International Institute for Applied Knowledge Management

Abstracts Proceedings - KM Conference 2023 – Geneva, Switzerland

A Publication of the International Institute for Applied Knowledge Management

Refereed Proceedings - Abstracts

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Pre-Conference Industry Day
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Themes: Knowledge Management, Cybersecurity, Learning, and Information Technology
https://iiakm.org/conference/

Invited Keynote
Addressing Workforce Development via Academic Partnerships

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

Abstract:
Problem statement: Why are job-defined credentials and certifications key developing the workforce of the future and how to bridge the divide between higher education and the Information Technology (IT) and cybersecurity workforce to provide equity and access to the IT workforce of today and tomorrow?
Our approach: ISACA's mission is to level the global playing field for all members of society and equip them with the skills and credentials to begin or enhance their IT and cybersecurity careers. Our approach is not driven by maximizing profit but rather prioritizing initiatives with the maximum global social benefit. We live in the confluence of academics and the workforce, and our role is to convene the IT workforce, understand their needs, and develop the knowledge and rubrics to certify individuals for those job needs. We achieve this by providing students with the knowledge, skills, and abilities mapped to job practices and delivering them at scale. Our new model focuses on bringing these skills and associated opportunities to high schools, higher education, and adult learners from around the globe. Our model is driven by our 150,000 members who typically hire talent and recognize that the traditional education model is not preparing students for the jobs they are trying to fill. To fill the talent gap and support the learner journey our 200+ chapters and their 150,000 members across the globe, mentor, support, instruct and hire our students. Through this unique model, ISACA provides equity and workforce access to students from all backgrounds and bridges the divide between education and the workforce.

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 through out 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
On Interoperability & Meaning

Dr. Philippe Page
Chair of the Board of Trustees & Head of the Research Council at the Human Colossus Foundation, Geneva, Co-Founder & CEO of MeDDEa Solutions AG

Abstract:

Based on an example in health information management, this talk delves into a too often neglected underlying root cause that hinders accurate and trustable knowledge management in the digital era: inadequate integration and interoperability of systems and platforms. Digital transformation in knowledge management has become essential for organisations and citizens to thrive in the rapidly evolving digital landscape. However, despite its potential benefits, many organisations face barriers when implementing successful digital transformation initiatives. The talk is centered around the complexities of sharing medical knowledge; one of the crucial barrier to innovation in healthcare leading to local and continental initiatives like the European Health Data Space.

About the Speaker:

Dr. Philippe Page is a Swiss-born theoretical physicist whose professional activities evolved from particle physics to hands-on change management within financial organisations. In 2020 he co-founded the Human Colossus Foundation, a non-profit Geneva-based institution for promulgating Human-centric and responsible alternatives to current digital transformation paradigms. Today, Philippe is the CEO of a start-up, MeDDEa Solutions, active in deploying digital trust infrastructures.

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Invited Keynote
Bridging the Education Gap: Delivering High-Quality Field-Ready Blended Learning Education to the Global South

Vincent Widmer, Ph.D.
BEEKEE, GENEVA, SWITZERLAND

Abstract:

The Global South lags behind in university enrollment levels by 170 million students due to the prohibitive cost of traditional face-to-face teaching methods. Online degrees are not a viable solution due to the inaccessibility caused by expensive and unstable internet connections and frequent power cuts. Moreover, since there's no in-person learner support, dropout rates are consistently sky-high.
Vincent Widmer, Ph.D. in Education Sciences and Co-founder of the Swiss startup Beekee, will present how Beekee currently enables NGOs like Doctors without Borders, International Organizations like the International Committee of the Red Cross and Universities like Arizona State University to deliver digital training sessions in the field.
Vincent will also introduce Beekee's plans to create an innovative, high-quality field-ready blended learning Higher Education institution that could benefit one billion students per generation.

About the Speaker:

A biologist by training, Vincent Widmer holds a master's degree in Learning in Teaching Technologies as well as a Ph.D. in Educational Sciences from the University of Geneva, Switzerland, where he worked and conducted scientific research in collaborative learning. Passionate about pedagogy and new technologies, Vincent believes that well-designed technologies can play an important role in fostering quality education everywhere. He cofounded the Startup Beekee to tackle one of the world's most significant challenges: enabling access to quality education to the underserved.

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Invited Talk
Achieving Compliance Through Awareness: Building and Monitoring a Cybersecurity Program

Douglas Andrews
Head of Information Security and Quality (CISO)
Galenica AG, Switzerland
https://www.galenica.com/en/

Abstract:
In 2019, a Swiss company in the manufacturing sector was hit with ransomware taking out a majority of its Information Technology (IT) systems and crippling its ability to do business. In the aftermath of the incident, the company's management, realizing that they needed to address their cybersecuirty gap, established the position and named their first Chief Information Security Officer (CISO), then started the journey toward compliance, awareness, and organizational cyber security culture. This presentation will highlight that catastrophic cyber event, the actions taken following the event, the CISO's initial strategy, and the subsequent awareness program which was very successful due to management's implicit support.

About the Speaker:

Douglas Andrews is the Head of Information Security and Quality (CISO) at Galenica AG, a company in the Swiss healthcare secor, with over 8,000 employees, more than 400 pharmacies, and which offers a wide array of services from personal care to pharmcetical logistics. Douglas earned his M.S. in Information Systems Management from the University of Maryland, and is currently working on his Ph.D. in Cybersecurity Management at Nova Southeastern University (NSU), College of Computing and Engineering. He is an active member of the Swiss Cyber Security Competence Group and holds a Certified Information Systems Security Profesional (CISSP) certification from (ISC)2 and a Security+ certification from CompTIA.

Invited Talk

Decentralized Finance: An Antinomic Notion?

Olivier Depierre
Attorney, LL.M., Independent Researcher, and Entrepreneur
https://www.linkedin.com/in/olivier-depierre/

Abstract:
How to apprehend decentralised finance, which is itself split into DeFi 1.0, 2.0 and now 3.0 ? Isn't finance first and foremost the result of diverse and varied interactions between public and private players? And if this is not the case, can it really be conceived as a peer-to-peer relationship only through blockchain technology, without state control? Bearing in mind that such control may for example be necessary to protect depositors and investors, or to collect the tax revenues regularly owed to the state by any individual? Let us delve into this perhaps not so utopian world of a so-called decentralised finance.

About the Speaker:

Olivier Depierre holds a law degree from the University of Geneva (2003) and was then a registered Trust and Estate Practitioner (2009). He then completed a CAS in Compliance Management (2010) and a Master of Laws (LL.M.) in Banking & Finance (Geneva University, Centre for Banking and Financial Law, 2013) cum laude. In 2015, he passed the Geneva bar and completed a CAS in Criminal Magistrature from the Haute Ecole Arc of Neuchâtel. He set up his own law firm in 2017, where he practiced banking law, financial markets law and criminal law, and was then the leading adviser in French-speaking Switzerland on TGEs (Token Generating Events) and all other activities related to cryptocurrencies and DLTs.
In 2019, he co-founded the Geneva Blockchain Congress and taught the legal module of the CAS Blockchain at the Centre Universitaire d'Informatique (Geneva). In 2020, he completed the CAS in Digital Finance Law (Geneva University, Centre for Banking and Financial Law), for which he has been a lecturer since 2021 in the field of stablecoins and decentralised finance (DeFi). The same year he created the world's first academic lexicon on blockchain technology (in French, cf. www.cdbf.ch/lexique), joined in this effort by Prof. Jean-Henri Morin, Dr. Michel Reymond, and computer technology developer Cyril Lapinte.

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28 June - 1 July 2023

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https://iiakm.org/conference/

2nd Day Opening Keynote Lecture

Rethinking Innovation: Creative Destruction in the Information Age

Professor Brian Buckles

Associate Dean of Faculty and Academic Planning
Dwight D. Eisenhower School for National Security and Resource Strategy,
National Defense University, Washington D.C.

Keynote Overview:

With an ever increasing focus on innovation, emerging technologies, and the application of Artificial Intelligence (AI), this presentation will reflect on innovation theories such as Schumpeter's economic concepts of creative destruction and the paradox of progress, Christensen's innovator's dilemma and disruptive technologies, and Roger's diffusion of innovation. By examining these industrial age concepts and the disruptive effects on product and labor markets, one can begin rethinking the impacts of applied AI on future labor markets. The presentation will conclude with an engaged dialogue addressing issues such as: To what extent will AI be a disruptive technology? How might the conditions of innovation be affected by AI? If the catch phrase of turning "coalminers into coders," was seen to relieve the stresses of creative destruction on the mining industry, what might be the long-term effects of AI on the information age workforce? Ultimately, society will need to address how artificial intelligence might creatively destroy information age labor markets.

