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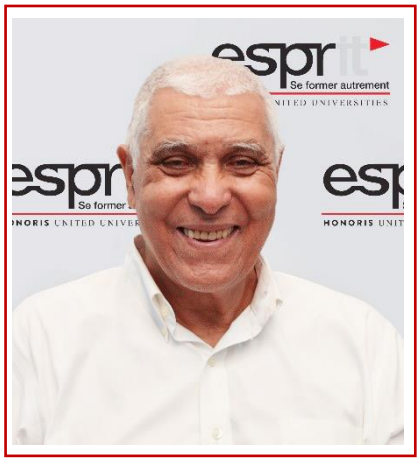
RDI

Research | Development | Innovation

Annual Report

2023-2024 Academic year

esb SCHOOL OF BUSINESS
HONORIS UNITED UNIVERSITIES



“At ESPRIT School of Business, we cultivate a dynamic environment that actively nurtures research and innovation, emphasizing their transformation into meaningful, real-world solutions. Our mission is to channel our research endeavors toward generating actionable outcomes that catalyze socio-economic development within the region. By aligning our initiatives closely with the United Nations Sustainable Development Goals (SDGs), we strive to address pressing global challenges while fostering inclusive growth and sustainability in our communities.”

Professor Tahar Ben Lakhdar, CEO - ESPRIT School of Business

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ESPRIT-Tech

The Research, Development, and Innovation Office

Welcome

ESPRIT School of Business (ESB) is uniquely committed to applied research and innovation, prioritizing RDI activities that yield tangible socio-economic impacts, in alignment with the UN SDGs, while valuing the significance of pure academic research. This year, we continue to witness an increase in research activities and publications, further solidifying our commitment towards knowledge creation and dissemination.

This catalog serves as a gateway to help you explore our diverse spectrum of RDI activities, events, initiatives, and achievements. We eagerly anticipate forging new collaborative RDI partnerships across the local community, private enterprises, and public sectors. These strategic alliances will not only fortify ESB role but will also lay the groundwork for an even more active and impactful contribution to the socio-economic development of Tunisia.

Welcome to a catalog that celebrates innovation, transformation, and the power of collaborations.

Prof. Faouzi Kamoun
Director ESPRIT-Tech
Tel: (216) 99 423 944
Email: faouzi.kammoun@esprit.tn

Research Teams

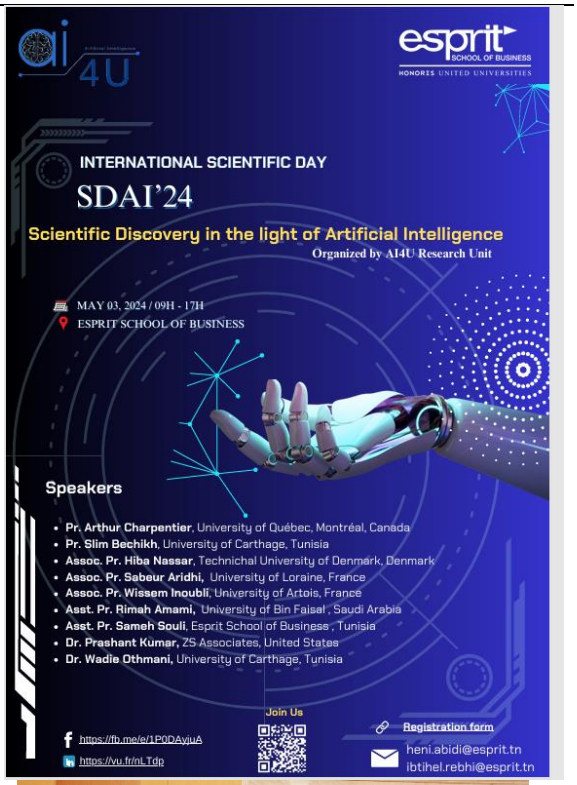
#	Name	Domain	Coordinator	Contact Email address
1	MANOR	Management & Organizations (**Man**agement et **Or**ganisation)	Amina Amri	amina.amri@esprit.tn
2	ECOFIND	Economics, Accounting, Finance & Law (Economie, Comptabilité, FINance & Droit)	Wided Ben Moussa	wided.benmoussa@esprit.tn
4	MARK'In	Marketing	Ines Mestaoui	ines.mestaoui@esprit.tn
5	*IND²*	Innovatio & Sustainable Development (**In**novation et **D**éveloppement **D**urable)	Azza Daboussi Torjeman	azza.daboussi@esprit.tn
6	AI4U	AI for You	Aymen Ben Brik	Aymen.benbrik@esprit.tn

Research Themes

#	Research Team	Research Themes
1	MANOR	⇒ Human Resource management ⇒ Entrepreneurship
2	ECOFIND	⇒ Economics ⇒ Finance and Sustainable Development ⇒ FinTech ⇒ Accounting and Innovation
4	MARK'In	⇒ Digital marketing ⇒ AI & Marketing ⇒ Consumers & Enterprise-related Sustainability
5	*IND²*	⇒ Corporate Social Responsibility & Organizational Innovation ⇒ Social Responsibility of Higher Education Institutions ⇒ Pedagogical Innovation & CSR
6	AI4U	⇒ AI for personalized learning ⇒ Pedagogical innovation – GAI & Metaverse ⇒ ICT integration in Higher Education Institutions

Major organized RDI events 2023-2024

"Scientific Discovery in the light of Artificial Intelligence " SDAI - 2024



The first edition of the "Scientific Discovery in the Light of Artificial Intelligence" (SDAI) event took place on May 3rd, 2024, marking a milestone in fostering international collaboration and dialogue among researchers and professionals in the field of Artificial Intelligence (AI). Organized by the AI4U research team, the event aimed to provide a platform for discussing cutting-edge advancements in AI, its implications across various disciplines, and its role in scientific discovery.

This first edition drew 131 participants, reflecting the growing interest and engagement in AI research and its applications. The event featured nine distinguished experts and specialists, whose contributions highlighted diverse perspectives and experiences. These speakers represented a community from six countries: Tunisia, France, Canada, Denmark, Saudi Arabia, and the United States. This diversity underscored the event's commitment to bridging geographical boundaries. By fostering knowledge exchange, SDAI demonstrated its potential to drive impactful collaborations and innovation in AI.

Sustainable Minds Event

During the period March 1-4, 2024, the Sustainable Social Development (SSD) research team led the organization of the second edition of the Sustainable Mind Hackathon in cooperation with other research teams and faculty from ESPRIT, ESB, ISG and INSAT.

140 students from 9 different institutions took part in this hackathon and more than 30 jury members were actively engaged in the evaluation of the teams' proposals.

In addition, 4 workshops were conducted to raise awareness among students about themes pertaining to SDGs and entrepreneurship.

A panel discussion on Sustainable Development was also held during this event.

Clean and Green 2

The second edition of the Clean & Green event was held on February 17th, 18th, and 21st, 2024.

"Clean and Green" is a collaborative event initiated by the ETM (Esprit Tomorrow's Material) RDI team in collaboration with Esprit School of Business, and students from the Electromechanical and Civil Engineering departments. The event showcases a successful synergy between academic experts and the dynamic student-led ESPRO JUNIOR Enterprises.

Objective

Clean and Green aimed to raise awareness among participants about environmental pollution and to empower students to become the change agents of tomorrow by trying to find innovative solutions to environmental challenges. This event also provided a forum for discussions among researchers, academics, industry stakeholders, and members of various associations to effectively address the environmental challenges.

The event consisted of three stages:

Phase 1: Clean and Green hackathon

The goal of the hackathon was to encourage our students to develop innovative solutions to address environmental pollution while applying the skills they have acquired throughout their academic studies.

Special training was offered during the hackathon on topics pertaining to Design Thinking, pitching, poster creation and video editing.

Phase 2 : Clean and Green Poster Session

This poster session provided an opportunity for students to present their proposed solutions. It facilitated discussions among all participants, including businesses and associations, and provided students with the opportunity to explore startup ventures.

Phase 3 : "Clean and Green" Awareness Day

This event aimed to raise awareness about the environmental dangers posed by waste and to educate the public on the strategies used to mitigate these risks. The event included a series of presentations and activities focused on environmental sustainability and waste management.

Faculty - Ph.D candidates and graduates

During the 2023-2024 academic year, 2 ESB faculty members have successfully completed their PhD degree as illustrated in the table below.

