Spreadsheets Comprehension and Debugging

-- Rui Maranhão, Assistant Professor --

1. Advisor

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There is the possibility to be advised by Franz Wotawa, Full Professor at the Technical University of Graz, Austria.

2. Research Lab

HASLab / INESC TEC

4. Research proposal

Spreadsheet tools can be viewed as programming environments for non-professional programmers. These so-called “end-user” programmers vastly outnumber professional programmers. In fact, spreadsheets, when viewed as a programming language, are one of the largest programming languages and can be characterized as a particularly low-level one: there is no support for abstraction, testing, encapsulation, modular or structured programming. As a result, numerous studies have shown that existing spreadsheets contain errors at an alarmingly high rate. In fact, companies are being put at risk due to their failure to realise that the process of constructing spreadsheets requires the discipline of traditional programming. Spreadsheet applications are more vulnerable to poor design and to errors than conventional programs. This means that a greater degree of discipline is required in the process of spreadsheet development.

In this project, the foundations of spreadsheets from a software engineering point of view we will study will be studied. The student will further propose techniques for testing, debugging, comprehension of spreadsheets. The results of this project will be a set of theories, techniques and tools that will help “end-user” programmers to efficiently test, maintain and construct correct spreadsheets. The toolset will also provide a set of intuitive visualizations for spreadsheets (following our past experience with http://www.gzoltar.com). Hence, the main objective is to ease the evolution of spreadsheets a well as their overall quality.

This topic is currently a hot-topic in the software engineering community, as proven by the vast number of papers accepted at top conferences such as ICSE, VL-HCC in the past years.