About the Keynote Presenter:

Dr. Brian Buckles serves as the Associate Dean of Faculty and Academic Planning, Dwight D. Eisenhower School for National Security and Resource Strategy, Ft. McNair, Washington D. C. As an Associate Dean, he is responsible for the Eisenhower School's curriculum development process, faculty performance evaluation process, and strategic planning process. As a faculty member, he instructs in the Senior Acquisition Course (SAC) electives program. Dr. Buckles also serves as a member of the Military Education Assessment Advisory Group (MEEAG) supporting Joint Staff (J7), Joint Education and Doctrine (JED) transition to outcomes based military education. He is a retired Colonel (United States Marine Corps) who served 28 years in various operational, educational, program management, and weapon system development billets. He participated in Operation Desert Shield (Saudi Arabia), Operation Desert Storm (Kuwait), the Global War on Terrorism (Iraq), and counter-drug operations (US). He has Bachelor of Science Degrees in Cartography and Geography (Univ. of Idaho), a Master of Science Degree in Management (Defense Systems Analysis) (Naval Postgraduate School), and a Doctor of Science (D.Sc.) in Information Systems and Communications (Robert Morris University). He has also served as a National Security Affairs Fellow, Hoover Institution, Stanford University.

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1st Day Opening Keynote Lecture

Legislation and Knowledge for the Post Accelerating Data and Knowledge Online Society (Padkos) and for Homo Sustainabiliticus Sustainable Future

Professor Meir Russ

University of Wisconsin - Green Bay and Stellenbosch University

Keynote Overview:

The keynote will start by covering a few characteristics of the unique period time in the history of our species on this planet, defined as Post Accelerating Data and Knowledge Online Society, (or the 'Padkos' Economy). Two resulting dangers: the arrival of the tri-modal economy and society, and that of the prospects of the Sapiens evolving into Homo Technologicus will then be discussed. A possible legal framework to minimize such risk incorporating stakeholder decision-making in both the private and governmental sectors will be illustrated in the context of Artificial Intelligence (AI). Following the discussion regarding the legal aspects, a model of Knowledge Management (KM) for the new 'Padkos' economy will be covered and detailed, as well as a framework for Organizational Learning in the context of the circular business model will be stipulated. We will close with concluding thoughts.

About the Keynote Presenter:

Prof. Meir Russ graduated from The Ohio State University in 1993 with a Ph.D. in Strategy, Entrepreneurship and International Business. He also holds a Bachelor of Science degree in Electronic Engineering and an MBA from Tel Aviv University. He is a founder of a high-tech company in Israel and consulted on strategy and knowledge management domestically and internationally. Following his doctoral studies at OSU, Meir joined the MBA program at Franklin University in Columbus, OH and later the University of Wisconsin-Green Bay, from where he retired in December 2018. He also taught undergraduate and graduate classes and delivered doctoral and graduate seminars at Semester at Sea, Shenzhen University, Sichuan University, The University of Deusto in Bilbao, Spain, University of Łódz, Poland, KEDGE-Bordeaux School of Management, the University of Pisa's, GSA Master program, NORD University, Norway; Master of Knowledge Management program, Tecnológico de Monterrey, EGADE School of Business, Mexico, MPhil in the Information and Knowledge Management at Stellenbosch University in South Africa, and at Roma-Tre, Rome, Italy the Ph.D. program as well as at the Doctorate in "Economia Aziendale e Management" program at the University of Pisa. Prof. Russ is the Chief Editor of Online Journal of Applied Knowledge Management (OJAKM). He was the founding Chief Editor of the International Journal of Management and Business (IJMB). Meir was named the Frederick E. Baer Professor in Business in 2009 and the Philip J. and Elizabeth Hendrickson Professor in Business in 2014. Meir is the author of more than 30 peer-reviewed publications and an editor of seven books. Meir was granted the prestigious Professor Emeritus honorary degree from the University of Wisconsin- Green Bay, in January 2020. He is also a Research Fellow at the Department of Information Science, at the Stellenbosch University, South Africa, as well as a Visiting Professor at the University of Łódź, Poland.

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1st Day Closing Keynote Lecture

Reinventing the wheel in Educational Technology: A perpetual drama?

Daniel K. Schneider

Former Associate Professor in Educational Technology, University of Geneva
Arbores Tech Sàrl *& FacLab UniGE

Keynote Overview:

History of educational technology is not remembered. Seasoned researchers and practitioners complain that artifacts and practices are presented as new and innovative when most often they are neither new nor inventive: prior research and field experience are either unknown or not considered. We can observe new "wheels" for different topics every 10–30 years and that newly hyped educational solutions are mostly technology-driven. For example, educational videos came into existence over 100 years ago and are being sold as a miracle solution every now and then, the last time for Covid emergency teaching and before that during the Massive Open Online Course (MOOC) "tsunami". Both ignored decades of theoretical and practical work on distance education and media-enhanced learning, leading to low-quality learning experiences. Similar observations can be made for educational designs that use computer-assisted learning, simulations, constructive environments, virtual environments, gamification, analytics, Artificial Intelligence (AI)-based recommenders, communities of learning, etc. Reinventing the wheel does lead to innovation but according to "a three steps back, four steps forward" principle resulting in innovation life cycles of 30–100 years. We will discuss some ideas to improve the progression, including knowledge management architectures and initiatives, incentives for sharing knowledge, shared Open Educational Resources (OER), communal constructivism and other knowledge building pedagogies, sustainable software initiatives, very long-term funding for educational reforms and environments. Additionally, we will speculate why knowledge conservation and transmission fails. We will conclude that change may require substantial reform of the educational, research and development systems.

About the Keynote Presenter:

Daniel K. Schneider was a former associate professor at TECFA, research and teaching unit in the faculty of psychology and education, University of Geneva. Holding a PhD in political science, he has been working in educational technology since 1988 and participated in various innovative pedagogical and technological projects. He has been a prime mover towards the introduction of creative pedagogical strategies and ICT technologies. His long-term R&D interests focused on modular, flexible and open Internet architectures supporting rich and effective educational designs. His more recent interests included digital design and fabrication (e.g., 3D printers in education, collective intelligence, learning process analytics, E-learning literacy and learning with technology in informal settings (e.g., citizen science). Within TECFA's "blended" master program in educational technology (MALTT), he taught educational information & communication systems, foundations of educational technology, "making" and research methodology. Since his retirement in July 2020, he founded Arbores Tech Sàrl, a consultancy for e-learning, program design, and quality assurance, online collaboration and digital design and fabrication in education. He spends most of his time in the Fab Lab of the University of Geneva (the FacLab) where he works as a resident on open source "making" projects and as a volunteer to teach digital design and fabrication.

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Conference Workshop

Industry—Academia Challenge Dating

Dr. Celina Sołek-Borowska[1], Dr. Julita Haber[2]

[1]Assistant Professor, SGH Warsaw School of Economics, Poland

[2]Clinical Assistant Professor, Fordham University, USA

Workshop Overview:

Both industry and academia are facing a knowledge production problem where academic research risks irrelevance as it strays from engagement with real-world problems. The notion of pure theoretical research makes no sense in most professional fields, especially in information systems, knowledge management, cybersecurity, and organizational learning. It remains an irony of the knowledge economy that knowledge production in industry and academia happens in parallel with limited contact between the two worlds.

Against this background, the Conference Workshop explores the possibilities for engaged scholarship, where academics consider the real-world significance of their academic research and business leaders open their minds to alternative framings of the challenges they face. To achieve this in a fun way, this workshop will feature 'speed-dating' rounds where participants attempt to match industry challenges and academic specializations. This event should not be treated as sales oriented.

During the workshop registration, we will ask academics to list three areas of specialization, whilst industry participants should list three business challenge areas. The aim is to match real-world problems with research expertise in a series of 'speed-dating' rounds of approximately 10 minutes. The end of each round provides a reflection time-out where participants record one idea or insight that they gained to be posted on a Miro board. The workshop concludes with a plenary discussion (held under the Chatham House Rule) around the wall of insights collected on the Miro board.

About the Workshop Facilitators:

Celina Sołek-Borowska is an Assistant Professor at the SGH Warsaw School of Economics, in Warsaw, Poland, where she teaches: Knowledge Management, Organizational Behavior and Team building classes. She serves as a trainer for businesses, as an academic advisor in business projects, and runs a team building workshop in the CEMS program (elite program at SGH). She has taught in the Erasmus program for the University of Gran Canaria (Spain), the University of Hertfordshire (UK), and the University of Alicante (Spain). Her research interests are knowledge sharing and knowledge creation, team building, and strategic alliance between Universities and businesses.

Julita Haber, Ph.D. is a clinical assistant 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.