Faculty name	Thesis defense date	Thesis title
Hela Hammami	07/12/2023	Modélisation spatiale des précipitations en Méditerranée : Prise en compte de la non-stationnarité spatiale et des événements extrêmes
Ichraf Dimassi	26/12/2023	« Le luxe seconde main : un luxe chimère : Significations et expression identitaire par le luxe de seconde main. »

In addition, 2 faculty members are currently pursuing their PhD studies at research laboratories affiliated with public universities:

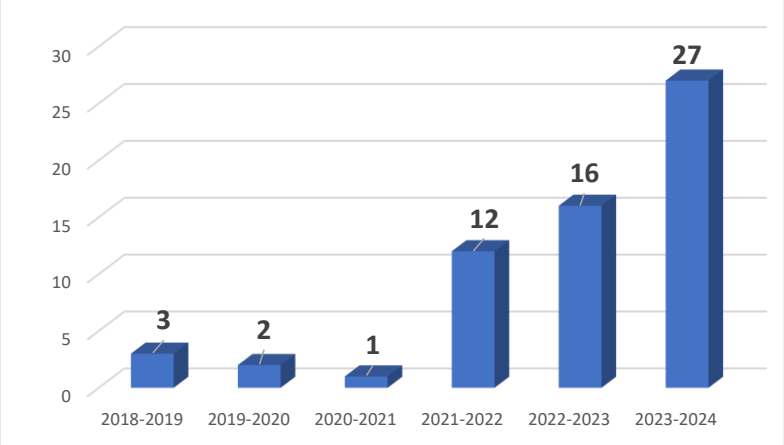
Faculty name	Thesis title
Charfeddine Mariem (FDSPT)	Les interferences entre le Juge et l'arbitre
Jedidi Hela	Bi-objective model of hospital resources allocation problem in emergencies

RDI publications highlights

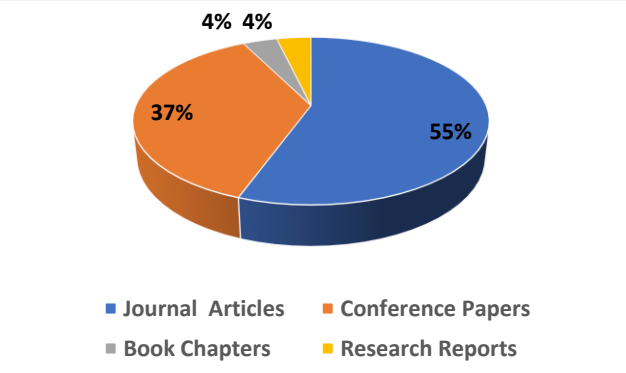
2023-2024 Academic Year (AY)

27 publications

- **15** Peer-reviewed journal articles
- **1** Book chapter
- **10** Peer-reviewed conference papers
- **1** Research Report



Evolution of the number of publications



Repartition of the research publications per type

Research Publications (2023-2024 AY)

#		Type[1]	Abstract on Page #
1	**Kamoun, F.**, **Ayeb, W., Jabri, I.**, Sifi, S., & Iqbal, F. (2024). Exploring students' and faculty's knowledge, attitudes, and perceptions towards ChatGPT: A cross-sectional empirical study. Journal of Information Technology Education: Research, 23(1). https://www.learntechlib.org/p/224875/	JA	18
2	**Sakouhi, Thouraya**, and Jalel Akaichi. (2024). Clustering-based multidimensional sequential pattern mining of semantic trajectories. International Journal of Data Mining, Modelling and Management. https://www.inderscienceonline.com/doi/abs/10.1504/IJDMMM.2024.138825	JA	20
3	Ozili, Peterson K., David Mhlanga, **Rym Ammar**, and Marwa Fersi. (2024). Information effect of fintech and digital finance on financial inclusion during the COVID-19 pandemic: Global evidence." FinTech 3, no. 1 (2024): 66-82. https://www.mdpi.com/2674-1032/3/1/5	JA	21
4	Becuwe, Audrey, Waleed Omri, Isabelle Chalamon, and **Amina Amri**. (2023). Développer la spiritualité au travail pour favoriser la performance individuelle au travail. Recherche en Sciences de Gestion 5 (2023): 275-305. https://shs.cairn.info/revue-recherches-en-sciences-de-gestion-2023-5-page-275?lang=fr	JA	22
5	**Mestaoui, Inès**, Jeff B. Murray, and Hela Zouaoui. (2024), 'I'travel–eye-travel: analysing the paradoxical travel experience between self-promotion and the evil eye. Journal of Marketing Management 40, no. 11-12 (2024): 1058-1081. https://www.tandfonline.com/doi/abs/10.1080/0267257X.2024.2406941	JA	23
6	Chiraz Trabelsi, Rim Amami, **Walid Ben Arbi, Hani Abidi**. Constrained Optimal Control Problem Applied to Vaccination for COVID-19 Epidemic. Nov. 2023. hal-03476454v3 https://hal.science/hal-03476454/document	JA	24
7	Wadie Othmani, **Rym Ammar. (2024).** Assessing tourism capital using two-tiered empirical model, Annals of Tourism Research Empirical Insights, Volume 5, Issue 2, 2024, https://doi.org/10.1016/j.annale.2024.100131. https://www.sciencedirect.com/science/article/pii/S2666957924000132	JA	25
8	Kebir, Amira, Amira Bouhali, **Walid Ben Aribi**, and Slimane Ben Miled. (2023). Age-optimal vaccination strategy for respiratory infectious disease: a constraint-dependant approach. Advance. AUTHOREA, Sagepub. https://advance.sagepub.com/doi/full/10.22541/au.169571176.62627085/v1	JA	26
9	**Abidi, H.**, Amami, R., Pettersson, R. and Trabelsi, C. (2024), L2-convergence of Yosida approximation for semi-linear backward stochastic differential equation with jumps in infinite dimension, Arab Journal of Mathematical Sciences. https://www.emerald.com/insight/content/doi/10.1108/ajms-09-2023-0024/full/html	JA	27
10	**Oussama Gafrej**. (2023). Predicting customer deposits with machine learning algorithms: Evidence from Tunisia. Managerial Finance, 50 (3). https://www.emerald.com/insight/content/doi/10.1108/mf-02-2023-0135/full/html	JA	28
11	Amara, Wided, Abdelaziz Alzahrani, **Ameni Mersani**, Donia Oueslati, Ahmed Elsharabasy, Bandar Hakim, Hatem Rmili, and Atef Elsherbeni. (2024). Nanoarray of Vivaldi Rectenna for Infrared-energy Harvesting. The Applied Computational Electromagnetics Society Journal (ACES) (2023): 513-521. https://journals.riverpublishers.com/index.php/ACES/article/view/24605	JA	29

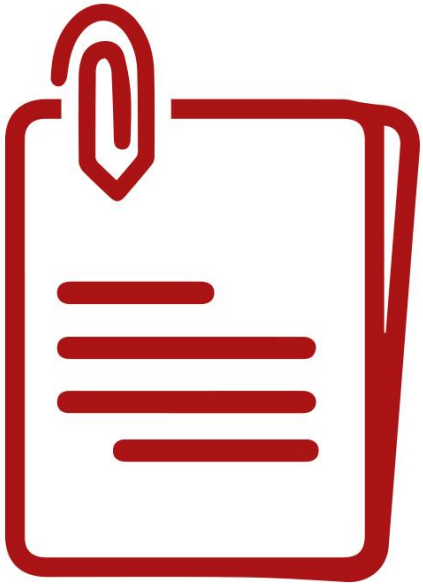
1* JA: Journal Article – CP: Conference paper - BC : Book Chapter - RR: Research Report

