Special Issue on Artificial Intelligence and Requirements Engineering

Guest Editors:
Nelly Bencomo, Durham University, UK
Alessio Ferrari, ISTI CNR, Italy
Daniel Rodriguez, University of Alcala, Spain

Editor-in-Chief:
Rachel Harrison

Overview:

The requirements engineering (RE) research community has proposed numerous (semi-)automatic approaches that take advantage of the vast landscape of techniques from artificial intelligence (AI) such as natural language processing (NLP), information retrieval (IR), machine learning, agents and multiagent systems, knowledge representation and reasoning, and so on.

Several classical RE tasks have profited across the years from the experimental application of AI techniques. These include automatic detection of quality defects or smells, classification of requirements, and trace-link detection. The current golden age of AI, which gave birth to crucial technologies such as word embeddings, BERT and other transformers, has opened the possibility to make a step forward in the solution of traditional RE tasks. The availability of novel data sources, such as app reviews, implicit and explicit user feedback, and information coming from issue tracking systems, provided novel challenges and opportunities for applications of AI.

On the other hand, the fast diffusion of AI-based systems in multiple domains, combined with the need for safe and explainable systems, demand tailored RE techniques. This way, transportation systems, banking applications and other mission critical systems can embed AI components without losing reliability and trust.

The International Workshop on Artificial Intelligence and Requirements Engineering (AIRE), traditionally co-located with the IEEE Requirements Engineering Conference (RE), has celebrated its 8th Edition in 2021. The workshop has been a meeting place for RE researchers interested in improving the quality of requirements through the usage of AI techniques. With its last edition, the workshop scope was extended to consider RE applications to the AI field.

This special issue aims to attract research papers that work at the boundary between AI and RE, thus including applications of AI to RE, and RE solutions for AI systems. Contributions that bridge the gap between the RE field and the broader field of software engineering, including testing, design, and software analytics are also particularly welcome.

We solicit submissions across the entire spectrum of the application of AI techniques to RE and vice versa. Topics of interest include but are not limited to:

RE quality models and their automation
Requirements@run.time
Natural language processing and comprehension
Natural language semantics, understanding and generation
Machine learning techniques including supervised, unsupervised, and machine-human interactions
Artificial neural networks, deep learning
Detection of uncertainties and ambiguities
Logic-based reasoning techniques
Knowledge acquisition and representation
Agent based solutions
Problem solving and decision making support mechanisms
Optimization techniques
Automated approaches for prioritization
RE for machine-learning based systems
RE to support explainable AI
RE and AI-based safety critical systems

Requirements for Submission:

- Papers must be written in a scientifically rigorous manner, with adequate references to related work.
- Submitted papers must not be simultaneously submitted in an extended form or in a shortened form to other journals or conferences. It is however possible to submit extended versions of previously published work if less than 75% of the content already appeared in a non-journal publication, or less than 40% in a journal publication. Please see the Journal Policy Statement on Plagiarism for further conditions.
- Suggested number of pages around 20-25 pages.
- Submission guidelines: https://www.springer.com/journal/11219/submission-guidelines

Communicate your intent to submit a paper by emailing the theme issue editors the following information before the Intent to Submit deadline (see key dates): Title, Authors, and an Abstract.

Reviewing details:

Each paper will be peer-reviewed by 3 reviewers experts in the areas.

-Note: Although this is an open call, Authors of the papers accepted at AIRE'20 and AIRE'21 are strongly encouraged to submit a substantially extended version of their manuscript to this Special Issue. Nevertheless, the submissions are open to any authors.. The Special Issue will be advertised by sending targeted emails to potential authors active in the field, and also posting information on the AIRE website, on social media and public mailing lists.

Suggested timetable:

1 Nov. 2021: Distribution of the Call for Papers
15th January: communication of Intent of Submission
1 Mar. 2022: Submission Deadline
1 May 2022: Review Deadline
1 Jun 2022: Revision Deadline
1 Dec 2022: Publication