Special Issue on "Machine Learning Techniques for Software Quality Evaluation"

The assessment of software quality is one of the most multifaceted (e.g., structural quality, product quality, process quality, etc.) and subjective aspects of software engineering (since in many cases it is substantially based on expert judgement). Such assessments can be performed at almost all phases of software development (from project inception to maintenance) and at different levels of granularity (from source code to architecture). However, human judgment is: (a) inherently biased by implicit, subjective criteria applied in the evaluation process, and (b) its economical effectiveness is limited compared to automated or semi-automated approaches. To this end, researchers are still looking for new, more effective methods of 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 (ML) and automated decision-making processes in several areas of software engineering. These models and algorithms help to reduce effort and risk related to human judgment in favour of automated systems, which are able to make informed decisions based on available data and evaluated with objective criteria. Thus, 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 often embedded within software, including in critical domains such as automotive and health. This calls for the application of quality assurance techniques to ensure the reliable engineering of ML-based software systems.

As such, the special issue invites submissions on new and innovative research results and industrial experience papers in the area of machine learning applications for software quality evaluation. We especially encourage submission of extended papers from the 3rd International Workshop on Machine Learning Techniques for Software Quality Evaluation (MaLTeSQuE 2019). 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.

Important dates.

Submission Deadline: 15 November 2019.
Initial Author Notification: 21 February 2020.
Initial Author Revision Due: 22 May 2020.
Final Author Notification 26 August 2020.
Final Manuscript Submission: 10 September 2020.

Submission guidelines.

All submitted papers will undergo a rigorous peer-review process and should adhere to the general principles of the Journal of Systems and Software articles. Submissions have to be prepared according to the Guide for Authors in http://ees.elsevier.com/jss. Submitted papers must be original, must not have been previously published or be under consideration for publication elsewhere. In case a paper has been already presented at a conference, it should be extended by at least 30% new material, before submitted for this special issue. Authors must provide any previously published material relevant to their submission and describe the additions made.