#		Type[1]	Abstract on Page #
12	Bechir Naffeti, Hamadi Ammar, **Walid Ben Aribi**. (2024). A Branch and Bound algorithm for multidimensional Holder optimization: Estimation of the age dependent viral hepatitis A infection force, Mathematics and Computers in Simulation, Volume 217, 2024, Pages 311-326 https://www.sciencedirect.com/science/article/abs/pii/S0378475423004597	JA	30
13	Amira Bouhali, **Walid Ben Aribi**, Slimane Ben Miled, Amira Kebir. (2024). Impact of immunity loss on the optimal vaccination strategy for an age-structured epidemiological model. Mathematical Biosciences and Engineering, 2024, 21(6): 6372-6392. doi: 10.3934/mbe.2024278 https://www.aimspress.com/article/id/667cba0aba35de4e76d266b6	JA	31
14	Kouka, Najwa, Rahma Fourati, **Asma Baghdadi**, Patrick Siarry, and M. Adel. (2024). A Mutual Information-Based Many-Objective Optimization Method for EEG Channel Selection in the Epileptic Seizure Prediction Task. Cognitive Computation 16, no. 3 (2024): 1268-1286. https://link.springer.com/article/10.1007/s12559-024-10261-9	JA	32
15	Bouallegue, S. Lachaab, M. and **Rebhi,I**. (2024). The Antecedents and behavioral outcomes of tourism destination image: The moderating role of travel motivation and tourist's region. European Journal of Business and Management Vol.16, No.7, 2024. https://iiste.org/Journals/index.php/EJBM/article/view/62574	JA	33
16	**Kamoun, F**., Iqbal, F., Zeresenay, S., Khalid, Z., Ikuesan, R., & Abraham, S. (2024). Metaverse Forensics: A Preliminary Analysis of Opportunities and Challenges. Forecasting Cyber Crimes in the Age of the Metaverse, 182-208. https://www.igi-global.com/chapter/metaverse-forensics/334501	BC	34
17	**Faouzi Kamoun, Aymen Ben Brik, Ibtihel Rebhi, Salsabil Besbes, Heni Abidi, Asma Baghdadi, Rym Ammar**. (2024). ChatGPT As a Co-Pilot for Assessment Design Refinement: An Exploratory Study**.** Proceedings of the 20th International CDIO Conference, Tunis, Tunisia. https://cdio.esprit.tn:9080/documents/1717975824465-229_b_final.pdf	CP	35
18	Kakon, Laura, Asmaâ Fenniri, Benjamin Lisimachio, and **Faouzi Kamoun**. (2024). Enhancing Quality Education at Scale through Generative AI and Adaptive Learning Systems. Proceedings of the 20th International CDIO Conference, Tunis, Tunisia https://cdio.esprit.tn:9080/documents/1717971968955-210_b_Final.pdf	CP	36
19	**Souli, Sameh, Souhir Lajnef**, and Rimah Amami. (2024). The Impact of AI Tools in Pedagogical Innovation and Adaptive Learning. Proceedings of the 20th International CDIO Conference, Tunis, Tunisia https://cdio.esprit.tn:9080/documents/1717972204798-266_c_Final.pdf	CP	37
20	Zouaoui, H., **Mestaoui, I**., Belk, R.W. (2024). Little ball of fur…or fat?": Cultural meanings of having obese pets & related dieting program. 2024 Consumer Culture Theory Conference, San Diago, USA. 11 - 14 Jul 2024. https://www.cctc2024.com/_files/ugd/d490e5_ef9c8229193e4ce3b577b0aa1a5b872b.pdf	CP	38
21	**Benzarti, S**., Tebourski, W., Karaa, W.B.A. (2024). D-MiQ: Deep Multimodal Interactive Healthcare Query Expansion Approach for Web Search Engines Retrieval Effectiveness. In: Nguyen, N.T., et al. Recent Challenges in Intelligent Information and Database Systems. ACIIDS 2024. Communications in Computer and Information Science, vol 2144. Springer, Singapore. https://doi.org/10.1007/978-981-97-5937-8_12 https://link.springer.com/chapter/10.1007/978-981-97-5937-8_12	CP	39

#		Type[1]	Abstract on Page #
22	**Benzarti, Sabrine**, Wafa Tebourski, and Wahiba Ben Abdessalem Karaa. (2024). Toward a Deep Multimodal Interactive Query Expansion for Healthcare Information Retrieval Effectiveness. In International Conference on Advanced Information Networking and Applications, pp. 369-379. Cham: Springer Nature Switzerland, 2024. https://link.springer.com/chapter/10.1007/978-3-031-57853-3_31	**CP**	**40**
23	**Imen Mbarki,** Muhammad Abubakr Naeem, Mohamed ShafiuAllah. (2024). Crises and risk Spillovers in Agricultural Commodities, Proceedings of the International Conference on Sustainable Business Practices in a VUCA World,- ICSBP 2024, May 9-10, Rabat, Morocco. In-Press.	**CP**	**41**
24	Faten Tebourbi, **Meriem Chichti**, Idriss Mahjoubi . (2024). Implementing Ai-Driven Tools in UX Design Course in Engineering and Business Education. Proceedings of the 20th International CDIO Conference, Tunis, Tunisia. https://cdio.esprit.tn:9080/documents/1717975118167-151_b_Final.pdf	**CP**	**42**
25	Othmani, W., & **Ammar, R**. (2023). Étude du rythme de vie de la station de Zermatt (Suisse) à l'aide de méthodes visuelles pour mesurer le concept du capital touristique. 9èmes Rendez-vous Champlain, Excelia Business School, LaRochelle, du 9 au 11 octobre 2023	**CP**	**43**
26	**Ichraf Dimassi** (2023). The Hybrid Identity of Second-Hand Luxury: A Semiotic Approach. 20ème Colloque International de l'Association Tunisienne de Marketing, ATM 2023. Hammamet. Tunisia. 20-21 October. https://atm2023.sciencesconf.org/data/pages/Programe_ATM2023_Version_Finaleee.pdf	**CP**	**44**
27	**Wided Ben Moussa** (UNCTAD Statistics Team contributor) et al. (2023). UNCTAD SDG Pulse 2023, 5th edition, UNCTAD's annual statistical publication reporting on developments relating to the 2030 Agenda for Sustainable Development (United Nations, 2015) and the SDGs. https://unctad.org/system/files/official-document/stat2023d3_en.pdf	**RR**	**45**

Appendix:

Paper Abstracts



Exploring students' and faculty's knowledge, attitudes, and perceptions towards ChatGPT: A cross-sectional empirical study

Faouzi Kamoun, Walid Ayeb, Ibtissem Jabri, Sami Sifi, Farkhund Iqbal

ABSTRACT

Aim/Purpose: This study explores the Knowledge, Attitude, and Perception (KAP) towards ChatGPT among university students and faculty. It also examines the faculty's readiness to cope with the challenges and leverage the opportunities presented by AI-powered conversational models.

Background: Launched on November 30, 2022, ChatGPT took the world by storm with its capability to generate high-quality written expressions in a conversational manner. The reactions to this innovation varied, from enthusiasm regarding its potential to enrich students' learning to concerns about its threat to students' cognitive development and academic integrity. A systematic exploration of students' and faculty's KAP towards ChatGPT can play an important role in addressing the multifaceted dimensions of AI-driven conversational models.

Methodology: This study employs a cross-sectional survey research design based on questionnaires distributed to 145 faculty members, as well as 855 undergraduate and graduate students at the ESPRIT School of Engineering and School of Business. The student sample was based on stratified and convenience sampling, while the faculty sample was based on a consensus sampling approach.

Contribution: To the best of our knowledge, this is the first reported study that contributes to understanding the KAP of students and faculty towards ChatGPT, as well as the readiness of faculty to effectively adopt AI-driven conversational models. Furthermore, our research contributes to the body of knowledge by taking Vygotsky's (1978) principle of social interaction and its role in promoting cognitive development to a new level by hypothesizing that if students were to acquire the competencies to actively engage with AI-driven chatbots in meaningful discussions and collaborative conversations, they might be able to develop some higher-order thinking skills further.

Findings: Our results indicated that faculty demonstrated a higher level of ChatGPT knowledge than students and that more than 40% of surveyed students and faculty expressed some trust in the reliability of ChatGPT's responses, a perception that does not align with reality. Faculty attitude towards ChatGPT was comparatively more reserved compared to that of students and showcased varying opinions. Furthermore, the surveyed faculty showcased a more negative perception of ChatGPT than students, and they expressed a greater degree of skepticism. Our research revealed that 63.4% of surveyed faculty reported that they lack the requisite training and resources to integrate ChatGPT into their pedagogical practices.

Recommendations for Practitioners: HEIs should take appropriate measures to enhance students' and faculty's knowledge, attitude, and perception regarding ChatGPT to stimulate ethical, meaningful, innovative, and engaging interactions and learning experiences. Recommendation for Researchers: Our study has shed light on some moderating factors that shape the acceptance of AI-driven conversational models and some adoption barriers. It delves into the perceptions, biases, and misconceptions held by both students and faculty, thereby providing a basis for future investigations on the effective integration of AI-driven conversational models in higher education.

