OthelloPlay – A Plug-in Based Tool for Requirement Formalization and Validation

Roberto Cavada
Marco Roveri

Alessandro Cimatti
Angelo Susi

Andrea Micheli
Stefano Tonetta

Fondazione Bruno Kessler
{cimatti, amicheli, roveri, susi, tonettas, cavada}@fbk.eu

ABSTRACT

Requirement engineering is one of the most important phases in the development process of software and systems. In safety-critical applications, it is important to support the validation of the requirements with formal techniques to identify and remove flaws. However, requirements are often written in textual documents and their formalization and validation is not trivial for non-experts in formal methods. The goal of the OthelloPlay tool is to support formalization of textual requirements and to simplify the use of formal techniques for requirements validation. The tool combines a formal verification engine and the Microsoft Word® editor in a single and consistent environment. A fundamental key in our design approach is a plug-in-based architecture, which uses the Python language in conjunction with a Microsoft Word® Add-In. The user can jump between textual requirements in the Microsoft Word® editor and the corresponding formal requirements model.

Categories and Subject Descriptors
D.2.1 [Software Engineering]: Requirements/Specifications—Tools

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Design, Verification

Keywords
Requirements formalization and validation, tools as plug-ins

1. OVERVIEW

Complex computer-based systems carry out critical functions in today’s intelligent buildings, trains, cars, aircrafts, plant control or spacecrafts. Fundamental steps in the development process of such systems are the specification and validation of requirements. Formal approaches may help with a deep analysis through the precise semantics of the requirements. However, the formalization is typically a difficult task and it is often separated from the validation.

OthelloPlay is a new tool, we are developing, to help users in the formalization of textual requirements in Othello [5], a new language expressive enough to represent various domains of interest, yet allowing efficient reasoning capabilities. The tool incorporates techniques presented in a recent series of papers ([3], [6], and [4]). The work extends the results of the EurailCheck project [2] by overcoming some drawbacks of the related tool support [1] (e.g., the traceability and navigability of the linking between natural language requirements written in Microsoft Word®).

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REFERENCES