

Advanced Engineering Informatics

Special Issue on Emerging Learning Technologies for Future of Work and Education in Engineering

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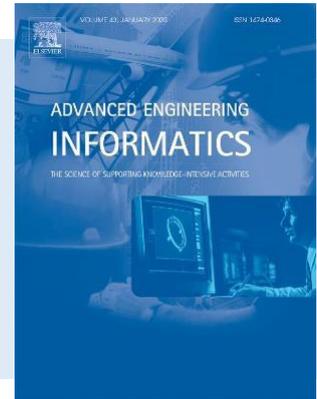
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Call for Papers

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Special Issue on *Emerging Learning Technologies for Future of Work and Education in Engineering*



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Introduction

New and emerging technologies are poised to transform engineering. Artificial Intelligence (AI), robotics, automation, and the gig economy are changing the future realities of design and engineering work, and some of the engineering expertise and knowledge areas are likely to grow, contract, emerge, or disappear entirely. These changes would create exciting new opportunities but also come with the risks of losing jobs to those technological advancements and high demand for an engineering workforce with new skills not met by current educational and training pathways. As such technological advancements are poised to spread across the industry, to embrace these disruptive changes, we need to educate and re-skill / up-skill engineering students, workers, and professionals and prepare them to excel in work at highly technological environments. Robotics, automation, and digital fabrication still seem to be in the margins of production and are not adopted in spite of their advantages. The industry needs to retrain and retool, and education is part of the adoption and change processes. To adopt technology, the industry needs to understand the risks and benefits of using emerging technologies. Research in emerging learning technologies could help us quantify the risks and benefits associated with technology adoption and prepare us for the future of work and education in engineering. Digital learning technologies can enhance, supplement, or even replace traditional on-site education and training and enable human-technology work partnerships and new conceptions of work and workplaces. The reality of the COVID-19 public health crisis served as the catalyst that changed the nature of many jobs, as remote work and focus on autonomous and technology-enabled work procedures are becoming the new norm. Moreover, the COVID-19 crisis highlighted the pedagogical problems of our traditional education and training systems and the need to revise our current educational strategies and move to more technology-rich learning environments.

This special issue focuses on emerging learning technology research that incorporates the learning and technological methods to enable radical improvements in engineering education and training and prepare higher education and lifelong learning for the future of work. This special issue aims to advance knowledge in the application of next-generation learning technologies in engineering work and education by encouraging authors to present new concepts, experiments, and case studies, as well as to define methodologies and best practices to foster and assess education and re-skilling through technology-rich learning environments. Such studies might cover a wide range of learning contexts and domains from formal (e.g., higher education, continuing education) or informal to non-formal (e.g., vocational education, work-based learning) or open and distance learning. Topics of interest would cover all advances in learning technologies, new modalities of education and training, and their applications in the context of future engineering work and education, including but not limited to:

- Augmented/Virtual/Mixed/Extended-Reality (AR/VR/MR/XR) technologies to create technology-rich learning experiences
- AI-enabled/augmented learning (e.g., AI partners, Human-AI collaboration)
- Educational robotics: learning experiences based on the use of robots
- Innovative online learning systems (e.g., peer-tutoring, collaborative learning tools, automated intelligent systems)
- Learning with sensors, mobile devices, and wearables
- Learning with educational games and simulations
- Learning with social media networks and infrastructures
- Intelligent instructors (including teachers/trainers, teaching assistants, or apprenticeship mentors/masters)
- Virtual communities/spaces for learner engagement (e.g., virtual social spaces, virtual clubs and groups)
- Technology-mediated field trips, lab work, on-the-job training, internships/Co-Ops, career fairs, and interviews
- Personalized and adaptive learning systems (e.g., adapting to learners/workers' interests, needs, prior knowledge, and available resources)
- Learning analytics and educational data mining

Important Dates

- Submission open: November 1, 2020
- Submission deadline: April 30, 2021
- Final review decision due: September 30, 2021

Impact Factor

2018: 3.772 Clarivate Analytics Journal Citation Reports 2019

Submission Information

Authors must use the online Editorial Manager system for Advanced Engineering Informatics (<https://www.editorialmanager.com/advei/default.aspx>) to submit their papers. To ensure the submissions are correctly identified for inclusion into the special issue, it is important that authors select **“VSI: Emerging Learning Tech”** when reaching the **"Article Type"** step of the submission process. Papers should comply with the regular criteria of Advanced Engineering Informatics in terms of the rigorous standard of originality, article writing structure, and references.