this initial lab phase. Thus, we enable sustainable exchange and methodical transfer support, including unconventional formats and electronic participant feedback. Our expected results are measurable increases in the efficiency and effectiveness of administrative processes. Some selected evaluation results are discussed.

Keywords: Living lab, public administration, knowledge transfer, interdisciplinary, sustainability

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Prompting a change: Comparing learning experiences with and without GenAI in higher education

[Research-In-Progress]

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Extended Abstract

Integrating generative artificial intelligence (GenAI) tools into academic life brings opportunities and challenges in higher education. While traditional teaching methods remain prevalent, many students now use GenAI to support their learning. This evolving reality raises the need to examine the effect of such tools on students' learning experience, motivation, and academic outcomes.

This study examines whether integrating GenAI into the learning process leads to measurable differences in key learning variables compared to traditional instruction: *What are the differences in knowledge construction, learning experience, motivation, engagement, and achievement between students who learn in traditional formats and those who learn with the aid of GenAI tools?*

The study involved 97 students (71 men, 26 women) assigned to one of two groups: traditional lecturer-led learning (lecturer-led group in short) and GenAI-based learning (GenAI group in short). A custom 15-item Learning Experience and Lesson Satisfaction Questionnaire was used for the study, featuring parallel items tailored to each learning environment, measuring motivation, self-efficacy, and learning experience. Students then participated in a structured learning session (in both environments) followed by a 6-question quiz. Semi-structured interviews were conducted with selected students from both learning environments to complement the quantitative data. These interviews explored students' perceptions, challenges, and attitudes toward learning with or without GenAI tools.

The findings indicate a significant difference in students' learning experience between the two groups *($t(84) = -2.754$, $p = .007$)*. Students in the GenAI group reported higher satisfaction scores *($M = 3.90$, $SD = 0.66$)* compared to those in the lecturer-led group *($M = 3.52$, $SD = 0.50$)*, suggesting a generally more positive learning experience when using GenAI tools. In addition, the analysis of quiz performance revealed a significant advantage for the GenAI group, which achieved higher scores ($M = 4.31$, $SD = 1.18$) than the lecturer-led group *($M = 3.72$, $SD = 1.26$)*. Further results/insights from quantitative and qualitative data will be presented at the conference.

Keywords: Generative AI, higher education, student learning.