Online Journal of Applied Knowledge Management

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Cross-country comparison of sustainable e-commerce entrepreneurship impact on sustainable development goals implementation: The case study of Germany and India

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Abstract

Sustainable E-commerce Entrepreneurship (SEE) plays a significant role in the World's Economy. Growing Internet accessibility encourages SEE growth worldwide. The growing number of SEE raises the question of the direction of SEEs impact on Sustainable Development Goals (SDGs) implementation. In the study, the author aims to describe the difference between German and Indian SEEs regarding their perspectives on SDG implementation. The study presents a novel approach by comparing the Indian (National Capital Region of New Delhi) and Germany (Berlin-Brandenburg Region) e-commerce entrepreneurs' perspectives on SDG implementation via SEE's activities. Interviewees from both countries were asked about (1) the current impact of SEE on SDGs implementation; (2) the future impact of SEE on one of the SDGs' categories; and (3) whether e-commerce has the potential to provide global patterns for SDGs implementation or should be seen from the local perspective and adjusted to the local needs. The study uses semi-structured interviews for the data collection. Scripted interviews have been coded and analyzed with the support of ATLAS.ti. Semi-structured interviews have been collected from ten Indian and nine German e-commerce entrepreneurs. The study results prove that German SEEs put more focus on the SDGs related to the biosphere than the Indian SEEs. The approach to prioritizing social and economic SDGs in India reflects the current socio-economic problems that face Indian society. On the other hand, German Interwievees present a rather idealistic perspective on SDG implementation. Thus, many of them highlight the SEEs' impact on the biosphere.

Keywords: sustainable, e-commerce, entrepreneurship, sustainability, SDG, Germany, India.

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IT support services conceptual engagement model

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Abstract

The Information Technology (IT) Support Engagement Conceptual Model was considered in light of IT service management (ITSM) frameworks, including the IT Infrastructure Library (ITIL) and the Service Support and Service Delivery (SSSD) models in addition to the Ansoff strategic planning model. The IT service growth strategies conceptual model proposes a standardized approach to frame the enterprise Business to Business (B2B) IT services growth strategies from operational efficiency, diversification, evaluation, and incubation. The model identifies the IT support service strategies and priorities by examining the product maturity and support service status in the organization. The IT Support Engagement Conceptual Model provides a standardized decision-making strategic framework to view the support service 'onboarding' decision-making criteria. This model proposes three service influencing factors that are; impact, volume, and complexity, aligned with corporate strategy to govern the service delivery decision-making process. The main contribution of this paper is to introduce the IT Support Engagement Conceptual Model as a novel framework to explain how enterprises can capture, identify and strategize opportunities to expand an organization's IT services in line with the corporate objectives. The model recommends different approaches and strategies to deal with different impact, volume, and complexity influencing factors while catering for any organization's nuanced factors.

Keywords: IT support services, IT support services planning, knowledge sharing, IT support strategies.

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A systematic mapping study of standards and frameworks for information management in the digital era

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Abstract

The close links of Information Management (IM) and Information Technology (IT) create an evolving environment of tasks and processes. Management standards are normative descriptions of an agreed-upon set of management tasks and suggested ways of the task execution. Certain standards like Information Technology Infrastructure Library (ITIL) and Control Objectives for Information and Related Technologies (COBIT) have been popular for a long time in sub-areas of IM including IT governance, IT service management, or IT project management. Driven by digitalization, the number and update frequency of IM-related standards have significantly increased recently, making standard selection and implementation more difficult. This study presents a systematic mapping of the current state in IM standardization with respect to standardization bodies, types of standards and certifications. Visual maps provide an overview of the IM standard landscape and reveal relevant topics and other categories. The article identifies the most relevant standardization bodies, standard types, and topics of the IM domain based on a full set of 109 IM standards. As a mapping outcome, the correlations of standardization bodies versus standard types, and of the topics versus IM task areas are clearly arranged in diagrams.

Keywords: Management standards, professional standards, certification, information management, systematic mapping.

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Identification of participants in business process modeling using BPMN

[Research-in-Progress]

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Abstract

Business Process Model and Notation (BPMN) is one of the most complex languages used in business process modeling and in the graphical presentation of functional requirements of Information Technology (IT) systems. The use of some elements of the notation in practice is controversial and often does not comply with the provisions contained in the standard. This situation can lead to ambiguity in the documentation of business processes. One of such difficult concepts are the participants of the business process. The purpose of this article is to identify problems related to participant identification and the use of pools in modeling with the use of BPMN, as well as to determine the reasons for this situation.

Keywords: Business process management, information systems, business analysis, business process modeling, business process participants, BPMN.

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Framework for trusted and fair data sharing and use

[Research-in-Progress]

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Abstract

Data use, the processing of data for a specific purpose, is a valuable activity across various sectors. The costs and risks linked to collecting data support the generalization of data sharing and reuse, spreading potential benefits and costs among users. Similarly, data use can involve multiple actors and systems, each providing services responsible for some data processing activity. Distribution of data and data uses, as well as evolving legal and technical landscapes, force stakeholders to adapt their practices to new risks. Data exchanges answer fairness, trust, and transparency requirements by providing appropriate services. Distributed data exchanges, then, have participants directly sharing governance rights as they share assets. This distribution can produce resilient and scalable systems offering participants greater control over their assets' lifecycles, but they often forego interoperability. This paper is part of research in progress aimed at exploring how data exchanges based on distributed governance can answer adaptable fairness and trust requirements, enforcing the sharing and use policies defined by participants in ways that preserve conditional interoperability. We propose a tentative model for data exchange systems that can adapt to answer participants' requirements and their regulatory and technological environment.

Keywords: Data sharing, distributed system, data governance, system model, fairness, trust.

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Internet of things and smart technologies in oral health: A systematic mapping study

[Research-in-Progress]

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Abstract

The Internet of Things (IoT) has been around for many years, and specific fields utilizing the benefit of connectivity, networking, and processing information from devices are well documented. Over the years, the IoT and the integration in oral health made through combining the Internet of Things (IoT) with smart technologies such as mobile phones and electronic medical records have been on the rise. There are different uses of IoT in dentistry and the benefits of applications of big data for interventional studies in oral health. Using IoT requires an understanding of acceptability and responsibility for preserving privacy for the user and the collected data, as the integration of IoT in health presents some challenges with privacy and security. There are advantages and challenges to integrating the Internet of Things (IoT) with smart technology in oral health requiring interdisciplinary collaboration to maximize benefits and minimize vulnerabilities. In this work-in-progress study, we seek to outline the trends and challenges in research and literature pertaining to IoT devices and smart technologies in oral health. The systematic mapping methodology is proposed to identify and analyze the trends and challenges in the research literature about IoT devices and smart technologies in oral health. The paper ends with a discussion and conclusion.

Keywords: Internet of Things (IoT), Internet of Dental Things, Oral health, wearable healthcare devices, smart health systems, Internet of medical things, security.

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A gap analysis of knowledge management performance using a State Enterprise Assessment Model (SE-AM): A case study of a Thai airport operator

[Complete Research]

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Abstract

This paper has examined the knowledge management performance of a Thai airport operator under State Enterprise Assessment Model (SE-AM) guidelines. By utilizing a qualitative research approach, data were collected from employees involved in the SE-AM process through in-depth interviews regarding their expectations of SE-AM performance in 2026, when compared with actual performance in 2021. The results show that the largest gaps were in the following SE-AM criteria: "Leading the organization" (1.50 gap score), "KM outcome" (1.10 gap score), "Planning and support resources" and "KM process" (0.80 gap score). To fill such gaps, this paper has revealed a wide array of managerial implications which were highlighted by the respondents, from leadership-driven strategies and process-driven strategies, to a proven result of key performance with KM implemented as part of the process.

Keywords: Airport operator, gap analysis, state enterprise, assessment model.

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Integrating open sim-based virtual worlds in K-12: Teacher and student insights regarding teaching prototypes and pedagogical strategies

[Complete Research]

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Extended Abstract

The increasing use of innovative technologies in education has introduced various advanced tools, such as innovative environments like virtual worlds (VWs) which have the potential to change teaching and learning processes and practices. Virtual worlds (VWs) are immersive three-dimensional environments accessible simultaneously to multiple users. They are shared simulated spaces, whose users are represented as avatars. Through these virtual worlds, educators are able to design private or public three-dimensional digital worlds. The use of VWs in education requires a shift from teacher-centered instruction to facilitation of student-centered learning practices. This study explores pedagogical strategies used in the integration of an Open Sim-based VW learning platform. In addition, it examines teacher prototypes (Sage-on-the-stage, Facilitator, Guide-on-the-side, and Partner) that reflect the degree of teacher centrality versus student autonomy in face-to-face K-12 classrooms (Yondler & Blau, 2021). We crosscheck the perspectives of teachers and students versus their actual practices. We conducted semi-structured interviews with 12 elementary teachers of different subject-matters and 11 fifth and sixth graders, followed by guided observations of actual VW learning environments. Our data reflected all four teaching prototypes described in the framework. We found that in the VW environments the most common teaching prototypes were 'Guide-on-the-side' and 'Facilitator', while 'Sage-on-the-stage' and 'Partner' were less common. Experiential Learning, Training and Modeling, PBL, Game-based Learning, and Collaboration were the most prevalent pedagogical strategies used by teachers in VW-enhanced classrooms. A significant finding was that both teachers and students perceived the students as the main designers of learning activities in the VW environments. This study provides insights on K-12 teaching, learning, and assessment processes and outcomes in VW environments.

Keywords: Virtual Worlds, Open-Sim, technology-enhanced teaching and learning, teacher prototypes, teacher centrality in the classroom, pedagogical strategies.

