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SPECIAL ISSUE – CALL FOR PAPERS

Artificial Intelligence in Computing Education: Innovative Strategies for Effective Teaching and Learning

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Background

The incorporation of artificial intelligence (AI) into computer science education is profoundly transforming instructional methodologies. AI technologies offer substantial potential for automating intricate educational processes, customising learning experiences to meet individual student needs, and delivering prompt, adaptive feedback (Luckin & Holmes, 2016; Mayer, 2019). These advancements are especially critical in the field of computer science education, where the swift pace of technological innovation necessitates the continuous evolution of pedagogical approaches. Recent research has shown that AI-based tools have a significant impact on educational practice, particularly in identifying student learning patterns, predicting performance, and providing personalised interventions (dos Santos & Junior, 2024). The ability of AI to enhance personalised learning, particularly in coding and computational problem solving, has been seen as critical to encouraging advanced understanding and engagement among students (Kaplan & Haenlein, 2019; Prather et al., 2023).

However, integrating AI into education is not without its challenges. Critical areas of concern include maintaining academic integrity, limiting biases inherent in AI-generated data, and ensuring the ethical use of such technologies (Floridi et al., 2018; Selwyn, 2019). Recent research has also begun to explore the role of AI in promoting collaborative learning and encouraging creativity and critical thinking in computing education (Denny et al., 2024; Akram et al., 2024). This special issue seeks to explore the various implications of AI in computing education, including both the new uses and issues they provide. Combining empirical research, theoretical frameworks and practical examples, this issue will provide a detailed picture of how AI is revolutionizing computer science education and what this means for the future of the field.

Research Questions

Possible questions areas may include, but are not limited to:

1. How can AI-based personalised learning environments help improve student outcomes in computer science education?
2. What are the effects of AI on student engagement and problem-solving skills in computer science courses?
3. What strategies can mitigate the ethical challenges, such as bias and data privacy, associated with AI tools in computing education?
4. How can educators effectively integrate AI into their teaching practices to maximise educational outcomes?
5. Why should AI be used, or not used, as a part of computer science education?
6. What pedagogy, heutagogy, or andragogy should apply to AI in computer science education?
7. How can educators ensure that teaching methods and purpose are entangled with decisions of which technologies to embed in curriculum?

Practice-Based Implications:

The findings will guide educators and institutions in effectively integrating AI into computing education, focusing on enhancing student engagement, improving learning outcomes, and addressing ethical issues. Some possible topics in relation to computer science education could include, but are not limited to:

- AI-driven personalised learning
- Entangled pedagogy
- Ethical considerations in AI-enhanced educational tools
- The role of AI in automating assessment and feedback
- AI in promoting collaborative learning
- Adaptive learning systems
- AI and gamification
- Using AI to support students with learning disabilities
- AI in supporting remote and hybrid learning
- The impact of AI on teaching methods
- AI-driven learning analytics for student engagement and performance
- Challenges and opportunities in AI-enhanced education
- AI in facilitating critical thinking and creativity
- AI in curriculum design
- The use of AI in virtual labs and Ssimulations
- AI-powered chatbots, virtual assistants, and robots
- AI for enhancing coding bootcamps
- AI and online assessments
- AI in enhancing teacher professional development
- AI on learning outcomes
- Social companion bots

Types of publications accepted into this Special Issue

The types of publications that are eligible for acceptance into this Special Issue include:

- Original research articles
- Theoretical and conceptual papers
- Systematic literature reviews and meta-analyses

Timeline

- Proposals due: 30 March 2025
- Acceptance notifications: 10 April 2025
- Presentation of working paper at the 2nd International Conference on AI in higher education 2025 (register here) on 27-28 May 2025.
- Full articles due: 30 July 2025
- Final revised articles due: 1 November 2025
- Final publication: 1 February 2026

For further information, or to submit an abstract, please email: paliktzoglou@gmail.com and eriona.cela@gmail.com

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