

7th International Computer Programming Education Conference

ICPEC 2026, June 11–12, 2026, University of Minho, Guimarães,
Portugal

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■ Preface

The 7th **International Computer Programming Education Conference** (ICPEC 2026) was held on June 11 and 12 at the Information Systems Department, **University of Minho's** School of Engineering in Guimarães, Portugal. Ever since it started, **ICPEC** has been a go-to spot for teachers, researchers, and experts passionate about improving programming education. This seventh edition kept that tradition alive, bringing together a global community to chat about new ways of teaching, the latest tech, and proven methods for teaching code in today's connected world. This year's theme, "**The Next Chapter of LeArnIng**" really captured the big shifts happening in education right now.

The rapid emergence of Generative Artificial Intelligence, immersive technologies, and intelligent educational systems is transforming how students learn and how educators teach. These developments raise important questions regarding assessment, academic integrity, critical thinking, and the evolving role of educators in an increasingly AI-driven educational landscape.

To foster discussion around these challenges, the conference hosted a **roundtable** discussion in collaboration with the EPIC Project (Pedagogical Excellence and Innovation in Co-creation), bringing together experts from academia and industry to reflect on the future of learning and programming education. Complementing this discussion, the conference featured the hands-on **workshop** "*From Prompt to Practice: Integrating Generative AI into Higher Education*", which enabled participants to explore contemporary AI tools and critically examine both their potential benefits and the challenges of adopting them in higher education.

The scientific programme featured seventeen peer-reviewed papers, together with a poster and demonstration session. The accepted contributions were organised into three thematic tracks: Teaching Strategies and Pedagogical Approaches, Emerging Technologies and Innovation, and Engagement, Accessibility and Immersive Learning.

The **Teaching Strategies and Pedagogical Approaches** track explored innovative methods to improve programming education, including Montessori-inspired approaches to introducing programming concepts, gamified learning experiences, competitive programming, competency-based assessment, personalised learning strategies, alternative grading models, and frameworks for studying and evaluating programming education practices. Contributions also examined the role of digital educational resources and the challenges and opportunities created by Artificial Intelligence in contemporary programming education.

The **Emerging Technologies and Innovation** track focused on intelligent educational systems and novel technological solutions to support teaching and learning. Topics included program comprehension assessment, Generative Artificial Intelligence for intelligent tutoring systems, learning analytics and early intervention platforms for identifying students at risk of academic failure, and collaborative platforms that foster interaction and engagement among programming students.

The **Engagement, Accessibility and Immersive Learning** track highlighted innovative approaches to learner motivation, participation, and experiential learning. Contributions addressed serious game-based cybersecurity training, the integration of Generative Artificial Intelligence and gamification into learning management systems, and the design and validation of mixed-reality environments for professional training.

The poster and demonstration session complemented the main programme by providing opportunities for interactive discussion of emerging educational platforms and innovative classroom support tools, from the perspectives of students and researchers.

Across all contributions, recurring themes included Artificial Intelligence in education, gamification, adaptive learning, learning analytics, immersive technologies, competency-based assessment, and innovative pedagogical strategies for developing programming knowledge and computational thinking skills. Together, these works reflect the growing diversity and maturity of research in computer programming education and demonstrate the community's commitment to improving teaching and learning in an increasingly technology-driven world.

A high-quality event like this does not happen without a lot of hard work. We want to say a huge thank you to all the authors, our dedicated reviewers on the Program Committee, the session chairs, our speakers, and everyone who attended and joined the conversation. We also really appreciate the local team at the University of Minho for their on-the-ground help. Finally, thanks to OASICs for their help in publishing these proceedings and ensuring this research reaches people all over the world.

As technology continues to change education, keeping our teaching human-centred and ethical is more important than ever. ICPEC remains dedicated to helping educators collaborate and innovate, ensuring students don't just learn to write code but also to solve tough problems and shape the future of technology responsibly.

Guimarães, June 2026

Filipe Portela, Luís Matos and Tiago Guimarães

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