

I - Workshop de Dissertações do Programa de Pós-graduação em Sistemas de Informação (PPgSI)

On the use of control- and data-flow in coverage-based fault localization

Aluno: Henrique Lemos Ribeiro 5876024, **Orientador:** Dr. Marcos Lordello Chaim

Context

Testing and debugging are key tasks during the development cycle. However, they are one of the most expensive activities during the development process. To improve the productivity of developers during the debugging process various fault localization techniques have been proposed. Although data-flow information has been shown to perform better than statements and branches (control-flow information) to locate the bug site, the high overhead to collect such an information has prevented its use on industry-level code. A data-flow coverage monitoring tool was recently implemented presenting in average 38% runtime overhead for large programs. Such a fairly modest overhead motivates the study of coverage-based fault localization using data-flow information in programs similar to those developed in the industry.

Objective

The objective is to analyze and compare the use of control- and data-flow testing information in fault localization.

Method

To achieve such a goal, an environment to apply control- and data-flow coverage data in fault localization will be developed. Moreover, two kinds of experiments will be carried out: with benchmarks available in the literature; and also with users performing fault localization tasks aided by the developed environment.

Results

This research will result in a plugin to support debugging using testing information. The plugin will allow the conduction of experiments that will provide insights on the use of control- and data-flow information in debugging.

Conclusion

We expect the results of this research to provide guidance on the use of control- and data-flow information in fault localization.