Reference:

Yondler, Y., & Blau, I. (2021). What is the degree of teacher centrality in optimal teaching of digital literacy in a technology-enhanced environment? Typology of teacher prototypes. *Journal of Research on Technology in Education*, 230-251. https://doi.org/10.1080/15391523.2021.1950084

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The welcome of the machines: An orientation event aimed for first-year students to higher education mediated by a social robot

[Research-in-Progress]

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Extended Abstract

Universities and colleges often conduct orientation events for their new students requiring optimized acclimation while transitioning from K-12 to higher education. Social Robots (SRs) represent an innovative technology that could enhance these events. There, SRs including their human-like shape and gestures could contribute to orientation and result in an event that is both effective and appealing (Kohen-Vacs & Kurtz, 2020, Kurtz & Kohen-Vacs, 2022). In this study, we outline the design and development of an orientation event focused on one essential skill that students need to succeed in their academic life—teamwork—through problem-based learning (PBL) (Kohen-Vacs & Kurtz, 2020, Kurtz & Kohen-Vacs, 2022). A human-shape SR - NAO, served as a mediator in this event. The orientation was conducted on the campus of an academic institution with the participation of four first-year volunteering students (see the clip here). Seven first-year students who watched the activity evaluated the experiment. Following the event, all eleven students were asked about their overall assessment of the activity and the added value of the NAO as a mediator in the current and future learning activities. The feasibility of using NAO as a motivating tutor in an orientation program was very encouraging. We found that NAO's key contributions included its unique physical embodiment and interactive capabilities, forming an empathetic bond with the students that improved their learning experience; its position as a neutral instructor with built-in tolerance; and its innovative way of teaching. The main challenge concerned NAO's lack of initiated and spontaneous dialogue. We believe this study marks the first step in developing a generic plan of action for orientation processes mediated by an SR.

Keywords: Social Robot (SR), Orientation event, Project Based Learning (PBL), Teamwork.

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Visual analytics to augment medical decision-making

[Research-in-Progress]

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Extended Abstract

Clinical Decision Support Systems (CDSS) are designed to aid clinicians in making diagnostic and treatment decisions for patients at the point of care. However, despite significant advances in computing, communication, and decision technologies, the design and implementation of CDSS remain challenging. Human-in-the-loop Intelligence Augmentation (IA) methods combined with Visual Analytics (VA) can potentially extend decision-making capabilities by enhancing the cognitive interpretability of data related to health risk assessment and patient-clinician shared decision-making. This study describes the co-development with clinicians of an Artificial Intelligence (AI)-based CDSS that uses VA to present cardiologists with a contextualized, cognitively driven view of risk assessment at multiple levels of granularity. This paper presents some key ideas underlying the synthesis of IA with VA (IA/VA) and challenges in the design, implementation, and use of IA/VA-enabled CDSS in the practice of medicine through data-driven knowledge management models. The study applies the Design Science Research (DSR) methodology to elicit General Requirements (GRs) and General Components (GCs) underlying the development of a CDSS to enhance its acceptance and sustained use by physicians. These GRs and GCs, stemming from well-established theories and current practices, are then demonstrated in a prototype, an illustrative IA/VA solution that provides a visualization of the distribution of patients' health risk levels and the impact of various factors on risk assessment at the population, cohort, and individual levels. It also allows interactive visualizations, where physicians can change values of actionable risk factors of the patient to simulate desirable results of a planned intervention and visually assess their impact. The prototype was demonstrated on a dataset that includes thousands of patients, showing superior performance over traditional methods. Alongside, 20 physicians positively evaluated the prototype's usability and interpretability of results. This approach also holds promise in enhancing decision support systems design, deployment and use outside the medical sphere.

Keywords: Congestive heart failure, clinical decision support systems, visual analytics, design science, intelligence augmentation

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An innovative approach to knowledge management: how scaling social-emotional learning through technology led to systemic change

[Complete Research]

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Extended Abstract

This research followed the Harborwoods Central School District (HCSD) and the application of their five-year strategic technology plan with three goals for 2022-2023: innovation, curriculum, and finance. A primary curricular goal was to improve the district's Social-Emotional Learning (SEL) for students and staff, which leaders achieved by implementing a Knowledge Management System (KMS). A reduction in staff sick days and student disciplinary actions through improved social-emotional development were the Key Performance Indicators (KPIs) for this project. The KMS aimed to increase the district's ability to scale its SEL goals across all stakeholders, using Artificial Intelligence (AI) to develop the training materials and support the KMS process.

To implement the KMS, district leaders first needed to audit existing SEL knowledge assets using Microsoft™ Teams, Google surveys, and AI analysis. They identified gaps in district resources and discarded duplicate lessons, assessments, and documentation that didn't meet the new standards for this project. SEL committee leaders created the KMS based on the audit results, utilizing various tools and technologies to support collaboration and knowledge sharing. SEL committee members developed a timeline to pilot the program with a cross-section of students and teachers, piloting in first, fourth, seventh, and eleventh-grade levels. They managed the project in a shared Gantt chart to help stakeholders share updates and track progress toward their goals.

District leaders relied upon their district and community culture to help align stakeholder groups for this successful initiative. Families, staff, and students worked together to improve the social-emotional development of the HCSD community. Participating teachers had nonteaching duties relieved to allow time for planning and collaboration to create new knowledge resources, learn from the pilot process, improve the KMS, and scale the program to all grade levels in the following school year. The KMS helped HCSD achieve its SEL goals and KPIs while enhancing stakeholder knowledge sharing.

This successful KMS proposal has become a use case for other district goals to reduce challenges faced by previous unsuccessful initiatives. HCSD's next steps include investigating the effects of implementing the KMS district-wide and examining its efficacy with other initiatives. HCSD's strategy provides valuable insights into the processes and techniques used to achieve success with its knowledge management plan and SEL program.

Keywords: Artificial Intelligence (AI), knowledge management, knowledge audit, K-12 education, Social-Emotional Learning (SEL).

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Organizational cyber readiness: An Italian investigation

[Complete Research]

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Extended Abstract

Nowadays cybersecurity issues are spreading among organizations of all sizes, especially the small ones. The main ideas revolving around the concept of cybersecurity are still linked to technology, which are no longer the only protection against cybercriminals. Since many forms of cyber-attacks are intended to exploit human factor vulnerabilities, we focus on a valuable set of organizational variables, thus embracing a broader cybersecurity perspective. We then focus on conducting a cyber organizational readiness assessment, which we resolve on depicting as composed of cyber awareness, cyber culture, and cyber organizational resilience. Our sample consist of 53 Italian Small and Medium Enterprises (SMEs) pertaining to the Information and Communication Technology (ICT) sector. Informed by the mixed method research ideas, this study follows the principles of the explanatory sequential mixed method design, thus adopting a quanti-qualitative approach. The quantitative data were collected through a questionnaire which focus on organizational cyber readiness main themes, thus allowing for an in-depth investigation of technical and organizational elements. We then generate a set of question aimed at obtaining more insight into some of the points raised throughout the survey (e.g., training activities and cybersecurity policy implementation). Qualitative data were collected through semi-structured interviews.

Many areas have yielded encouraging results. However, organizational factor which are the basis of cyber organizational readiness, such as cybersecurity awareness and culture are still in need to be effectively implemented. This result highlights how organizations are still relying on the technological side of cybersecurity, thus requiring more attention to the factor that nowadays are the ones exploited by cybercriminals.

Keywords: Small and Medium Enterprises; cyber organizational readiness; cyber organizational culture; cyber organizational resilience; ICT sector.

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Unlocking academic connections through Social Network: an end-to-end method for promoting interdisciplinary research

[Research-in-Progress]

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Extended Abstract

Interdisciplinary research is frequently depicted as innovative and transformative research that surpasses boundaries and contributes to the achievement of larger societal goals (Ku & Zehr, 2022). However, while academia dedicates many resources and focus on the students' sense of community, mostly via Virtual Learning Environments (VLEs), the faculty members weave their academic knots without any formal system (let alone traditional methods such as conferences, workshops, etc.). Our purpose is to design a network of scholars that are interrelated in a set of concepts and methodological terminologies. Current scholars' network reflects their past collaborations, basically to measure their current academic activity and to make decisions about promotions (Färber, 2019; Kong et al 2019). This is how the Current Research Information System (CRIS) is designed, for example. To this end, we suggest a concept-based Social Networks (SNs) approach, meaning nodes will consist of research concepts and not only on scholars' names, to provide a collaborative horizon and a potential connection for the future. We will present an end-to-end model for a knowledge graph of potential collaborative interdisciplinary research, formed in the process of information dissemination, mainly using the CRIS database of an Israeli academic Institution. Eventually, this social network graph will be made available online as an interactive tool to the benefit of the faculty members that will use it for finding scholars with similar research interests, by using simple search queries, filtering grouping and other graph-related tools to find the best institutional match for their interdisciplinary work.

Keywords: Interdisciplinary research, Social Networks, academia, knowledge graph.

