

Call for Papers for a INFEDU Special Issue, 2021
The Role(s) of Abstraction in Computer Science Education

Journal

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

Guest Editors

Dr. [Cruz Izu](#), University of Adelaide, Australia

Dr. [Violetta Lonati](#), University of Milan, Italy

Topic

“Abstraction is the elimination of the irrelevant and the amplification of the essential.”

— *Robert C. Martin, [Agile Principles, Patterns, and Practices in C#](#)*

Abstraction is a pillar of computational thinking and plays a key role in many CS related areas. In computer science, abstraction is used to understand a problem, manage its complexity and select an appropriate level of detail and degree of generality when solving it. Procedural and data abstractions allow algorithms to be used without knowledge of their details. Besides, the ability to abstract facilitates generalization and knowledge transfer.

Abstraction has been considered, either implicitly or explicitly, in the literature that covers top-down design of programs, system modelling and problem solving. However, teaching students to abstract when reading, designing or implementing code remains a challenge at both secondary and tertiary level. To make progress in this area, this special issue has three aims: (1) to collate different perspectives of the use of abstraction in CS Education, (2) to capture the role that abstraction plays in learning programming and computational thinking skills, and (3) to identify tasks that could help to explain and/or develop abstraction.

The scope of the paper submissions is broad, as long as the research covers the role/use of abstraction in computer science education. An incomplete list of potential topics is given below for reference:

- Abstraction in problem solving,
- Abstraction in software design,
- Abstraction in learning to generalise,
- Abstraction in program comprehension,
- Teaching abstraction at secondary level,
- Tasks that illustrate abstraction in action,
- Tasks that develop or assess abstraction.

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. Authors can submit research studies, systematic reviews, as well as idea papers.

Timeline

Activity	Due Date
Authors to submit their abstracts	February 12, 2021
Guest editor responses to abstracts	March 1, 2021
Authors submit their manuscripts	June 1, 2021
First round of peer review complete	August 20, 2021
Acceptance deadline	October 20, 2021
Online Publication	December 1, 2021

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 Dr. Cruz Izu (cruz.izu@adelaide.edu.au)

Guest Editor Dr. Violetta Lonati (lonati@di.unimi.it)