EDITORIAL

Artificial intelligence and machine learning research: towards digital transformation at a global scale

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Artificial intelligence (AI) is reshaping how we live, learn, and work. Until recently, AI used to be a fanciful concept, more closely associated with science fiction rather than with anything else. However, driven by unprecedented advances in sophisticated information and communication technology (ICT), AI today is synonymous technological progress already attained and the one yet to come in all spheres of our lives (Chui et al. 2018; Lytras et al. 2018, 2019).

Considering that Machine Learning (ML) and AI are apt to reach unforeseen levels of accuracy and efficiency, this special issue sought to promote research on AI and ML seen as functions of data-driven innovation and digital transformation. The combination of expanding ICT-driven capabilities and capacities identifiable across our socio-economic systems along with growing consumer expectations vis-a-vis technology and its value-added for our societies, requires multidisciplinary research and research agenda on AI and ML (Lytras et al. 2021; Visvizi et al. 2020; Chui et al. 2020).

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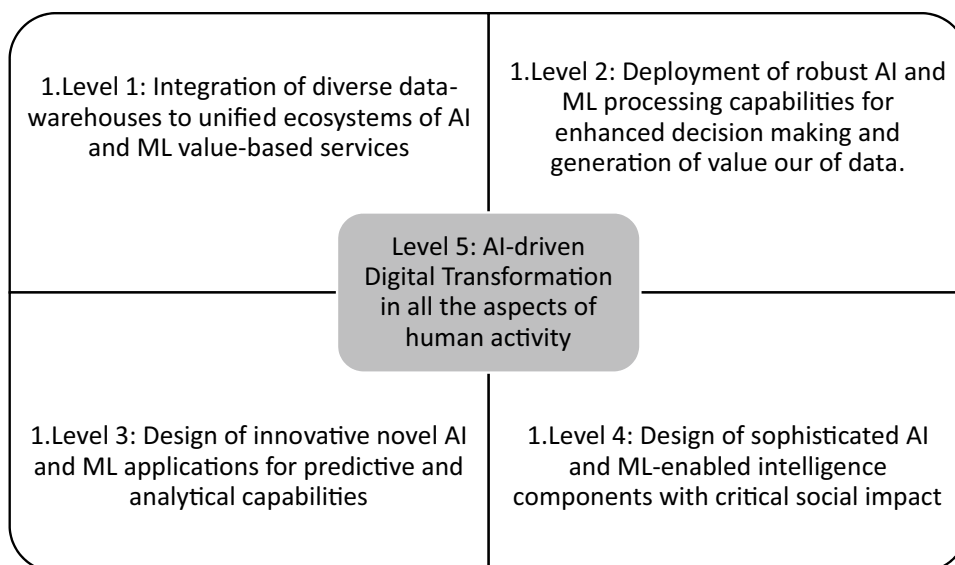mlytras@acg.edu

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Such a research agenda should oscilate around the following five defining issues (Fig. 1):

(1) Integration of diverse data-warehouses to unified eco-systems of AI and ML value-based services
(2) Deployment of robust AI and ML processing capabilities for enhanced decision making and generation of value our of data.
(3) Design of innovative novel AI and ML applications for predictive and analytical capabilities
(4) Design of sophisticated AI and ML-enabled intelligence components with critical social impact
(5) Promotion of the Digital Transformation in all the aspects of human activity including business, healthcare, government, commerce, social intelligence etc.

Such development will also have a critical impact on government, policies, regulations and initiatives aiming to interpret the value of the AI-driven digital transformation to the sustainable economic development of our planet. Additionally the disruptive character of AI and ML technology and research will required further research on business models and management of innovation capabilities.

This special issue is based on submissions invited from the 17th Annual Learning and Technology Conference 2019 that was held at Effat University and open call jointly. Several very good submissions were received. All of them were subjected a rigorous peer review process specific to the Ambient Intelligence and Humanized Computing Journal.

A variety of innovative topics are included in the agenda of the published papers in this special issue including topics such as:

- Stock market Prediction using Machine learning
- Detection of Apple Diseases and Pests based on Multi-Model LSTM-based Convolutional Neural Networks
- ML for Searching

Fig. 1 An AI-Driven Digital Transformation in all aspects of human activity/ Source: The Authors

1.Level 1: Integration of diverse data-warehouses to unified ecosystems of AI and ML value-based services	1.Level 2: Deployment of robust AI and ML processing capabilities for enhanced decision making and generation of value our of data.
Level 5: AI-driven Digital Transformation in all the aspects of human activity	
1.Level 3: Design of innovative novel AI and ML applications for predictive and analytical capabilities	1.Level 4: Design of sophisticated AI and ML-enabled intelligence components with critical social impact

- Machine Learning for Learning Automata
- Entity recognition & Relation Extraction
- Intelligent Surveillance Systems
- Activity Recognition and K-Means Clustering
- Distributed Mobility Management
- Review Rating Prediction with Deep Learning
- Cybersecurity: Botnet detection with Deep learning
- Self-Training methods
- Neuro-Fuzzy Inference systems
- Fuzzy Controllers
- Monarch Butterfly Optimized Control with Robustness Analysis
- GMM methods for speaker age and gender classification
- Regression methods for Permeability Prediction of Petroleum Reservoirs
- Surface EMG Signal Classification
- Pattern Mining
- Human Activity Recognition in Smart Environments
- Teaching–Learning based Optimization Algorithm
- Big Data Analytics
- Diagnosis based on Event-Driven Processing and Machine Learning for Mobile Healthcare

Over a decade ago, Effat University envisioned a timely platform that brings together educators, researchers and tech enthusiasts under one roof and functions as a fount for creativity and innovation. It was a dream that such platform bridges the existing gap and becomes a leading hub for innovators across disciplines to share their knowledge and exchange novel ideas. It was in 2003 that this dream was realized and the first Learning & Technology Conference was held. Up until today, the conference has covered a variety of cutting-edge themes such as Digital Literacy, Cyber Citizenship, Edutainment, Massive Open Online Courses, and many, many others. The conference has also attracted key, prominent figures in the fields of sciences and technology such as Farouq El Baz from NASA, Queen Rania Al-Abdullah of Jordan, and many others who addressed large, eager-to-learn audiences and inspired many with unique stories.

While emerging innovations, such as Artificial Intelligence technologies, are seen today as promising instruments that could pave our way to the future, these were also the focal points around which fruitful discussions have always taken place here at the L&T. The (AI) was selected for this conference due to its great impact. The Saudi government realized this impact of AI and already started actual steps to invest in AI. It is stated in the Kingdome Vision 2030: "In technology, we will increase our investments in, and lead, the digital economy." Dr. Ahmed Al Theneyan, Deputy Minister of Technology, Industry and Digital Capabilities, stated that: "The Government has invested around USD 3 billion in building the infrastructure so that the country is AI-ready and can become a leader in AI use." Vision 2030 programs also promote innovation in technologies. Another great step that our country made is establishing NEOM city (the model smart city).

Effat University realized this ambition and started working to make it a reality by offering academic programs that support the different sectors needed in such projects. For example, the master program in Energy Engineering was launched four years ago to support the energy sector. Also, the bachelor program of Computer Science has tracks in Artificial Intelligence and Cyber Security which was launched in Fall 2020 semester. Additionally, Energy & Technology and Smart Building Research Centers were

established to support innovation in the technology and energy sectors. In general, Effat University works effectively in supporting the KSA to achieve its vision in this time of national transformation by graduating skilled citizen in different fields of technology.

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