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Knowledge management phenomena and task conflict: Mixed effects on hospital quality of care

[Complete Research]

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Extended Abstract

The implementation of knowledge management systems in the healthcare industry aims to facilitate knowledge flows and improve healthcare outcomes. However, due to the complex and multifaceted nature of healthcare knowledge and the social aspect of knowledge-related phenomena, it can be challenging to effectively capture, leverage, and share knowledge in healthcare organizations. Previous research suggests that the overreliance on knowledge assets driving healthcare organizations is met with a simultaneous potential of creation in healthcare. However, there is a potential risk towards value destruction when counterproductive knowledge behaviors are engaged by healthcare professionals. Knowledge hiding and knowledge hoarding reflect examples of counterproductive knowledge behaviors, describing intentional and accidental individual attitudes that jeopardize organizational knowledge assets and impede its flow. The subsequent loss of information and knowledge coming from the engagement in counterproductive knowledge behaviors limits assess to important resources, therefore contributing to relational and working dissonances that shape task conflict. Expanding on such rationale, this work aims to understand the impact of knowledge management systems, knowledge hoarding and knowledge hiding, and task conflict on the quality of care in healthcare organizations. The study follows a quantitative approach and surveys 318 healthcare professionals working in Portuguese hospitals, using Partial Least-Squares Structural Equation Modelling (PLS-SEM). Main findings show that knowledge management systems positively contribute to knowledge hoarding behavior, while also positively influencing the quality of care provided by healthcare professionals. Conversely, knowledge management systems are also negatively related to task conflict between healthcare professionals. However, results show that knowledge hoarding is positively related with quality of care, adverting caution on the potential benefits stemming from this form of counterproductive behavior. On the other hand, knowledge hiding is positively related to task conflict, which, in turn, negatively affects quality of care. The research provides an original contribution to healthcare management by offering insight into the influence of knowledge-related systems and behaviors on the quality of care provided by healthcare professionals. The findings have important theoretical and practical implications for future actions and research in healthcare organizations.

Keywords: Knowledge management systems, Knowledge hiding, Knowledge hoarding, Task conflict, Quality of care, Healthcare, PLS-SEM.

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Information warfare: Cybersecurity threat in the healthcare sector

[Research-in-Progress]

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Extended Abstract

The pandemic of COVID-19 presented a world challenge in different aspects, including the spread of misinformation and disinformation. The World Health Organization and the National Library of Medicine recently published a systematic review where it shows this problem in the health sector, its effect, and the necessity of knowledge to minimize the impact of it. Also, it reflects the influence in the psychological behavior of the people. Psychological operations (PSYOPS) aim to undermine the morale and well-being of a significant segment of a country's population by disseminating untrue information through social media and news channels (Rehman et al., 2022). The desired outcome in this scenario is to induce a sense of panic and fear. These types of activities are classified as Information Warfare (IW). IW involves manipulation, destruction or denying access to real information while maintaining the target audience trust. A wide variety of content falls under it, including the communication of inaccurate information with or without the intention to harm, misinterpretation of satire, and spreading information with a clear socio-political agenda. With the increase in the use of social networks and the Internet in the world, there has been a dizzying increase in misinformation and disinformation. During the Covid-19 pandemic, misinformation, disinformation, and cyber-attacks were a big problem for different sectors of the industry and the government. This type of situation greatly affected these sectors and the population in general. The healthcare sector is not excluded of this world problem. Here, we cover the different aspects of fake news, such as its impact on the healthcare industry, how it spreads, the various cyber threats, and methods to combat it. These types of cybersecurity threats in the healthcare sector are enormous and there is a different tendency to approach this topic in a general manner. The objective of the study is to serve as an understanding of the basic aspects of IW to health practitioners and to provide a conceptual contribution, specifically a framework, for mitigation and resilience to the medical community.

Keywords: PSYOPS, information warfare, cybersecurity, electronic warfare, healthcare, cyberwarfare.

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How can learning analytics augment meaningful experiences in the Metaversity?

[Research-in-Progress]

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Extended Abstract

Within the Fourth Industrial Revolution (4IR) framework, humans are provided with digital twins that can collect, categorize, and analyze their actions in digital environments for various purposes. The 'Metaversity' as an umbrella term, represents the use of extended reality technologies and academic content by universities for teaching and learning within the metaverse environments (Wang et al., 2022). Akin to disruptions in most industries that are driven by the 4IR, the Metaversity is expected to impact higher education. Specifically, these new formats are designed to generate an unprecedented level of detail in learning data. Hence, learning analytics will become a dominant dimension for creating, operating, and managing learning and teaching. Moreover, the shared and immersive digital world will facilitate the transition from traditional courseware into meaningful 3D learning experiences. These two dimensions of change require the re-alignment of new learning analytics to pedagogical intentions in the metaverse. Currently, the promise of the metaverse to become an all-encompassing learning environment might end up as just another fad for higher education. However, as immersive capabilities evolve and become embedded in daily life, the Metaversity will become a focal point for connecting learning, knowledge, and experience. Therefore, we suggest adopting a design science (Hevner, 2007) perspective to analyze these changes within the context of the 4IR. This mode of inquiry aims at analyzing the emerging phenomena of Metaversity and the next generation of immersive learning experiences versus existing formats of knowledge sharing. Specifically, we would like to develop learning analytics-based performance measures that would help instructors and pedagogical designers to create and augment meaningful experiences in the Metaversity.

Keywords: Metaversity, metaverse, learning analytics, the fourth industrial revolution (4IR), higher education, performance measurement.

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Identifying predoctoral dental students' health informatics knowledge, skills, and competencies

[Research-in-Progress]

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Extended Abstract

Health informatics is a broad field concerned with the collection, processing, and dissemination of data as well as information using systems such as an Electronic Health Record (EHR) and Electronic Dental Records (EDR). Like health informatics, dental informatics applies information and computer sciences to improve patient dental care, clinical practice, dental medical education, and dental medical research. Still in its early development stages, the application of dental informatics has already demonstrated quality of care improvements in the clinical care setting. However, there is a significant gap to overcome: dental informatics is not well understood by both practicing dental providers and dental medicine students. Additionally, dental curricular programs appear to have limited opportunities in preparing future dentists to use health informatics tools to their advantage. Several example of health informatics opportunities include electronically coordinating the plan of care, providing support for evidence-based patient care, utilizing data analytics for quality and safety, engaging in telehealth consultations, and using applications (apps) for patient self-management, scheduling, and patient education, while conforming to Health Insurance Portability and Accountability Act (HIPAA) privacy and security. The aim of this exploratory research will be to empirically assess current predoctoral dental students' knowledge, skills, and competencies relevant to dental informatics gained through academic experiences. Additionally, this research-in-progress study will assess dental students' perceptions of the value of health informatics during their academic experience. The initial step of this research, which is undergoing, established a survey to Subject Matter Experts (SMEs) to validate the initial instrument for the dental students with questions related to (1) the importance of acquiring health informatics skills as it pertains to a dental practitioner, (2) opportunities for health informatics knowledge acquisition and skills development during the didactic, clinical, and simulation experiences comprising dental curricular programs, (3) students' self-reported health informatics knowledge and skills. This exploratory research offers a unique perspective on the preparation of future dentists to the workforce as it pertains to the current and future use of health informatics.

Keywords: Health informatics, health informatics knowledge and skills, dental curricular program experience, health informatics for dental professionals, knowledge, and skills of Electronic Health Records (EHR) and Electronic Dental Records (EDR).

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How do knowledge management practices in open innovation impact the knowledge base? Evidence in Poland

[Complete Research]

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Extended Abstract

Open innovation is defined as "a distributed innovation process based on purposefully managed knowledge flows across organizational boundaries" (Chesbrough & Bogers, 2014, p. 17). It means that open innovation requires active knowledge management, whereas the literature refers to two of the most important knowledge management practices: sharing and protecting knowledge. Open innovation requires knowledge sharing between different parties engaged in the innovation process, however, openness cannot be unlimited and at least some existing and new knowledge needs to be protected (Laursen & Salter, 2014). Therefore, the aim of the research is to show open innovation knowledge management practices (sharing and protecting knowledge) applied by innovative firms in Poland and how these impact the knowledge base.

The sample consists of randomly selected 119 innovative firms in Poland (65,5% of firms studied are from manufacturing industries, while 34,5% from service industries). The study uses the CATI method, and it was carried out in 2017. Data is analyzed with the use of quantitative statistical techniques, such as the distribution of answers, descriptive statistics, cross-tabulation analysis, and the chi-squared test. The results indicate that innovative firms studied apply both knowledge sharing and protecting in open innovation. It also shows that the partial knowledge sharing favors partial and full knowledge protection, and the full knowledge sharing is linked with the full knowledge protection as well (it is confirmed by the chi-squared test that yielded a 16,227 result ($p=0,01$; $df=4$)). Moreover, the study indicates that applying both knowledge sharing and protecting favors increase of the knowledge base of innovative firms, while the protecting knowledge without sharing knowledge has no impact on knowledge base (it is confirmed by the chi-squared test that yielded a 37,482 result ($p=0,01$; $df=4$)). The study confirms that firms in open innovation share and protect knowledge that is benefiting them by increasing knowledge base.

