SAT based Fault Tree Analysis

Description

Fault tree analysis is a common technique to perform a safety analysis for complex critical systems. Fault trees are probabilistic models which require both quantitative and qualitative analysis. There existing many more assertive techniques from each other which use Binary decision diagrams, and variations, etc. In this seminar topic, the student is expected to apply SAT solvers (Z3, etc.) to apply qualitative analysis, which proposes to calculate minimal cut set of the critical system, and implement the quantitative analysis on top of that. Both positive and negative performance results are valuable during the performance analysis since SAT solvers were not applied before. Depending on the outcomes and the student performance, the topic is a good candidate for an extension to a M.Sc topic.

Prerequisites

A basic knowledge of Software Engineering I/II and Mathematical background

References


Contacts

Sinem Getir (getir@informatik.hu-berlin.de)
Software Engineering Group
Institut für Informatik
Humboldt-Universität zu Berlin