

EDITORIAL

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Editorial: Special Section on Human-Centered Artificial Intelligence with Big Data Applications

Reference

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In recent years, human-centered artificial intelligence (AI) has become the most promising research domain in both industrial and academic areas worldwide. AI is the next step on the journey from big data to full automation. Human needs are the motivation behind improvements in computing paradigms. In the aforementioned areas, system-generated information such as smart devices, sensors, agents, and meters—as well as human-generated information such as texts, photos, and videos—lead to a tremendous amount of data while new levels of security, performance, and reliability are required. This Special Section aims to highlight the unique areas of human-centered AI with big data applications and various innovations in multidiscipline areas, while also presenting technical evidence and its countermeasure.

This Special Section aims to identify the emerging artificial intelligence with big data in all human-centered (HC) related areas. It consists of up-to-date, state-of-the-art research contributions with novel designs and developments of intelligent application, perception, and security methods in human-centered AI, to enhance the reliability and feasibility of HC in real-world applications.

The first three papers by Zhang et al., Huang and Liu, and Qing et al. deal with performance and effect analysis of China's financial venture capital development, multimedia-assisted children's tennis skills, and agglomeration in the middle reach of the Yangtze River. Shree et al. propose a new fusion-based agricultural synthetic aperture radar (SAR) image despeckling by using anisotropic diffusion and discrete wavelet transform method. SAR images have applications in various fields. Speckle noise, which has the characteristic of multiplicative noise, degrades the image quality of SAR images, which causes information loss. This study proposes a speckle noise reduction algorithm while using the speckle reducing anisotropic diffusion filter, discrete wavelet transform to remove speckle noise.

The papers by Ren and Cui, Zhang, and Zhang and Li concentrate on the use of multimedia technology in college English reading teaching, gymnastics teaching, and musical drama teaching. They show that multimedia technology has a positive influence on college education, as it promotes scientific, advanced, and vivid development of college physical education. However, there are still problems in the application of multimedia technology in college physical education; for example, the problem in the links between multimedia teaching and traditional teaching and in the great influence of courseware on teaching effects. So it is necessary to accelerate multimedia technology development, strengthen the application of multimedia technology in college education, achieve proper cooperation between traditional and multimedia teaching, and enrich multimedia courseware and its effect. Yao et al. review the general application of multimedia technology in teaching innovation. Li et al. propose a design and implementation of multimedia technology-assisted English vocabulary teaching courseware for industrial engineering majors. Zhang et al. deal with the development and experimental research of multimedia courseware for hurdle running.

Jena et al. focus on the thermo-mechanical characterization of rice husk filled carbon-reinforced hybrid polymer composites. Rice husk (RH) is a natural sheath that forms around rice grains during their growth. As a type of natural fiber obtained from agro-industrial waste, RH can be used as filler in composites materials in various polymer matrices. Wu addresses the asymmetric impact of inflation in financial development. This study analyzes the asymmetric effects of financial development on economic growth using a model augmented with inflation and asymmetries to inform model specification. The appropriate policies that favor low inflation and reduced expansion of feasibly reformed financial institutions, capital accumulation, and increased resource mobilization should be instituted if real growth is to positively happen.

Ouyang et al., Priyadharshini et al., Krithika and Subramani, Gomathi et al., and Thangavel et al. deal with industrial development, such as the study on damage tests based on structure and operating parameters of wire ropes used by conveyors in orchards; development of intelligent smart metering system through remote monitoring and control under robust conditions; neural network-based drive cycle analysis for parallel hybrid electric vehicle; design fabrication and performance analysis of intelligent mesoscale capacitive accelerometer for vibration measurement; and dynamic modeling and control analysis of industrial electro-mechanical servo positioning system using machine learning technique.

Pratheep et al. focuses on the genetic algorithm-based robust controller for an inverted pendulum using model order reduction. This paper considered proportional-integral optimized with a genetic algorithm controller on the inverted pendulum for the control of the angle position. The obtained results show that the GA-based PID controller confirms the enhanced performance indexes by holding minimum settling time and peak overshoot on comparing with the conventional PID controller. Tao et al. propose the existence of k -people stable alliance in n -player cooperative games. This paper considers the existence of a stable k -cooperative alliance with a nonempty core in an n -person cooperative game on the premise that the Nash negotiation solution is the distribution criterion. Also, this article provides sufficient conditions for the benefits of all players in a k -man alliance to lie in its internal sub alliance.