M.Sc. Thesis Project at Ericsson AB for two students

Comparison of model-based testing tools based on modelling of LTE functionality

Two M.Sc. students are sought for this project, in which they get the opportunity to work with cutting-edge technology for testing of future 4G systems.

Background "LTE", Long Term Evolution, is the next generation mobile network beyond 3G. LTE offers several important benefits for users and operators, including higher data rates, lower latency, higher capacity, backwards compatibility, and support for wide range of terminals. The technology allows for speeds more than 300Mbps. LTE is a very complicated system, implying that many challenges are faced in its design and testing. The project will be carried out at the LTE RAN Integration & Verification organization of Ericsson AB, in collaboration with the Department of IT, Uppsala University. The LTE RAN Integration & Verification organization is responsible for integration and verification of the LTE Radio Access Network. The purpose of verification is to ensure that LTE RAN products fulfil functionality and quality requirements appropriate for Ericsson customers.

Project The overall goal is to make design of test cases much more efficient by employing techniques that automatically generate test cases from a model of the functionality to be tested. Currently, the design of test cases is typically a manual process. *Model-based testing* is a technique in which test cases are automatically generated from explicit behaviour models of the system. The task of this project is to model chosen LTE functionalities so that test cases can be generated using tools for model-based testing. A major goal of the project is to compare different model-based testing tools and compare the tools based on performance, usability, and coverage criteria for generated test cases. You will understand how LTE functionality works by reading internal Ericsson documents as well as 3GPP standards. You will need to learn about different modelling languages, including UML diagrams, Java, AETGSpec textual notation, QML and C#. You will create models of LTE functionality and use them as an input to model-based testing tools. The result of the master thesis should be concluded in a presentation and a report. The project is assigned for six months.

Qualifications You should be a student working towards MSc degree in Computer Science or a related field. You should have an interest in testing and telecommunications. You should have good computer and programming skills. You should have completed courses in Algorithms and data structures, Object Oriented programming using Java, Constraint programming, Test methodology, and Software Engineering, or have corresponding skills.

Applications should include personal letter, CV, transcript of your grades and contact details to two references.

Please send applications as soon as possible, but no later than January 22, to
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