Re-engineering of Graphical User Interfaces

PhD Research Theme Proposal

Centro de Ciências e Tecnologias da Computação, Universidade do Minho

José Creissac Campos
jose.campos@di.uminho.pt

João Alexandre Saraiva
jas@di.uminho.pt

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This research theme follows from an ongoing effort to develop tools and techniques for the systematics analysis of interactive systems. We are developing GUISurfer [2, 3, 1], a tool that automatically extracts models from the user interface layer of interactive computing systems' source code. A particular emphasis is being placed on developing GUISurfer as a language independent tool. Through the use of generic programming techniques, the tool is targetable to different user interface toolkits, and different programming languages (including different programming paradigms – e.g. object oriented or functional). At this time, the tool is able to reverse-engineer Java (either with Swing or GWT) and Haskell application's source code (with varying levels of support). From the source code, GUISurfer extracts a range of models, aiming at supporting the analysis, maintenance and evolution of existing interactive applications.

The current proposal aims at building on the current state of the art to explore model refactoring, and forward engineering. The goal being to enable the reengineering of GUIs directly from source code, using the models generated by GUISurfer as redesign artefacts.

The proposal integrates with reverse engineering related tasks in two FCT funded projects: CROSS (An Infrastructure for Certification and Re-engineering of Open Source Software – PTDC/EIA-CCO/108995/2008), and SSaaPP (SpreadSheets as a Programming Paradigm – PTDC/EIA-CCO/108613/2008). These projects will provide both an active research environment, and funding for missions.

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References

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