Impact on Society: This research provides new insights that can harness the potential merits of ChatGPT in enhancing students' learning while mitigating potential pitfalls. It suggests facilitating open forums and dialogues among students, faculty, employers, and other key stakeholders to debate the impact of AI-driven conversational models on students' learning and faculty's teaching and assessment.

Future Research: We invite researchers to conduct cross-cultural studies on this topic while also taking into consideration a qualitative research design approach. Future research can also test the hypothesis that AI-driven conversational models inhibit critical thinking by facilitating the passive consumption of information.

KEYWORDS

Academic Integrity, AI-driven conversational model, Attitude, ChatGPT Generative Pre-trained Transformer , knowledge Perception, student ethics, technology adoption

Kamoun, F., Ayeb, W., Jabri, I., **Sifi, S.**, & Iqbal, F. (2024). Exploring students' and faculty's knowledge, attitudes, and perceptions towards ChatGPT: A cross-sectional empirical study. Journal of Information Technology Education: Research, 23(1). https://www.learntechlib.org/p/224875/

Clustering-based multidimensional sequential pattern mining of semantic trajectories

Sakouhi, Thouraya, and Jalel Akaichi

ABSTRACT

Knowledge discovery from mobility data is about identifying behaviours from trajectories. In fact, mining masses of trajectories is required to have an overview of this data, notably, investigate the relationship between different entities movement. Most state-of-the-art work in this issue operates on raw trajectories. Nevertheless, behaviours discovered from raw trajectories are not as rich and meaningful as those discovered from semantic trajectories. In this paper, we establish a mining approach to extract patterns from semantic trajectories. We propose to apply sequential pattern mining based on a pre-processing step of clustering to alleviate the former's temporal complexity. Mining considers the spatial and temporal dimensions at different levels of granularity providing then richer and more insightful patterns about humans behaviour. We evaluate our work on tourists semantic trajectories in Kyoto. Results showed the effectiveness and efficiency of our model compared to state-of-the-art work.

KEYWORDS

Mobility data, trajectories, semantic modelling, sequential pattern mining, clustering, mobility pattern

Sakouhi, Thouraya, and Jalel Akaichi. (2024). Clustering-based multidimensional sequential pattern mining of semantic trajectories. International Journal of Data Mining, Modelling and Management.

https://www.inderscienceonline.com/doi/abs/10.1504/IJDMMM.2024.138825

Information Effect of Fintech and Digital Finance on Financial Inclusion during the COVID-19 Pandemic: Global Evidence

Ozili, Peterson K., David Mhlanga, **Rym Ammar**, and Marwa Fersi

ABSTRACT

The lockdown restrictions during the COVID-19 pandemic led to increased interest in Fintech and digital finance solutions, and it gave people an incentive to join the formal financial sector by owning a formal account. People became interested in information about Fintech and digital finance solutions, and it led them to search the Internet to obtain information about Fintech, digital finance, and financial inclusion. In this study, we investigate whether interest in Internet information about Fintech and digital finance led to interest in Internet information about financial inclusion during the COVID-19 pandemic. Using global data that capture interest over time, we found that interest in information about Fintech was greater in developed countries while interest in information about financial inclusion was greater in developing countries during the pandemic. Interest in Fintech information was strongly correlated with interest in financial inclusion information during the pandemic. Interest in Fintech information had a significant positive effect on interest in financial inclusion information during the pandemic. There is a unidirectional causality between interest in Fintech information and interest in financial inclusion information during the pandemic. The implication of these findings is that interest in Fintech information is an important determinant of interest in financial inclusion information.

KEYWORD

Information; digital finance; financial inclusion; Fintech; Internet; COVID-19; pandemic; financial technology; financial innovation; web search; Google Trends

Ozili, Peterson K., David Mhlanga, **Rym Ammar**, and Marwa Fersi. (2024). Information effect of fintech and digital finance on financial inclusion during the COVID-19 pandemic: Global evidence." FinTech 3, no. 1 (2024): 66-82. https://www.mdpi.com/2674-1032/3/1/5

Développer la spiritualité au travail pour favoriser la performance individuelle au travail

Becuwe, Audrey, Waleed Omri, Isabelle Chalamon, and **Amina Amri**

ABSRACT (English version)

This article examines the relationship between work spirituality, innovation behaviour, and individual performance, based on social exchange theory. Drawing on a sample of 214 nurses, the results validate the direct impact of workplace spirituality on individual performance. Furthermore, they show that innovative behaviour mediates the relationship between work spirituality and individual work performance. In terms of managerial contributions, our results invite the development of human resource policies and managerial practices that promote spirituality and innovative behaviour.

KEYWORDS

Innovative workplace behavior , Workplace spirituality , Individual performance , Social exchange theory.

Becuwe, Audrey, Waleed Omri, Isabelle Chalamon, and **Amina Amri**. (2023). Développer la spiritualité au travail pour favoriser la performance individuelle au travail. Recherche en Sciences de Gestion 5 (2023): 275-305. https://shs.cairn.info/revue-recherches-en-sciences-de-gestion-2023-5-page-275?lang=fr

‘I’travel–eye-travel: analysing the paradoxical travel experience between self-promotion and the evil eye

Mestaoui, Inès, Jeff B. Murray, and Hela Zouaoui

ABSTRACT

Through a qualitative research with in-depth interviews with Tunisian travellers and netnography on travel related blogs, we aim to investigate how connected technologies modified imaginaries in the travel experience through the (non)sharing behaviour. Findings demonstrate a related expressed paradoxical behaviour swinging between ‘self-promotion’ and ‘evil eye’: the former being the desire to be socially visible and included, and the latter is the fear of being jinxed by others. Accordingly, we identify five different travellers’ profiles. We conclude that paradoxical social imaginaries of both worldviews can coexist within the travel experience, leading to an incredible complexity and a continuous oscillation between both.

KEYWORDS

Travel experience sharing, qualitative research, social imaginaries, self-promotion, evil eye

Mestaoui, Inès, Jeff B. Murray, and Hela Zouaoui. (2024), ‘I’travel–eye-travel: analysing the paradoxical travel experience between self-promotion and the evil eye." Journal of Marketing Management 40, no. 11-12 (2024): 1058-1081.

https://www.tandfonline.com/doi/abs/10.1080/0267257X.2024.2406941

Chiraz Trabelsi, Rim Amami, **Walid Ben Arbi, Hani Abidi**

ABSTRACT

COVID-19 remains a major threat to the world since its emergence in December 2019, especially the lack of identification of a specific treatment, as scientific researchers continue to seek a better understanding of the epidemiological cycle and dynamics of the virus. In this work, we propose a dynamic mathematical model framework governed by a system of differential equations that integrates COVID-19 outbreaks, which is an extension of the standard SEAIR model. An optimal control problem is formulated with the aim of minimizing the number of infected individuals while considering intervention costs and the constraints of the total and maximum daily vaccine administration. We use the penalty method to approximate this constrained optimization problem and derive an optimality system that characterizes the optimal control. Finally, we carry out some numerical simulations.

KEYWORDS

Covid-19 Epidemic, SEAIR, ordinary differential equations, Optimal control problem, penality method.

Chiraz Trabelsi, Rim Amami, **Walid Ben Arbi, Hani Abidi**. Constrained Optimal Control Problem Applied to Vaccination for COVID-19 Epidemic. Nov. 2023. hal-03476454v3

https://hal.science/hal-03476454/document

Assessing tourism capital using two-tiered empirical model

Wadie Othmani, **Rym Ammar**

ABSTRACT

The study aims to develop a novel approach to assess Tourism Capital in resort areas, specifically Zermatt-Matterhorn, between 2014 and 2021. This approach integrates a two-tiered empirical model, where the first tier involves CNN-based image analysis, and the second tier employs mathematical techniques and time-series social media data to evaluate stakeholder engagement. The research emphasizes how fluctuations in tourism capital are influenced by stakeholder interactions and external events, highlighting the significance of empirical and quantitative approaches in understanding tourism dynamics. The findings underscore the substantial role of stakeholder engagement in shaping overall tourism capital, offering a practical and dynamic tool for tourism analysis and urban planning. This study innovatively assesses Tourism Capital by analyzing Instagram images, offering a more in-depth, data-driven view of tourism development in resorts.

