Machine Learning Techniques for Software Quality Evaluation

Empirical Software Engineering (EMSE) Special Issue – Call for papers

Editors of the special issue

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Description of the special issue

The assessment of software quality is one of the most multifaceted, e.g., structural, product, and quality, and subjective aspects of software engineering - since in many cases, it is substantially based on expert judgment. Such assessments can be performed at almost all the phases of software development – from project inception to maintenance – and at different levels of granularity – from source code to architecture.

However, human judgment is inherently biased by implicit, subjective criteria applied to the evaluation process, and its economical effectiveness is limited compared to automated or semi-automated approaches. To this end, researchers are still looking for new and more effective methods for assessing various qualitative characteristics of software systems and the related processes.

In recent years, we have been observing a rising interest in adopting various approaches to exploiting machine learning and automated decision-making processes in several areas of software engineering. The machine learning models and algorithms help to reduce effort and risk related to human judgment in favor of automated systems, which are able to make informed decisions based on available data and evaluated with objective criteria. Therefore, the adoption of machine learning techniques seems to be one of the most promising ways to improve software quality evaluation.

Conversely, learning capabilities are increasingly embedded within software, including in critical domains such as automotive and health. For this reason, the application of quality assurance techniques is required to ensure the reliable engineering of software systems based on machine learning. As such, the special issue will invite submissions on new and innovative research results and industrial experience papers in the area of machine learning applications for software quality evaluation.

Submission topics

Submissions could deal with all aspects of the problem, including, but not limited to, the following topics of interest:

- Application of machine-learning in software quality evaluation,
- Analysis of multi-source data,
- Knowledge acquisition from software repositories,
- Adoption and validation of machine learning models and algorithms in software quality,
- Decision support and analysis in software quality,
- Prediction models to support software quality evaluation,
- Validation and verification of learning systems,
- Automated machine learning,
- Design of safety-critical learning software,
- Integration of learning systems in software ecosystems.
- Quality assurance of learned models/systems

Schedule

- Submission Deadline: 20 February 2021
- First Review Notification: 20 May 2021

Submission instructions

Papers should be submitted through the Empirical Software Engineering editorial manager website (http://www.editorialmanager.com/emse/) as follows (1) select "Research Papers" and (2) later on the Additional Information page:

- answer "Yes" to "Does this paper belong to a special issue?";
- and select "Machine Learning Techniques for Software Quality Evaluation" for "Please select the issue your manuscript belongs to".

For formatting guidelines as well as submission instructions, please visit http://www.springer.com/computer/swe/journal/10664?detailsPage=pltci_2530593