

Thesis Topic**TAAR - A Tool for Architectural Analysis and Reasoning****Degree level**

Bachelor/Master

Company

None

Description

Software architects face a daunting task of architectural analysis and reasoning while designing software systems with rapidly changing environments, goals and requirements including quality attributes. Unlike functional requirements, quality attributes, such as performance and availability, are often system wide characteristics and are difficult to localize. Moreover, quality attributes can never be achieved in isolation. The achievement of any one will have an effect, sometimes positive and sometimes negative, on the achievement of others. Thus, realization of quality attributes requires architects to identify design alternatives for multiple quality attributes, model and evaluate the alternatives, reason about them, trade-off and select best-fit alternatives that satisfy all the desired quality attributes. This project aims to develop a tool that can assist architects in realization of quality attributes. The tool is ideally required to take a set of quality attributes specifications, business goals, and environmental conditions, or design alternatives as an input and return a set of best-fit design alternatives as an output. A first step here will be to formalize quality attributes, business goals, environment conditions, and design alternatives into machine-readable format that can be interpreted and evaluated by the tool. The tool may rank design alternatives according to desired attributes, the architects then may choose the alternatives based on their own understanding of the given system and their personal knowledge and experience.

Objectives

Main objectives of the project are as follows:

- Develop a tool that can assist architects in identifying design alternatives, reason about the alternatives, trade off, and select best-fit alternatives.

Requirements

- 2DV603, 2DV604, 4DV608, or other similar courses
- Good knowledge of Software Architecture and Design

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