KEYWORDS

Tourism capital, Visual methods, Deep learning, Time series, InstagramZermatt

Wadie Othmani, **Rym Ammar**. (2024). Assessing tourism capital using two-tiered empirical model, Annals of Tourism Research Empirical Insights, Volume 5, Issue 2, 2024, https://doi.org/10.1016/j.annale.2024.100131.

https://www.sciencedirect.com/science/article/pii/S2666957924000132

Age-optimal vaccination strategy for respiratory infectious disease: a constraint-dependant approach

Kebir, Amira, Amira Bouhali, **Walid Ben Aribi**, and Slimane Ben Miled

ABSTRACT

After the vaccine implementation for COVID-19, the WHO set a unified vaccination approach to be adopted by all different countries. However, given the various constraints including vaccine availability, heterogeneous age distributions, and differing control measures across countries, questions arise about the optimality of the WHO strategy. In this study, we develop an age-structured SEIR epidemic model with vaccinated and unvaccinated compartments to optimize age-targeted vaccination strategies for COVID-19, incorporating realistic constraints. The model equilibria and the basic reproduction number R_0 are checked. Moreover, mathematical formulation and analysis of optimal control problem, are conducted. The model is calibrated to COVID-19 data and simulated to solve the optimal control problem under various vaccination and distancing scenarios. Results demonstrate that the optimal strategy strongly depends on the population age distribution and contact patterns. Findings emphasize the significance of age-specific disease transmission in designing vaccination priorities, particularly when vaccine supplies are constrained. The model provides a quantitative framework to inform optimal allocation strategies in a general way that allows to adapt the model for other infectious diseases exhibiting similar features to Covid-19.

KEYWORDS

Optimal Control, epidemiology, Vaccine, COVID-19, age-structured model.

Kebir, Amira, Amira Bouhali, **Walid Ben Aribi**, and Slimane Ben Miled. (2023). Age-optimal vaccination strategy for respiratory infectious disease: a constraint-dependant approach. Advance. AUTHOREA. Sagepub.

https://advance.sagepub.com/doi/full/10.22541/au.169571176.62627085/v1

L2-convergence of Yosida approximation for semi-linear backward stochastic differential equation with jumps in infinite dimension

Hani Abidi, Rim Amami, Roger Pettersson, Chiraz Trabelsi

ABSTRACT

Purpose

The main motivation of this paper is to present the Yosida approximation of a semi-linear backward stochastic differential equation in infinite dimension. Under suitable assumption and condition, an L2-convergence rate is established.

Design/methodology/approach

The authors establish a result concerning the L2-convergence rate of the solution of backward stochastic differential equation with jumps with respect to the Yosida approximation.

Findings

The authors carry out a convergence rate of Yosida approximation to the semi-linear backward stochastic differential equation in infinite dimension.

Originality/value

In this paper, the authors present the Yosida approximation of a semi-linear backward stochastic differential equation in infinite dimension. Under suitable assumption and condition, an L2-convergence rate is established.

KEYWORDS

Backward stochastic differential equation with jumps, Gelfand triple, Yosida approximation, 60H15, 35R60, 93E20.

Abidi, H., Amami, R., Pettersson, R. and Trabelsi, C. (2024), L2-convergence of Yosida approximation for semi-linear backward stochastic differential equation with jumps in infinite dimension, Arab Journal of Mathematical Sciences.

https://www.emerald.com/insight/content/doi/10.1108/ajms-09-2023-0024/full/html

Predicting customer deposits with machine learning algorithms: Evidence from Tunisia

Oussama Gafrej

ABSTRACT:

Purpose

This paper aims to evaluate the performance of the multiple linear regression (MLR) using a fixed-effects model (FE) and artificial neural network (ANN) models to predict the level of customer deposits on a sample of Tunisian commercial banks.

Design/methodology/approach

Training and testing datasets are developed to evaluate the level of customer deposits of 15 Tunisian commercial banks over the 2002–2021 period. This study uses two predictive modeling techniques: the MLR using a FE model and ANN. In addition, it uses the mean absolute error (MAE), R-squared and mean square error (MSE) as performance metrics.

Findings

The results prove that both methods have a high ability in predicting customer deposits of 15 Tunisian banks. However, the ANN method has a slightly higher performance compared to the MLR method by considering the MAE, R-squared and MSE.

Practical implications

The findings of this paper will be very significant for banks to use additional management support to forecast the level of their customers' deposits. It will be also beneficial for investors to have knowledge about the capacity of banks to attract deposits.

Originality/value

This paper contributes to the existing literature on the application of machine learning in the banking industry. To the author's knowledge, this is the first study that predicts the level of customer deposits using banking specific and macroeconomic variables.

Oussama Gafrej. (2023). Predicting customer deposits with machine learning algorithms: Evidence from Tunisia. Managerial Finance, 50 (3).

https://www.emerald.com/insight/content/doi/10.1108/mf-02-2023-0135/full/html

Nanoarray of Vivaldi Rectenna for Infrared-energy Harvesting

Amara, Wided, Abdelaziz Alzahrani, **Ameni Mersani**, Donia Oueslati, Ahmed Elsharabasy, Bandar Hakim, Hatem Rmili, and Atef Elsherbeni

ABSTRACT

This article presents the design of an array of rectennas operating at 28.3 THz for infrared (IR) energy harvesting applications. The basic element of the array consists of a Vivaldi-dipole rectenna composed of two arms made with different conductors (gold and titanium). A metal-insulator-metal (MIM) tunnel diode is used to rectify the THz ac current. The proposed MIM diode consists of a very thin layer of Al2O3 sandwiched between the two metal electrodes. Arrays of two, three, and four rectennas are investigated. The improvement of the energy captured by coupling several elements in the same structure with a common gap is also investigated. This array architecture, without feeding network, may reduce the number of rectifying diodes and, therefore, decrease losses and increase the overall efficiency. Finally, it has been found that the four-elements rectenna array has a maximum electric field intensity of 62.4 × 104 V/m at 28.3 THz.

KEYWORDS

Energy harvesting, infrared (IR) energy, MIM diode, rectenna, THz, Vivaldi antenna array

Amara, Wided, Abdelaziz Alzahrani, **Ameni Mersani**, Donia Oueslati, Ahmed Elsharabasy, Bandar Hakim, Hatem Rmili, and Atef Elsherbeni. (2024). Nanoarray of Vivaldi Rectenna for Infrared-energy Harvesting. The Applied Computational Electromagnetics Society Journal (ACES) (2023): 513-521.

https://journals.riverpublishers.com/index.php/ACES/article/view/24605

A Branch and Bound algorithm for multidimensional Holder optimization: Estimation of the age-dependent viral hepatitis A infection force

Bechir Naffeti, Hamadi Ammar, **Walid Ben Aribi**

ABSTRACT

In the present framework, we develop a branch and bound multidimensional Holder optimization method. This method is composed of two subroutines. The first one allows converting the multivariate objective function into a single variable one using the alpha-dense space fitting curves. In the second subroutine, we minimize the single variable function resulting from the first subroutine. To achieve this task, we develop a novel iterative optimization method reducing the feasible region in each iteration taking into account the property of Holder of the objective function. We apply this method to solve a parameters identification problem resulting from the modelling of the spread of viral hepatitis A in the central west of Tunisia following the increase in the number of infections. The Tunisian health authorities wanted to know the prevalence and the infection force of the virus in order to identify the situation and take the necessary measures. The modelling leads to a minimization problem of the least square multivariate error between the observed values and the theoretical ones. Besides, we implement the proposed method in some numerical experiments to evaluate its efficiency.

