

Call for Contributions
Special Issue of Formal Aspects of Computing for
“SETTA 2020 Special Track on Formal Methods for AI”

Submission Deadline: August 15, 2020

It is over fifty years since formal methods was established as a research topic in computer science. Since then, the academic community has developed rich theoretical foundations for formal methods. It has also developed and taught a large body of knowledge and formal techniques and tools for the design of correct, safe and secure software systems. Traditional artificial intelligence (AI) studies knowledge representation and reasoning. Researchers have developed methods for modelling and constructing large knowledge-based and multi-agent systems. Formal methods for software systems development and knowledge-based AI are both rooted in mathematical logic and modelling.

Software-intensive computer systems are pervasive in our life, society and all sectors of the economy and business. Their components are developed with different languages and in different paradigms and architecture styles. These systems are making use of learning systems to implement autonomous intelligent control software. This exploits rapid advances in machine learning, especially deep neural networks. As a consequence, the safety, security and interpretability (or explainability) of these systems is now causing concern. This could become a major barrier to future development and applications.

The situation is further complicated by humans in the loop, as individuals, organizations and social systems. These software-intensive systems are characterised as Human-Cyber-Physical Systems (HCPS).

This special issue calls for contributions to address challenges to modelling, design and verification of intelligent systems, especially those related to HCPS, including but not limited to:

- Modelling theory of Human-Cyber-Physical intelligent computation;
- Interactions between human, cyber and physical components, where cyber components include both knowledge reasoning software and deep learning software;
- Models, verification, testing and simulation of artificial intelligent software, including knowledge reasoning software and deep learning software, for their robustness, interpretability, controllability, composability, refinement, and reusability.

Manuscripts submitted to this special issue will be reviewed according to the requirements of the journal, and those which are accepted to this special issue and some more will be invited to present SETTA 2020, and their extended abstract will be including in the conference proceedings. **If a short version of a submission is also submitted to SETTA 2020, a reference must be made explicitly to the short version.** All manuscripts submitted to the special issue must be written in English and must not be under consideration elsewhere for publication. Guidelines for authors are available on the website of the journal at <https://www.springer.com/journal/165>.

Important Dates

- Manuscript submission: **August 15, 2020**
- Acceptance notification: **October 15, 2020**
- Publication date: **December 31, 2020**

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