PhD position in Machine Learning and Software Test Automation

Title: Analysis and Selection of Execution Traces with Machine Learning Techniques for Software Test Automation
Duration: 3 years
Starting date: October 2018

Context: Testing Information Systems has become a major bottleneck. Besides the ever-growing complexity of such systems, their indispensable assurance quality requirements have led to increase dramatically the verification and validation costs. A fine-grained analysis of existing testing procedures reveals however that not all artefacts are exploited to tame this cost increase. In particular, test and operational execution traces are usually ignored by validation engineers. This does not come as a big surprise as these traces are almost impossible to classify and analyze by hand. Our ambition is to process these traces with machine learning methods in order to improve the tests generation. This research will be done in collaboration with University of Sunshine Coast (Australia), Simula lab (Norway), U. of Bourgogne Franche-Comté (France) and 2 industry partners providing data and test automation tooling.

Description: The PhD work will consist in analyzing these traces in order to select a representative sample of the traces that can be used as a basis for generating tests for the new release of the information system in the context of continuous integration. This will be done by adapting and testing different supervised and unsupervised machine learning methods in order to cope with the available data (user execution traces, manual testing traces, automated test execution traces and code change metadata).

Application: The application should include a brief description of research interests and past experience, a CV, degrees and grades, relevant publications, and any relevant documents. Candidates are encouraged to provide contact information to reference persons. Please send your application in one single pdf to both Christophe.Brouard@univ-grenoble-alpes.fr, Roland.Groz@univ-grenoble-alpes.fr

Working Environment: The PhD candidate will work at LIG in Grenoble, with the AMA and VASCO teams (http://ama.liglab.fr/ , http://vasco.imag.fr/).