Bechir Naffeti, Hamadi Ammar, **Walid Ben Aribi**. (2024). A Branch and Bound algorithm for multidimensional Holder optimization: Estimation of the age dependent viral hepatitis A infection force, Mathematics and Computers in Simulation, Volume 217, 2024, Pages 311-326

https://www.sciencedirect.com/science/article/abs/pii/S0378475423004597

Impact of immunity loss on the optimal vaccination strategy for an age-structured epidemiological model

Amira Bouhali, **Walid Ben Aribi**, Slimane Ben Miled, Amira Kebir

ABSTRACT

The pursuit of effective vaccination strategies against COVID-19 remains a critical endeavour in global public health, particularly amidst challenges posed by immunity loss and evolving epidemiological dynamics. This study investigated optimal vaccination strategies by considering age structure, immunity dynamics, and varying maximal vaccination rates. To this end, we formulated an SEIR model stratified into age classes, with the vaccination rate as an age-dependent control variable in an optimal control problem. We developed an objective function aimed at minimising critical infections while optimising vaccination efforts and then conducted rigorous mathematical analyses to ensure the existence and characterization of the optimal control. Using data from three countries with diverse age distributions, in expansive, constrictive, and stationary pyramids, we performed numerical simulations to evaluate the optimal age-dependent vaccination strategy, number of critical infections, and vaccination frequency. Our findings highlight the significant influence of maximal vaccination rates on shaping optimal vaccination strategies. Under constant maximal vaccination rates, prioritising age groups based on population demographics proves effective, with higher rates resulting in fewer critically infected individuals across all age distributions. Conversely, adopting age-dependent maximal vaccination rates, akin to the WHO strategy, may not always lead to the lowest critical infection peaks but offers a viable alternative in resource-constrained settings.

KEYWORDS

Optimal control, epidemiology, long-term vaccination, COVID-19, age-structured model

Amira Bouhali, **Walid Ben Aribi**, Slimane Ben Miled, Amira Kebir. (2024). Impact of immunity loss on the optimal vaccination strategy for an age-structured epidemiological model. Mathematical Biosciences and Engineering, 2024, 21(6): 6372-6392. doi: 10.3934/mbe.2024278

https://www.aimspress.com/article/id/667cba0aba35de4e76d266b6

A Mutual Information-Based Many-Objective Optimization Method for EEG Channel Selection in the Epileptic Seizure Prediction Task

Kouka, Najwa, Rahma Fourati, **Asma Baghdadi**, Patrick Siarry, and M. Adel

ABSTRACT

Epileptic seizure prediction using multi-channel electroencephalogram (EEG) signals is very important in clinical therapy. A large number of channels lead to high computational complexity with low model performance. To improve the performance and reduce the overfitting that arises due to the use of unrelevant channels, the present paper proposed a channel selection method to study the brain region activation related to epileptic seizure. Our method is bio-inspired and cognitive since it integrates the novel binary many-objective particle swarm optimization with a ConvLSTM model. The proposed method has two advantages. First, it performed a new initialization strategy based on channel weighting with mutual information, thereby promoting the fast convergence of the optimization algorithm. Second, it captures spatio-temporal information from raw EEG segments thanks to the ConvLSTM model. The selected sub-channels are optimized as many-objective optimization problem that includes maximizing F1-score, sensitivity, specificity, and minimizing the ratio rate of selected channels. Our results have shown a performance of up to 97.94% with only one EEG channel. Interestingly, when using all the EEG channels available, lower performance was achieved compared to the case when EEG channels were selected by our approach. This study revealed that it is possible to predict epileptic seizures using a few channels, which provides evidence for the future development of portable EEG seizure prediction devices.

KEYWORDS

Seizure prediction, Binary many-objective optimization, EEG channel selection, ConvLSTM

Kouka, Najwa, Rahma Fourati, **Asma Baghdadi**, Patrick Siarry, and M. Adel. (2024). A Mutual Information-Based Many-Objective Optimization Method for EEG Channel Selection in the Epileptic Seizure Prediction Task. Cognitive Computation 16, no. 3 (2024): 1268-1286.

https://link.springer.com/article/10.1007/s12559-024-10261-9

Antecedents and behavioral outcomes of tourism destination image: The moderating role of travel motivation and tourist's region

Sabrine Bouallègue, Mohamed Lachaab, **Ibtihel Rebhi**

ABSTRACT

The goal of this research is to identify the antecedents and behavioral outcomes of destination image, as well as to investigate the mediating influence of destination image and the moderating effects of tourists' region and travel motivation. A quantitative survey of 400 tourists in Tunisia was done to achieve these goals, and structural equation modeling, a multi-group analysis, and Sobel's test were utilized. The findings indicate that the destination image mediates the relationship between its antecedents (E-WOM and travel experience) and behavioral outcomes. Furthermore, the results demonstrate that the tourist's region and the high level of travel motivation have a moderating impact on the relationship between the destination image and its antecedents as well as the relationship between the destination image and its consequences. These results lead important practical contributions to tourism marketing practitioners on improving the destination image perception as a key element to provide behavioral intentions through exciting memorable experience and positive online contents about a destination. Moreover, tourism businesses can better segment their visitors who have a high level of travel motivation. The results of this paper can bring successful marketing strategies for the tourism industry.

KEYWORDS

Destination image, e-WOM, tourism experience, travel motivation, tourist's region, behavioral outcomes

Bouallegue, S. Lachaab, M. and **Rebhi,I**. (2024). The Antecedents and behavioral outcomes of tourism destination image: The moderating role of travel motivation and tourist's region. European Journal of Business and Management Vol.16, No.7, 2024. https://iiste.org/Journals/index.php/EJBM/article/view/62574

Metaverse Forensics: A Preliminary Analysis of Opportunities and Challenges

Faouzi Kamoun, Farkhund Iqbal, Siem Zeresenay, Zainab Khalid, Richard Ikuesan, Sened Abraham

ABSTRACT

The metaverse is poised to offer an immersive virtual environment for people to meet, socialize, collaborate, play, and conduct business transactions. Although the metaverse has not yet reached its full maturity, it has already been misused to launch illegal activities that can jeopardize the safety and well-being of individuals, and cause harm to organizations. Despite its increased importance, "metaverse forensics" remains an unexplored research topic. This chapter starts by reviewing the state-of-the-art research related to metaverse cybersecurity threats and underlying ethical, privacy, and legal issues. It then presents the results of a forensic investigation analysis performed on the VRChat and AltspaceVR metaverse platforms. The authors present new insights into metaverse forensics in terms of accessing digital containers and retrieving useful information for forensic investigators. Additionally, they highlight the primary obstacles encountered in metaverse digital forensic investigations and put forth recommendations for future research directions.

Kamoun, F., Iqbal, F., Zeresenay, S., Khalid, Z., Ikuesan, R., & Abraham, S. (2024). Metaverse Forensics: A Preliminary Analysis of Opportunities and Challenges. Forecasting Cyber Crimes in the Age of the Metaverse, 182-208.

https://www.igi-global.com/chapter/metaverse-forensics/334501

Faouzi Kamoun, Aymen Ben Brik, Ibtihel Rebhi, Salsabil Besbes, Heni Abidi, Asma Baghdadi, Rym Ammar

ABSTRACT

The evaluation of students' attainment of course learning outcomes is a fundamental aspect of a successful engineering program, exemplified by CDIO Standard 11 'Learning Assessment'. However, earlier research has identified a prevailing gap in assessment competency among faculty. Rooted in established interdisciplinary concepts and theories, this study aims to explore the usage of ChatGPT-4 as a co-pilot to guide faculty in assessment design refinement. To achieve this goal, we adopt a conversational analysis approach, contextualizing our study within the settings of the final exam of the senior course “Wireless Sensor Networks”, offered at ESPRIT School of Engineering. We propose a framework to guide the implementation of the conversational analysis method. Our research results illustrate the merits, potentials, and limitations of using ChatGPT as a copilot to assist faculty in refining the assessment design process. It also brings into evidence the importance of keeping a ‘human in the loop’ perspective during the faculty-ChatGPT assessment co-creation activities. Our study can pave the way for further research on other potential applications of “Human-AI co-creation” and augmented man-machine intelligence in a CDIO engineering education.

KEYWORDS

Learning assessment, CDIO, Generative AI, ChatGPT, Engineering education, co-creation, Standards: 10, 11.