Keywords: Open innovation, knowledge sharing, knowledge protecting, innovative firms

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Accelerating healthcare decision-making with advanced no-code data analytics

[Research-in-Progress]

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Extended Abstract

The authors are writing a textbook and holding workshops for medical professionals who want to expand their practical knowledge in advanced data analytics and predictive modeling. Although the data examples used are primarily medical, they are relevant to other fields. The topics covered include the history of Machine Learning (ML), Artificial Intelligence (AI), basic statistics, hypothesis testing, predictive modeling, model evaluation, model optimization, text mining, image analysis, time series and survival analysis, geolocation, and the evolution of lean six sigma. Our new textbook and its associated workshops stand out because they provide a comprehensive discussion of major data science and advanced data analytics topics without requiring knowledge of a programming language. Unlike many other textbooks that discuss advanced data analytics without using a programming language, our material includes practical exercises and examples that the reader can perform. We use three free open-source data science software programs to comprehensively cover data analytics and ensure that readers gain practical knowledge. Our approach is especially relevant to medical professionals who seek to leverage data analytics to improve patient outcomes. However, the techniques covered in this book have broader applications, making it useful to professionals in many other fields.

Keywords: Data analytics, data science, machine learning, artificial intelligence, supervised learning, data visualization, lean six sigma.

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Are chatbots changing learning processes in higher education?

[Research-in-Progress]

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Extended Abstract

This research aims to explore uses of Artificial Intelligence (AI) technology in learning in higher education with an emphasis on chatbot technologies. With the advent and popularity of chatbots gaining much attention there is anecdotal evidence of conflicting interests in how to implement and integrate chatbots into teaching and learning practices across the range of academic disciplines. Some disciplines raise concerns that the pace of change with the technologies alongside changing attitudes and behaviours of students leaves educators on catchup. There are concerns surrounding these AI tools with whom human beings consciously interact for the first time ranging from it being a helpful to harmful tool in learning. This applies to all parties involved in the learning process but also extends to universities as institutions alike. A more diverse picture emerges at individual and academic levels as perceptions and expectations with respect to opportunities and risks of chatbots. There are favourable and uncomfortable views on the use of Natural Language Processing (NLP) to aid the learning experiences of students.

Under this premise, this study explores the use of ChatGPT within the activity theory framework and aims to develop a methodology to assess its effectiveness as a tool to enable learning. To date, no evaluation system exists which tests this, and we propose to move away from the linear Initiate-Response-Evaluate model to develop a circular and flipped learning circle to enhance learner activity and agency. By using a novel framework and methodology this paper aims to contribute to the discussion surrounding the limitations and benefits of ChatGPT in the learning process and complements current studies on the use of AI in teaching. Whereas this research focuses on the individual learning activities, we see the link to developments in the wider Higher Education (HE) sector: By helping to demystify the impact of AI in learning, we hope to contribute to reducing the uncertainty surrounding the impact of ChatGPT in the HE sector. This will support the development and reform of frameworks and standards which are vital for academics as well as students to be able to use AI within their teaching and learning in a defined way.

Keywords: AI, chatbots, natural language processing, activity theory and learning.

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Case study on the digitalization of automated heparin infusion monitoring at a hospital

[Research-in-Progress]

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Extended Abstract

Unfractionated Heparin is a common blood thinner that is designed to block clot formation post-surgical procedures. Heparin therapy is typically administered via an IntraVenous (IV) catheter that is inserted into an arm vein. Following a blood test, an initial dosage is determined based on body weight. Additional blood tests help to monitor and determine the appropriate regimen. One of the most challenging aspects of Heparin monitoring is that numerous variables need to be aggregated, examined, and analyzed before a clinical decision can be made regarding the dosage and rate of drip. Errors related to inappropriate Heparin therapy regimen can stem from miscalculation of dosage, misinterpretations of blood lab results, as well as lack of familiarity with policies and procedures. Such errors result in patients potentially experiencing an adverse event by receiving unnecessary Heparin and incorrect medication therapy, as well as incident report documentation thereby compromising patients' safety. This case study outlines work-in-progress research conducted at a regional hospital in the Southeastern United States to model workflow process improvement from a manual paper-based process to an automated electronic process. A workgroup was assembled to identify the current challenges while invoking discern rules to digitize the heparin infusion monitoring process and map a set of follow-up tasks. Subsequently, an automated process embedded in the hospital's Electronic Health Record (EHR) was created along with digital alerts to nurses and pharmacists who are an integral part of the monitoring process. To ensure an error free process, a cross functional team of experts in nursing informatics, pharmacy informatics, and clinicians tested the automated Heparin infusion monitoring system at the hospital. Several challenges were addressed including reduction of alert fatigue, and development of a new safety protocol and procedure related to the new procedures. This case study offers a unique perspective on the development of an automated approach while adhering to the Heparin infusion protocol core measures as well as increasing patients' safety and quality of treatment.

Keywords: Health Informatics, Alert fatigue, Electronic Health Records (EHR), Heparin infusion monitoring system, quality of treatment, patients' safety, workflow process improvement.

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Measuring knowledge sharing: A critical review of the operationalization of knowledge sharing in KM research

[Research-in-Progress]

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Extended Abstract

Knowledge management implementations often aim to support knowledge sharing by connecting people to documents or to each other via knowledge management systems and practices. A lot of knowledge management research is devoted to the empirical investigation of knowledge sharing. However, there is a lot of diversity in how knowledge sharing is operationalized and measured, showing a lack of consensus in the field.

The study analyzes the most frequently used operationalizations of knowledge sharing in the top knowledge management journals (Serenko & Bontis, 2017). It is found that most studies develop their own operationalization of knowledge sharing, but the most frequently used operationalization (Bock et al., 2005) conceives of knowledge sharing as the "intent to share". The various operationalizations of knowledge sharing are coded into types and related to the variables studied in connection with it. Results show that psychological and organizational variables are studied more often in relation to knowledge sharing than technological or epistemological variables.

The discussion views the most used operationalizations of knowledge sharing critically and argues that standardized measures will aid the maturation of the knowledge management research field. In conclusion, the skew nature of the empirical research into knowledge sharing in favor of quantitative studies is bemoaned and the scope for future qualitative research about knowledge sharing is emphasized.

Keywords: knowledge sharing, knowledge transfer, knowledge management research, operationalization.

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Is social media in trouble? Examining the social media users' exhaustion and discontinuance intention

[Complete Research]

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Extended Abstract

Social networks have an incredible weight in our everyday life since they enable real-time and barrier-free communication. The dynamic nature of social media, influenced by recent changes in users' behavior and the social media privacy concerns have brought new challenges. Given the relevance of social networks, it is important to understand how they affect the users and their loyalty to preferred networks. Although most of the studies highlight the benefits of social networks, the drawbacks of their use must be also addressed. Though social media offer many attractive futures, they may compromise users' privacy and affect their well-being, distrust, insecurity, and fatigue.

This study adopts the Stressor–Strain–Outcome (SSO) framework to explain how the social media use, information overload and fear of missing out influence the users' exhaustion and their intention to quit using social media. Additionally, we examine the role of social media privacy concerns and information sensitivity.

To explore those relationships an online survey was applied, with a total of 258 valid responses form social media users in Portugal. The results of partial least squares structural equation modelling indicate that indeed the fear of missing out causes users' exhaustion which in turn impacts the users' discontinuance intention. Users' exhaustion shows to be influenced also by the information overload and privacy concerns. Interestingly, the social media use frequency showed not to be influencing the user's exhaustion. The conclusions drawn from this study contribute to a deeper understanding of social users' behavior and indicate the challenges that the social networks must overcome.

Keywords: Social media exhaustion, privacy concerns, information overload, discontinuance intention.

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HIPAA and security compliance during telehealth consultations

[Research-in-Progress]

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Extended Abstract

Telehealth utilization trends have been estimated to rise by 70% according to a report by the American Medical Association. During pre-pandemic times, only 5% of patients utilized telehealth, compared to 25% of patients during 2020. According to the Health Resources and Services Administration (HRSA), telehealth refers to the utilization of electronic information and telecommunication technologies to support and promote long-distance clinical and administrative health care services. Moreover, Health Insurance Portability and Accountability Act (HIPAA) requires healthcare provider entities to maintain patients 'data privacy and security while providing telehealth services similar to its standards enforced with in-person health care services. This research in progress aims to investigate the utilization of privacy and security consent protocols, awareness, and healthcare employees 'training as evidence for HIPAA security and privacy compliance during telehealth consultations. The results of this investigation will highlight the challenges to healthcare providers, as well as report the results of feedback obtained from a 30-member expert panel that validated a survey developed in this study. The validation process is critical to ensure internal validity of the survey prior to administrating it to study participants. Moreover, the validation process includes a quantitative survey gathering feedback about the survey items as well as a small team of qualitative method gathering feedback about the survey and research protocol. Subsequently, the validated survey will be provided to small and midsize healthcare clinics in South Florida. The research team plans to host an in-person and Zoom training session on standard HIPAA privacy and security regulations to healthcare clinics. Following this training, the healthcare clinics will be asked to take the validated survey once again to analyze the effect the training had on their familiarity with HIPAA privacy and security compliance. Results of this research effort will aid further investigations on telehealth compliance within macro-healthcare systems.

