Automatic Detection and Diagnosis of Program Faults (ADDOPF)
project title
University of Luxemburg
host institution

Project description:

Software has an increasing use in systems and devices that pervade all the aspects of our life. Businesses, financial, health, communication, transportation and every other service of a modern society rely on software. Thus, a rising demand for its amplified reliability has long been established. In ADDOPF project we aim at proposing automatic techniques for the effective detection and diagnosis of software defects targeting on program faults.

Software testing and debugging techniques form the current practice for identifying and fixing software defects. However, these techniques are very expensive as they can consume 50% or even 60% of the total cost of the software development. Therefore, the need for automatic solutions is imperative, especially when high reliability is a mandatory requirement. In the absence of such solutions, i.e. current practice in industry, these activities must be manually performed making its cost exceedingly expensive.

The ADDOPF project addresses two crucial dimensions: establishing an empirical model of the faults' behaviour and the development of automatic testing and debugging strategies based on the established model. The challenging points of the project are:
1. the analysis of how faults are propagated, i.e., how a fault affects program behaviour, and fault correlation, i.e., the relationship between multiple faults within one program
2. the development of automated testing and debugging techniques taking into account the propagation and correlation properties of program faults.