Faouzi Kamoun, Aymen Ben Brik, Ibtihel Rebhi, Salsabil Besbes, Heni Abidi, Asma Baghdadi, Rym Ammar. (2024). ChatGPT As a Co-Pilot for Assessment Design Refinement: An Exploratory Study. Proceedings of the 20th International CDIO Conference, Tunis, Tunisia. https://cdio.esprit.tn:9080/documents/1717975824465-229_b_final.pdf

Kakon, Laura, Asmaâ Fenniri, Benjamin Lisimachio, and **Faouzi Kamoun**

ABSTRACT

In March 2024, Honoris United Universities is set to launch a pioneering course incorporating AI-generated learning materials and Adaptive Learning Systems (ALS) across its network. This contribution reports on an in-progress pilot study related to the conception, design, implementation, and assessment of an ALS, targeting a self-paced online short course about the United Nations Sustainable Development Goals (SDGs), Diversity, Equity, and Inclusion (DE&I), and Work Ethics, and tailored for the African context. The course includes two AI applications. The first one utilizes a Generative AI engine built on the top of a proprietary Large Language Model (LLM) to curate appropriate learning materials relevant to each nano- learning objective of the course. The second application lies in delivering the course to the learner in adaptive learning mode, leveraging a proprietary ALS that personalizes the learning pathway based on each learner's individual pace, progress, and comprehension. We first report on an empirical study that aimed to probe the initial student and faculty Knowledge, Attitude, and Perception (KAP) towards ALS before finalizing the design and implementation stages. Conducting this pre-intervention KAP survey offers several opportunities, such as providing baseline data of the current state of the KAP levels for benchmarking purposes, addressing potential misconceptions, biases, and concerns, enhancing end-users' adoption, and reinforcing a user-centric design approach. We then describe the process and the workflow adopted for the pilot course's design, creation, and implementation. In future, we plan to conduct a post-implementation empirical study, and assess outcomes from both students and teachers' perspectives. This includes evaluating students learning outcomes, engagement, and satisfaction, alongside the faculty perception and feedback on the effectiveness, relevance, and scalability of ALS. Our research aims to showcase in practical settings how to leverage the potential of ALS to expedite the curation of learning materials on a large scale and at reduced costs. Furthermore, it explores constructing adaptive learning courses designed to enhance access to quality education on a broad scale.

KEYWORDS

Adaptive Learning Systems, Personalized learning, AI-generated learning materials, Learner's satisfaction, Quality of education at scale, Sustainability, CDIO Syllabus 3.0, Standards 2, 3, 7, 9, and 11.

Kakon, Laura, Asmaâ Fenniri, Benjamin Lisimachio, and **Faouzi Kamoun**. (2024). Enhancing Quality Education at Scale through Generative AI and Adaptive Learning Systems. Proceedings of the 20th International CDIO Conference, Tunis, Tunisia.
https://cdio.esprit.tn:9080/documents/1717971968955-210_b_Final.pdf

The Impact of AI Tools in Pedagogical Innovation and Adaptive Learning

Sameh Souli, Souhir Lajnef, Rimah Amami

ABSTRACT

This research paper explores the transformative impact of AI tools on pedagogical innovation and adaptive learning. Through a comprehensive analysis of diverse educational settings, we investigate how AI technologies enhance personalized learning experiences, cater to individual learning styles, and contribute to the evolution of teaching methodologies. The study also addresses potential challenges and ethical considerations associated with the integration of AI in education. By examining case studies and emerging trends, this research aims to provide valuable insights for educators, policymakers, and researchers navigating the dynamic intersection of artificial intelligence and pedagogy.

KEYWORDS

Pedagogical Innovation, Adaptive Learning, evolution of teaching, AI in education, Standards:

2,8,11

Souli, Sameh, Souhir Lajnef, and Rimah Amami. (2024). The Impact of AI Tools in Pedagogical Innovation and Adaptive Learning. Proceedings of the 20th International CDIO Conference, Tunis, Tunisia

https://cdio.esprit.tn:9080/documents/1717972204798-266_c_Final.pdf

“Little ball of fur…or fat?”: Cultural meanings of having obese pets & related dieting programs

Hela Hela Zouaoui , **Ines Mestaoui** , Russell Belk

ABSTRACT

This is an ongoing qualitative investigation regarding the extension of cultural meanings of obesity to pets and related dieting programs through interviews with owners of (fat) pets and veterinarians. Perceptions of fat in pets are fluctuating from “cute” to “unhealthy” with the recognition that it is mainly a consequence of what their owners feed them.

KEYWORDS

Obese pets, courtesy stigma, qualitative research, pet care

Zouaoui, H., **Mestaoui, I.**, Belk, R.W. (2024). Little ball of fur…or fat?”: Cultural meanings of having obese pets & related dieting program. 2024 Consumer Culture Theory Conference, San Diago, USA. 11 - 14 Jul 2024.
https://www.cctc2024.com/_files/ugd/d490e5_ef9c8229193e4ce3b577b0aa1a5b872b.pdf

D-MiQ: Deep Multimodal Interactive Healthcare Query Expansion Approach for Web Search Engines Retrieval Effectiveness

Benzarti, Sabrine, Wafa Tebourski, and Wahiba Ben Abdessalem Karaa

ABSTRACT

Health Information Retrieval (HIR) has become the new trend that tries to respond in an efficient, relevant, and satisfying way to specific users' information requirements. The dilemma is that the health care domain ought to have its own vocabularies which mainly impact the quality of the HIR process results. Keywords queries are frequently defined using several lexical variants thus leading to the Vocabulary Mismatch phenomena (VM). Hence, more rigorous efforts are required in the health information retrieval domain in general and in query formulation especially to assist either clinicians' practitioners or non-specialist during their daily retrieval practice. In this paper, we propose a novel approach that combines the clinical diagnosis generation via deep image captioning, Unified Medical Language System unique concept detection to get the best query formulation combination for an enhanced query. To ensure an efficient HIR process we refine the query by the user. Experimental results procured for the well-used search engines such as Google and Bing showed that when we used our D-MiQ query formulation, results effectiveness is considerably improved. Funding demonstrates that the utilization of merging various techniques is a valuable addition to the Query Expansion (QE) process leading to significantly improved precision rate by over 68% and reduced VM in Health Information Retrieval

Benzarti, S., Tebourski, W., Karaa, W.B.A. (2024). D-MiQ: Deep Multimodal Interactive Healthcare Query Expansion Approach for Web Search Engines Retrieval Effectiveness. In: Nguyen, N.T., et al. Recent Challenges in Intelligent Information and Database Systems. ACIIDS 2024. Communications in Computer and Information Science, vol 2144. Springer, Singapore. https://doi.org/10.1007/978-981-97-5937-8_12

https://link.springer.com/chapter/10.1007/978-981-97-5937-8_12

Toward a Deep Multimodal Interactive Query Expansion for Healthcare Information Retrieval Effectiveness

Benzarti, Sabrine, Wafa Tebourski, and Wahiba Ben Abdessalem Karaa

ABSTRACT

The emerging trend of Health Information Retrieval (HIR) aims to efficiently address users' specific information requirements. However, a beyond challenge arises in the healthcare domain due to the necessity for specialized dictionaries, which influence the outcomes of HIR. The Vocabulary Mismatch (VM) phenomenon necessitates more robust efforts in the Health Information Retrieval domain, mainly in query formulation. It is crucial to support clinicians, biomedical scientists, and non-specialists in their daily retrieval endeavors. In this paper, we propose an innovative approach that combines deep image captioning for clinical diagnosis generation then MetaMap normalization, and finally a user involvement step. This combination aims to optimize query formulation task for an enhanced query and an efficient HIR process. Experimental results, conducted on widely used search engines such as Google and Bing, reveal that our approach has demonstrated its effectiveness by enhancing result quality and delivering documents from reliable sources. It has significantly improved the user experience, ensuring relevant results appear within the top five ranking links. The findings demonstrate that the integration of various techniques is a valuable enhancement to the Query Expansion (QE) process, resulting in a notable increase in weighted precision rates by around the twofold a MAP to over 70% and an apparent reduction in Vocabulary Mismatch for Healthcare Information Retrieval.

Benzarti, Sabrine, Wafa Tebourski, and Wahiba Ben Abdessalem Karaa. (2024). Toward a Deep Multimodal Interactive Query Expansion for Healthcare Information Retrieval Effectiveness. In International Conference on Advanced Information Networking and Applications, pp. 369-379. Cham: Springer Nature Switzerland, 2024.

https://link.springer.com/chapter/10.1007/978-3-031-57853-3_31

Crises and risk Spillovers in Agricultural Commodities

Imen Mbarki, Muhammad Abubakr Naeem, Mohamed ShafiuAllah

ABSTRACT

Since the surge in the FAO price index, that has precipitated the "food crisis" in 2007, a particular interest among academicians and policy makers has been drawn to the agriculture market. Motivated by the financialization of commodities and the microeconomic theory implications, this study aims to investigate the risk interconnectedness among agricultural commodities and analyze how this interconnectedness behaves during various types of crises. We achieve this using the novel R^2 connectedness framework. We use a daily dataset covering 17 agricultural commodities categorized into three groups (Softs, Livestock, and Grains & Oilseeds). The period spans between January 2001 and June 2023. The empirical results exhibit clustering among commodities belonging to the same group. Staple commodities dominate the R_2 risk spillover networks. Throughout the crises, the R^2 dependency soars and a consistent pattern emerges, with Grains & Oilseeds and Softs commodities demonstrating a tendency to be net receivers of risk. Notably, staple food items exhibit a higher level of dependency on external risks. Remarkably, health crises and geopolitical risks have similar impacts on risk interconnections and Rice seems shielded from the turbulence in other agricultural commodities during extreme events. We compared our estimations to other relevant models and the insights remain consistent.