Keywords: Telehealth, HIPAA compliance, Security compliance, Data privacy.

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Development of a universal cybersecurity competency model for organizational users

[Complete Research]

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Extended Abstract

The worldwide dependence on electronically advanced organization processes requires more investments in cybersecurity. These additional cybersecurity investments are more likely to protect information assets from cybercriminals. The National Initiative for Cybersecurity Education (NICE) Cybersecurity Workforce Framework (NCWF) was created to assist industry and government agencies with standardizing the cybersecurity profession. The NCWF catalogued the Knowledge, Skills, and Tasks (KSTs) necessary for cybersecurity professionals to protect their organizational information networks. With the vast majority of data breaches caused by social engineering to all organizational users, not only cybersecurity professionals, but a universal benchmark evaluation of all organizational users' cybersecurity competency is necessary to avoid further increase in cyber incidents. This research was based on the NCWF' cybersecurity KSTs to develop a universal cybersecurity competency model, as well as to determine the organizational users' cybersecurity competency. A panel of cybersecurity experts authenticated the cybersecurity KSTs necessary for the universal cybersecurity model. The development of the universal cybersecurity competency model utilized a mixed-method approach for the three-phase data collection. Phase 1 had 42 cybersecurity experts identifying the necessary universal cybersecurity model's KSTs. Phase 1 results contributed towards the construction of Phase 2 semi-structured interview. Phase 2 had 12 cybersecurity experts providing qualitative feedback. The integration of Phase 1 and Phase 2 data validated the universal cybersecurity competency model's KSTs. Phase 3 had 20 cybersecurity experts validating the KST weights and identifying the minimum level of achieving cybersecurity competency by aggregating the KST weights into the universal cybersecurity competency model index. Phase 3 results revealed knowledge as the most important cybersecurity competency, followed by skills and tasks. The qualitative findings revealed organizations should provide training to the organizational users for cybersecurity tasks to mitigate cyber-attacks. The cybersecurity experts ascertained 72% as the minimum level for cybersecurity competency.

Keywords: Cybersecurity knowledge, cybersecurity skills, cybersecurity tasks, cybersecurity competency framework, mixed-method approach.

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An analysis of differences in behaviors and practices of security-conscious users and regular users on mobile devices

[Complete Research]

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Extended Abstract

Mobile devices are widespread worldwide; individuals increasingly use them to check emails, online banking, social media, etc. Previous studies have shown, however, that mobile devices have specific weaknesses and vulnerabilities to security. Security attacks for mobile users have also been on the increase. This study aimed to investigate the differences in security-conscious (group A) and regular (group B) users' behaviors and practices on mobile devices. A survey was used to investigate the differences in behaviors and practices of security-conscious users (group A) and regular users (group B) on mobile devices. Each group had 50 participants, for a total of 100. The analysis revealed that differences are present in the behaviors and practices of security-conscious users and regular users. The results indicated that security-conscious users engage in behaviors and practices that are more secure on mobile devices when compared with regular users. The results will help recommend the best behaviors and practices for mobile device users, increasing mobile device security. The results will help society to be more aware of security behaviors and practices on mobile devices.

Keywords: Mobile devices, mobile security, security-conscious, ransomware, cybersecurity.

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Evaluating state-of-the-art speech recognition systems with focus on low resource languages

[Complete Research]

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Extended Abstract

The correct transcription of speech is a crucial role in different application areas, from subtitling for the hearing impaired, support for e-health applications up to general voice assistants in everyday life. This task is simplified with the emergence of high-performance open (end-to-end) Automatic Speech Recognition (ASR) systems such as OpenAI's Whisper, wav2vec, and the ASRs from the NeMo-framework, especially where automatic transcription must be conducted on-device, as sensitive personal data are affected, or open data demands are required, for e.g., by the European Commission. Furthermore, open offline ASR systems allow gaining model insights or finetune for specific needs. In a previous study (Silber-Varod et al., 2021), we used commercially developed ASR systems with limited "black box" type of access to compare its transcription accuracy in several languages and different genres of speech. This paper extends these previous investigations by utilizing several open-source ASR engines and compares the open-access engines' accuracy for English, German, and Hebrew, but additionally also for low- or under-resourced languages such as Hindi and non-native (L2) English speech. This research focuses on how comparable open ASRs' performance is to the commercial ones and found that the open ASRs gain slightly better recognition accuracy in English and similar accuracy for German and Hebrew, utilizing the same data as in the previous experiment. Additionally, for Hindi and non-native (L2) English speech, the error rates are (as expected) much higher. We contribute these findings to raise awareness for the need of open and accessible ASR models.

Keywords: Open access, Automatic Speech Recognition (ASR), cross language comparison, L2.

Reference:

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Legislation and knowledge for the post accelerating data and knowledge online society (Padkos) and for homo sustainabiliticus sustainable future

[Research-in-Progress]

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Extended Abstract

We, the *Sapiens*, live in a unique period in the history of our species on this planet, defined here as Post Accelerating Data and Knowledge Online Society, (or the 'Padkos' Economy). The accelerating and continuous pace of technological revolutions is unprecedented and their effects on the economy, society and the natural environment are unsettling if not upright disastrous. Also, the shrinking 'half-life of knowledge' and the 'winner takes all' phenomenon will be described. As a result of those mega-trends, the dangers of tri-modal economy and society, and that of the prospects of the *Sapiens* evolving into *Homo Technologicus* will be discussed. *Homo Technologicus* is seen here as a symbiotic entity of human and technology driven by technology, profit, and political interest. An alternative future still might be a possibility but will require a new legal framework and swiftly implemented new legislation. Some legal aspects of such a possibility, which will be defined here as *Homo Sustainabiliticus*, will then be covered. *Homo Sustainabiliticus* is seen here as a symbiotic entity of human and technology driven by holistic human interests taking into consideration the environment, technology (specifically artificial intelligence), as well as the traditional economic, political, social and technological considerations. Specifically, the paper will explore the legal aspect of looking at the guidelines for A.I. management in the context of an extended stakeholder decision-making a framework in both the private and governmental sectors. To the traditional list of stakeholders, we will add the 'nature/environment,' 'artificial intelligence' and the 'foreign intelligence/criminal hackers. This model requires fundamental modifications in the capitalistic model prevalent in most democratic societies. Specifically, capitalistic economies must move away from the goal of short-term profit spikes dictating corporate behavior. These economies must adopt a human-centric, vis a vis, profit-centric, stakeholder model of decision-making in which social responsibility goals share an equal footing with shareholder wealth maximization. Following the discussion regarding the legal aspects of the new technological developments, an updated model of Knowledge Management (KM) for the new 'Padkos' economy will be covered, as well as a framework for Organizational Learning in the context of the circular business model will be stipulated. Finally, we will detail the KM model more in depth. We will close with departing thoughts.

Keywords: the 'Padkos' Economy, Homo Technologicus, Homo Sustainabiliticus, legal framework, stakeholder governance, knowledge management model, artificial intelligence.

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Improving the interdisciplinary knowledge on cybersecurity by easily accessible, open data sources

[Research-in-Progress]

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Extended Abstract

The constantly growing amounts of data, and their Information Technology (IT)-supported, highly networked and largely automatic processing led to increased attack surfaces and threats in the cyberspace. Progressive actors counter the risks through suitable design principles with regard to their IT systems and databases, sometimes also proactively, e.g. through a dedicated open data/open source strategy that at least partially deprives attackers and their business models or political intentions of the effect. In addition, the actors in the cybersecurity network, form alliances and exchange data, e.g. about incidents. Hence, on the one hand, data embodies a main target of cyberattacks, but on the other hand, data can play a key role in cyber resilience.

Due to various factors, e.g. the complexity of modern IT, the high technical variability of attack types as well as state and corporate secrecy, a profound knowledge of methods and mechanisms in cybersecurity is restricted to a specialist community of IT and security experts. Meanwhile, anomalies or attacks are often evaluated automatically. In case of uninformed stakeholders, on the other hand, carelessness or exaggerated fears regarding the current situation can be observed.

Political, economic, social, and individual decisions require an easier access to reliable data on incidents/threats, and support for interpretation, with interdisciplinary approaches having great potential. Transparent and reliable data sources are also important in higher education and further training (e.g. on cyber awareness), chiefly in technical, economic, and administrative disciplines.

The public provision of user-specific, reliable data through an interdisciplinary research network can improve the cybersecurity expertise among interdisciplinary stakeholders, and the up-to-date information on cyber incidents or relevant trends, which allows for better and faster decisions on different political, economic or social levels. This contribution discusses the potential of open government data using the example of the European Repository of Cyber Incidents (EuRepoC), and the strengths, weaknesses, opportunities and threats of such projects. In view of the current Russian war of aggression on Ukraine, including hybrid warfare, some incident constellations are demonstrated in the EuRepoC dashboard, exemplarily reflected by data from annual BSI reports on the state of IT security in Germany, and followed by conclusions on open cybersecurity data.

