

Thesis Topic

Architectural Tactics and Patterns for Self-Adaptive Software Systems

Degree level

Bachelor/Master

Company

None

Description

Architectural patterns and tactics are ways of documenting proven good design solutions so that they can be reused. Architectural tactics refer to design decisions that architects have been using for years to realize quality attributes. Ping/echo and heartbeat are two examples of architectural tactics that can be reused for fault-detection in realization of availability quality attribute. An Architectural pattern group several tactics that are found repeatedly in practice and can be reused to realize multiple quality attributes. This projects aims to explore relevant literature, interview practitioners and experts in the field to develop a library of best practices to design and develop Self-Adaptive Software Systems (SASS).

Tasks/Objectives

Main tasks and objectives of the project are as follows:

- Explore scholarly publications, technical reports, books and other such literature to identify tactics and patterns, such as MAPE-K control loop, which are commonly used to design and develop self-adaptive software systems.
- Interview researchers and practitioners in the field to dig out best design practices
- Identify other commonly used design solutions that are not recognized as tactics or patterns, however, can be generalized and reused for the design and development of SASS.
- Document all the above-identified approaches as a catalogue or library of tactics and patterns for SASS.

Requirements

- 4DV610, 2DV603, 2DV604, 4DV608, or other similar courses
- Good knowledge of Software Architecture and Self-Adaptive Software Systems

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