KEYWORDS

Geopolitical risk – agriculture – commodity – R2 connectedness – risk -crises

Imen Mbarki, Muhammad Abubakr Naeem, Mohamed ShafiuAllah. (2024). Crises and risk Spillovers in Agricultural Commodities, Proceedings of the International Conference on Sustainable Business Practices in a VUCA World,- ICSBP 2024, May 9-10, Rabat, Morocco. In-Press.

Implementing AI-Driven Tools in UX Design Course in Engineering and Business Education

Faten Tebourbi, **Meriem Chichti**, Idriss Mahjoubi

ABSTRACT

Pedagogical transformations aim to improve the learning process. These innovations in training/teaching methods are crucial within the evolving economic landscape and technological advancements. Previous work on design thinking for CDIO curriculum development demonstrated that learning experience in a multi-disciplinary environment and human-centric approach help students learn in an innovative process. This article is about UX Design, which is also a user-centered process, but which focuses on optimizing the user experience when using technological products. The aim of our endeavour is to implement AI tools in UX design taught to engineering and business students at Esprit, allowing them to be immersed in the realm of industry 4.0. Incorporating AI tools into user research methods during the UX design process in our curricula not only optimized the acquisition of essential data for students, but also fostered their skills in data analysis. In addition, it allows teachers to level up the complexity of the designed learning outcomes. In this regard, we explore how effective and engaging pedagogical methods using AI-driven tools could be in engineering and business education. Indeed, our programs are aligned with CDIO syllabus, we aim to cultivate a multifaceted skill set, covering knowledge, attitude, and skills development. Moreover, the utilization of AI promotes a positive attitude toward embracing technological advancements, encouraging adaptability and a forward-thinking mindset. In terms of skills, students sharpen their strategic product design abilities, honing a crucial competence in navigating the intersection of AI technology and human-centered design practices. To illustrate this, we present a case study showcasing how the integration of AI tools in our curriculum has enabled students to navigate complex challenges effectively and teachers to update learning outcomes for enriched learning experience. Moreover, we examine the impact of these pedagogical transformations and AI integration, in conjunction within the CDIO context in our programs. We also share our survey findings to reinforce the efficacy of our approach showing that it could be adopted in different fields. We conclude by drawing up a reflective practice process to ensure an insightful integration of innovative tools into curriculum design helping our students to address their needs in a dynamic technological landscape.

KEYWORDS

Human-Centric Design, AI-driven pedagogical approach, Lifelong learning, CDIO standards 3.0, Standards :1, 2, 5, 8.

Faten Tebourbi, **Meriem Chichti**, Idriss Mahjoubi . (2024). Implementing Ai-Driven Tools in UX Design Course in Engineering and Business Education. Proceedings of the 20th International CDIO Conference, Tunis, Tunisia. https://cdio.esprit.tn:9080/documents/1717975118167-151_b_Final.pdf

Étude du rythme de vie de la station de Zermatt (Suisse) à l'aide de méthodes visuelles pour mesurer le concept du capital touristique

A Study of Zermatt Station's Lifestyle (Switzerland) Using Visual Methods to Assess the Concept of Tourism Capital

Wadie Othmani & **Rym Ammar**

ABSTRACT

This research focuses on the measurement and evaluation of tourist capital, specifically within the context of urban spaces and tourist destinations. Traditional studies often overlook the experiential dimension and fail to address factors such as temporality, seasonality, and the evaluation of resources from the perspectives of both stakeholders and users (tourists, potential tourists, and residents). Building on the concept of tourist capital, this study aims to expand beyond economic evaluation by incorporating a broader understanding of resource usage. Using image classification through deep learning techniques, the study aggregates visual data from Instagram, classifying images into ten categories and then grouping them into five sub-capitals. The study case focuses on Zermatt, analyzing Instagram data from 2015 to 2021. The results reveal trends such as the impact of events like COVID-19 and seasonal fluctuations. This research proposes a new empirical model for measuring tourist capital that accounts for different dimensions, temporal and seasonal variations, and experiential aspects, offering a more holistic approach to tourism management and planning.

KEYWORDS

Tourist Capital, Instagram Data, Deep Learning, Seasonal Fluctuations, Urban Space Evaluation

Othmani, W., & **Ammar, R**. (2023). Étude du rythme de vie de la station de Zermatt (Suisse) à l'aide de méthodes visuelles pour mesurer le concept du capital touristique. 9èmes Rendez-vous Champlain, Excelia Business School, LaRochelle, du 9 au 11 octobre 2023

The Hybrid Identity of Second-Hand Luxury: A Semiotic Approach

Ichraf Dimassi

ABSTRACT

The evolution of the current era testifies to a revival in the consumption of luxury products. More accessible to the masses, the luxury industry today is faced with a significant challenge: the sale of luxury products in alternative second-hand markets. Using a semiotic analysis of 20 interviews conducted with Tunisian consumers, we highlight the meanings given to the products, which lead to the construction of a definition. It emerges that the products are a category apart, forcing the luxury industries to revise their management of products/brands

KEYWORDS

Luxury, second hand, semiotic, vintage

Ichraf Dimassi (2023). The Hybrid Identity of Second-Hand Luxury: A Semiotic Approach. 20ème Colloque International de l'Association Tunisienne de Marketing, ATM 2023. Hammamet. Tunisia. 20-21 October.

https://atm2023.sciencesconf.org/data/pages/Programe_ATM2023_Version_Finaleee.pdf

UNCTAD SDG Pulse 2023

Wided Ben Moussa (UNCTAD Statistics Team contributor) et al

ABSTRACT (Extract from the Foreword introduction of the report)

In times of high uncertainty, credible data and statistics give us solid ground to shape debates and inform decisions. This 2023 edition of the Pulse helps us understand and navigate our progress towards the 2030 Agenda at a time where global cascading crises are threatening its very survival. According to the SDG Progress Report (United Nations, 2023a), only 12 per cent of SDG targets are on track for achievement by 2030. This SDG Pulse zooms into this alarming story. The fifth edition of SDG Pulse shows that too many countries have indeed fallen back from their targets due to several factors, including unrelenting economic shocks, worsening climate change impacts, and fragmenting international cooperation. Furthermore, we track how bleak conditions for financing for development – marked by insufficient growing debt distress, concentrated FDI flows, and the lack of multilateral development investments at scale – have led to rising inequalities between and within countries.

With this background, the 2023 SDG Pulse explores new sources for financing development, sharing the first-ever preliminary estimates for an SDG indicator on illicit financial flows, worked alongside the UNODC and the UN Regional Commissions. We also launched a global project to support interested countries of the South to report data on a new SDG indicator on development support, including South-South cooperation based on a voluntary framework developed by the countries.

This SDG Pulse also elaborates on the challenges of the energy transition. The world needs a 45 per cent cut in emissions by 2030, but early data indicate continued increase of emissions in 2022 after another record-breaking year in 2021. New technology has driven cuts in carbon intensity and most regions achieved a 5 per cent reduction in 2021. The boom in electric car sales and cleaner energy hold promise but remain out of reach for many. Investment in climate mitigation and renewables increased significantly in developed economies in 2021. But the poorest and most vulnerable were left behind in the green transition…….

Rebeca Grynspan Secretary-General of UNCTAD

KEYWORDS

UN SDGs, sustainable development, sustainability, SDG statistics, SDG reporting

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https://unctad.org/system/files/official-document/stat2023d3_en.pdf

www.esb.tn

Campus ESB Lot N° 46, Z.I Chotrana II,

2088, Ariana, Tunisia

Tél : +216 70 685 685