

Call for Papers for a INFEDU Special Issue - 2022
Effective Industry Participation in Computing and Engineering Education

Journal

Informatics in Education <https://infedu.vu.lt/journal/INFEDU>

Guest Editors

Andrew Csizmadia, Newman University, Birmingham, United Kingdom

Francesco Maiorana, Department of Pure and Applied Science, University of Urbino, Italy

Topic

This special issue will focus on the symbiotic relationship between industry and academia worldwide in establishing, evangelising, and embedding engineering education within a constantly changing computing curriculum.

Globally, there is an acknowledged worldwide shortage of IT professionals working within and entering now only the IT sector but other sectors as well. In addition, there was concern from employers regarding potential employee's IT technical competence, confidence, and capability as well as developed employability skills, such as: communications, problem-solving, team working and project management. These factors have contributed to a shortfall within a skilled IT workforce as part of the digital talent pipeline. In order to address these barriers, and as part of their own individual corporate social responsibility programs, global IT organisations, such as Arm, Cisco Systems, Google, Intel, Microsoft and Oracle have established education programs to support initially higher education and post-16 establishments and now K-12 education establishments. These education programs complement the research and development initiatives that IT organisations actively engage with computer science departments worldwide.

These industry-funded computing education programs, including Arm University, Cisco Network Academy Program, Google for Education, Intel Artificial Intelligence Academy, Microsoft Academy, and Oracle Academy, have provided software, hardware, technology-enhanced learning resources, simulation tools, freely or heavily discounted. Access to industrial experts, employed by IT organisations, is provided both virtually and in person for those educators teaching and supporting learners learning a specific industrial sponsored curriculum. In order, for teaching staff to deliver a specific curriculum, these IT organisations have bespoke professional development programs to certify and accredit education staff to deliver a specific curriculum as well as established communities of practice. Several IT organisations, such as Arm, Cisco Systems, Intel, and Microsoft annually organise computing related hackathons for both K-12 and undergraduate students to enable them to design solutions by applying engineering principles to solve real life problems. Several IT and other organizations sponsor and support out of class learning through clubs, such as Coding Club competitions, competitions such as Lego Robotics First League and challenges, such as Apps for Good, to engage students to apply principles of engineering education to solve a given challenge in a supportive and structured learning environment.

Currently, several IT organisations are developing educational resources for emerging and cutting areas of computing, such as artificial intelligence, cloud computing, cybersecurity, physical computing and robotics. This is to engage and enthuse students regarding the application of engineering education with computing. For example, NVIDIA has sponsored the development of a K-12 Artificial Intelligence scheme of work and resources for the Exploring Computing Science curriculum.

Invited academic and/or industrial contributing author(s) in their collaborative journal articles, where possible, will be asked to consider the following:

- Firstly, they will celebrate the impact of this symbiotic interaction between industry and academia on transforming the computing curricula.
- Secondly, they will highlight pedagogical approaches to teaching the specific engineering education curriculum they will write about, including both hardware and software tools and pedagogical approaches they have adopted.
- Thirdly, the author(s) will consider the challenges faced by education establishments involved in adopting resources and curriculum from industrial partners and training educators to deliver a specific computing curriculum.
- Fourthly, author(s) will provide practical advice and guidance to educators on introducing and implementing a specific curriculum within their own educational establishment.

Call for Abstracts and Papers

We invite authors to submit first their abstracts and, at a later stage, their full papers on issues related to the above-mentioned topics.

Timeline

Activity	Due Date
Authors to submit their abstracts	April 20, 2022
Guest editor responses to abstracts	May 10, 2022
Authors submit their manuscripts	June 20, 2022
First round of peer review complete	August 30, 2022
Acceptance deadline	October 25, 2022
Online Publication	December 10, 2022

Submission Guidelines

Information how to submit abstract (please fill in “Comments to the editor” field in submission with note about special issue):

<https://infedu.vu.lt/journal/INFEDU/information/submit-your-article>

Please visit instructions for authors before submitting your manuscript:

<https://infedu.vu.lt/journal/INFEDU/information/instructions-for-authors>

Questions?

Guest editor Andrew Csizmadia (a.p.csizmadia@staff.newman.ac.uk)

Guest editor Francesco Maiorana (fmaioran@gmail.com)