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Editorial

Special Issue: Artificial intelligence and computational intelligence

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We are delighted to present this special issue, dedicated to the fascinating realm of "Artificial intelligence and computational intelligence". In an era marked by rapid technological advancements and transformative breakthroughs, this issue brings together a collection of insightful research papers that delve into the realms of artificial and computational intelligence, showcasing the profound impact these fields have on our modern world.

Artificial intelligence (AI) has emerged as one of the most significant technological frontiers of our time. With its ability to mimic human cognitive functions, AI is revolutionizing industries, from healthcare to finance, from transportation to education. The papers featured in this special issue reflect the diversity and potential of AI, addressing critical topics such as graph attention network, cyber-physical systems, and computer vision. Each of these papers provides valuable contributions to the ongoing AI revolution. Computational intelligence (CI) is another facet of our digital landscape that deserves significant attention. As technology becomes increasingly complex and interconnected, CI serves as the driving force behind the optimization of algorithms, the enhancement of decision-making processes, and the harnessing of the power of data. The papers within this issue explore cutting-edge CI techniques that promise to shape the future of problem-solving, data analysis, and intelligent systems.

Both AI and CI are areas of research with vast implications for the world we live in. They enable us to tackle complex problems, predict future trends, and develop systems that learn and adapt. In the face of these exciting advancements, the special issue encompasses a range of disciplines, presenting diverse research insights that cater to the interdisciplinary nature of AI and CI.

This special issue is dedicated to showcasing the latest advancements in artificial intelligence and computational intelligence techniques and fostering the exchange of innovative ideas. After undergoing a rigorous review process, 15 papers have been deemed worthy of publication. Drawing on the relevance and originality of these contributions and recognizing their latest advances in algorithm development and practical application, we have selected six of them for introduction as follows.

The paper titled "*MSGraph: Modeling multi-scale k-line sequences with graph attention network for profitable indices recommendation*" by C. Wang et al. [1], introduces MSGraph, a novel approach aimed at enhancing index ranking performance by capturing correlations between short and long-term historical embeddings through the use of a graph attention network. Comparative results demonstrate that their method achieves state-of-the-art performance across all evaluation metrics.

The paper titled "*Integrating artificial intelligence in cybersecurity for cyber-physical systems*" by M. Alowaidi et al. [2], introduces a framework for Cyber-Physical Business Systems based on Artificial Intelligence (CPBS-AI). It provides an overview of various safety risks across different levels of Cyber-Physical Systems, discusses threat modeling, and outlines the scientific challenges in creating effective security solutions. The research presents a comprehensive assessment of current static detection and tracking capabilities, highlighting their limitations in identifying runtime security attacks stemming from hibernation or uncertainty. The overall system effectiveness is reported at approximately 96.01%.

In the paper titled "*A model of amacrine cells for orientation detection*" by F. Yuan et al. [3], a simple and efficient orientation detection model is proposed, based on a perceptron. This model aims to elucidate the neural circuitry of orientation-selective cells in the retina. Experimental comparisons with convolutional neural networks for image orientation recognition confirm the model's proficiency in orientation detection, offering a new perspective on understanding orientation-selective cell neural circuits.

The paper titled "*Blockchain-assisted cybersecurity in medical things using artificial intelligence*" by M. Alshehri [4], presents a blockchain-integrated cybersecurity solution, BICS-AI, designed for the safeguarding of medical-related data and devices. The use of blockchain technology for decentralized data protection is employed to secure patient health records from potential breaches. The research introduces a lightweight solution that allows for the delegation of security operations and affirms the viability of the proposed system.

The paper titled "*Improving performance of decision threshold moving-based strategies by integrating density-based clustering technique*" by M. Lu et al. [5], introduces an enhanced algorithm named CDTM, which divides majority training instances into various density regions and conducts the Decision Threshold-Moving (DTM) procedure independently in each region. The authors leverage the DBSCAN clustering algorithm to adapt to density variations effectively. Experimental results demonstrate the superiority of the CDTM algorithm over several other state-of-the-art DTM algorithms, particularly in terms of the G mean performance metric.

In the paper titled "*Portrait age recognition method based on improved ResNet and deformable convolution*" by J. Xi et al. [6], an enhanced portrait age recognition algorithm is introduced, based on ResNet architecture. The approach employs CORAL (Consistent Rank Logits) rank-ordered regression, instead of traditional classification, for precise age prediction. Further improvements are made by incorporating deformable convolution (DCN), resulting in the DCNR model. Comparative testing of DCN-R34 and DCN-R50 against the state-of-the-art models demonstrates better results with equivalent complexity.

In summary, the accepted articles exhibit a commendable level of quality and offer valu-able insights into AI and CI techniques. This special issue wouldn't have been possible without the rigorous efforts of our contributors. The authors, who have spent countless hours researching, experimenting, and refining their ideas, have shared their valuable insights with the community. We extend our heartfelt thanks to these talented researchers for their contributions.

As we navigate the evolving landscape of AI and CI, we anticipate that this special issue will serve as a source of inspiration, knowledge, and collaboration for researchers, professionals, and enthusiasts. As it often happens in young research areas, research is driven by specific applications that suggest the development of a variety of new techniques. The papers featured herein touch upon the exciting possibilities that these fields offer, and we believe they will spark new ideas, initiatives, and hoping to enrich these different research directions all.

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