Keywords: Cybersecurity, interdisciplinary knowledge, cyber threat, cyber incident, open data.

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Federal Office for Information Security, BSI (2022). *The state of IT security in Germany*.

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A quantifiable measure of SMBs' cybersecurity posture: initial feedback from experts on the cybersecurity footprint elements

[Complete Research]

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Extended Abstract

This research introduces the Universal Cybersecurity Footprint Index (UCFI), a framework for quantifying the cybersecurity posture of organizations, suitable for most industries, and especially for SMBs, aiming to measure the organization's Cybersecurity Footprint. The *Theory of Cybersecurity Footprint* (Levy & Gafni, 2021) states that the risk and damage that can be caused by an attacked entity are not directly related to the size of the organization but to a range of parameters that may affect the interconnected entities in their supply chain. The UCFI takes into consideration the interconnectivities of organizations in the supply chain, which causes the cascading effect when an organization suffers a cybersecurity incident. UCFI is expected to help organizations, SMBs in particular, understand the challenges related to their overall cybersecurity posture and to all organizations to be able to assess their connections to other entities in their supply chain, concerning their own Cybersecurity Footprint. The UCFI was developed through several steps. A set of 26 elements aligned with the Cybersecurity Maturity Model Certification (CMMC) 2.0 found by Levy and Gafni (2022) to impact the Cybersecurity Footprint was used. Then a survey was conducted with 27 Subject Matter Experts (SMEs), each with many years of experience in cybersecurity, to reveal the most relevant elements to be included in the UCFI, and then specify their importance level, to calculate their relative weight. Results indicated that 20 of the 26 elements were validated by the SMEs for their relevance to be included in the UCFI, and their weights were calculated. Finally, an equation, conceptualized as a normalized score, representing the UCFI for an organization, and taking into consideration the cascading interconnected supply chain organizations, is introduced. Using the UCFI, an organization can demonstrate to other interconnected organizations the degree of cybersecurity risk and the possible impact of interconnecting it in the supply chain. Organizations can choose their partners according to a minimum value of the UCFI, to reduce their cybersecurity risks.

Keywords: Cybersecurity footprint, cybersecurity posture of small to medium size businesses, cybersecurity posture metrics, experts' feedback.

References:

Levy, Y., & Gafni, R. (2021). Introducing the concept of cybersecurity footprint. *Information and Computer Security, 29*(5), 724-736. https://doi.org/10.1108/ICS-04-2020-0054

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Utilizing knowledge graph for Supporting decision-making processes characterized by limited interaction

[Complete Research]

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Extended Abstract

This study describes an algorithm-based framework, intended to provide an infrastructure to support decision-making processes, characterized by an interaction between an end user and a domain expert, who assist the end user to solve a problem. This type of process can be observed in several content worlds, such as commerce, education medicine, etc. Within this type, we are particularly interested in decision-making processes, which are characterized by the following setup: (a) The process starts once the end user encounters a problem, (b) and refers a request to the domain expert for assistance. (c) Both participate in a real-time interaction, where the domain expert asks questions, and the end user provides the answers. (d) As the interaction is required to be limited as possible, the number of questions asked by the domain expert must be restricted. Based on the above setup, we named this type of process *decision-making process with limited interaction*. The following scenarios include decision-making processes of the above type. They are especially characterized by a requirement for a limited interaction: (a) a meeting between a physician and a patient, (b) a conversation between a service provider and a client.

The purpose of the framework we developed is to support decision-making processes with limited interaction, via a mechanism based on a knowledge graph. The framework suggests to the domain expert a set of refined questions for the end user, which will reduce the cycles of questions and answers. The framework is based on semantic technology, capable of using bigdata, along with a set of algorithms that enable the inference of the refined questions suggested for the domain expert. The suggested framework consists of two parts: the first part formalizes the relevant domain expert's knowledge into semantic technology representation, specifically via a knowledge graph. Knowledge graphs have gained popularity in recent years, whenever a substantial collection of connected data has to be represented. The second part includes a set of interactive algorithms. The problem-related information that the end user provides is inserted as evidence into the graph. As a result, the algorithms infer the next question (based on the stored data) and suggest it to the domain expert. The answers that the end user provides to these questions become the input for the next iteration, thus advancing the decision-making process, until the domain expert is ready to make its decision.

Our framework offers an interactive and explainable decision-making process. Next, we will enhance the data by integrating related-ontologies and enrich the algorithms' inference power.

Keywords: Semantic technology, knowledge graph, semantic reasoning, decision support systems.

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Are new technological applications a risk factor to higher education? A phenomenological research study

[Research-in-Progress]

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Extended Abstract

Artificial intelligence programs are designed to generate sophisticated text in response to any prompt provided by the user. However, the advancement of technology is not always embraced freely by individuals. Fear of new technology contributes many times to misplaced anxiety (Mutch, 2022). With the announcement of artificial intelligence programs, such as OpenAI's ChatGPT, many are questioning the risks to higher education. This research study will investigate the dilemma of higher education institutions' resistance and fear to deploy new emergent artificial intelligent applications in an academic setting. Moreover, the goal is to identify the contributing factors or barriers that prevent the deployment of artificial intelligence applications for the purpose of completing academic work in higher education institutions.

The main goal of this qualitative phenomenological study is to explore the lived experiences, perceptions, and attitudes of about 40 professionals (i.e., Provost, Vice-President of Academic Affairs, Dean, Department Chair, etc.) employed in a higher education institution. Applying the Social Norm and Collaboration theories, this study will investigate and assess the factors perceived to be the contributors or barriers to deploying artificial intelligent applications in the academic classroom. Next, a pilot study will be conducted with a small group representing the target population. The results from the pilot study will ensure the survey elicits the desired responses before continuing with data collection.

Keywords: Artificial intelligence, knowledge sharing, phenomenology study, perceived risk, psychological risk.

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Mixed AI – human codenames teams

[Research-in-Progress]

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Extended Abstract

Codenames is a fascinating, fun, and popular board game played by human teams. It is a competitive game, based on Codemaster and Guesser roles. The Codemaster in each team suggests a single word hint for the Guesser to identify as many words as possible within a given set of randomly allocated words. For example, the Codemaster may suggest the word *pirate* as a hint for the words: *ship*, *sea* and *gold*. Several studies have addressed the Natural Language Processing challenge of incorporating Artificial Intelligence (AI) as a player in the game. Most of them have focused on the results of teams based solely on AI playing both Codemaster and Guesser roles. They measured the success of using the same algorithm for both roles versus having them using different algorithms. Very little attention was directed to human-AI mixed teams, achieving limited success for such mixed teams.

The main strategies used in the literature are based on Word Vectors, Language Graphs, BERT and Transformers. So far, no studies have used strategies that collect data from gamers to train AI algorithms to play the role of Codemaster or Guesser. The novelty of our approach is collecting large amounts of anonymized Codenames data by inviting users to play an online version of Codenames that we're developing. The players' hints and guesses will be stored and used for training a Deep Neural Network to play the game. This will enable us to develop a ML algorithm that will play the game of Codenames in AI-Human mixed teams. In addition, having this corpus of data will also allow us to address interesting research questions related to human-to-human semantic information conveying strategies. For example, it will allow us to identify common characteristics/topics in which humans succeed to convey semantic hints and domains where they often fail.

Keywords: Artificial Intelligence (AI), Natural Language Processing (NLP), Deep Learning, Semantics, Game.

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How is fear of appearing incompetent predicted by authenticity, flourishing, and mediated by mindfulness?

[Research in Progress]

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Extended Abstract

Fear of Appearing Incompetent (FAI) is a prevalent phenomenon in school and the workplace where demonstrating knowledge and competency is a critical part of individuals' role. A few studies to date have scratched the surface of the emotional upheaval related to FAI and none have explored the association or the impact of well-being constructs on mitigating FAI, which our research focuses on.

We used a cross-sectional design to examine the relationship of well-being research staples of authenticity, flourishing, and mindfulness (AFM) with respect to FAI among students. A groundbreaking humanistic management course was developed for undergraduates at a university in the Northeast United States. While taking the course, 800 sophomores completed multiple surveys in the beginning and the end of a semester with 723 valid responses. This course integrated mindfulness, meditation, prosocial, dignity, and social innovation to pioneer pedagogy of *knowing, doing, and being* in business.

We formed three research questions. Q1: Whether the course promotes higher levels of AFM and lower levels of FAI? Q2: Is there a correlation among AFM and FAI? Q3: Whether authenticity and flourishing predict the FAI through mediation of mindfulness. The results for Q1 show that the level of AFM was significantly higher at the end of the course compared to the beginning. For Q2, according to the Pearson's correlation coefficient matrix, AFM were moderately and significant positively correlated. For Q3, we followed the Baron and Kenny (1986)'s mediation analysis with the four-step model.

Although the course failed to reduce students' FAI, the findings show that FAI is predicted by AFM and through mediation of mindfulness. Implications will be discussed at the conference.

Keywords: Fear of appearing incompetent, mindfulness, authenticity, flourishing, management.

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