Open Thesis / Project:

From C/C++ Code to Formal Models and Vice Versa

Motivation & Summary

The modern embedded software development process promotes the use of formal methods for modeling and verification. However, the gap between formal models and practical code implementations remains a significant challenge. Bridging this gap is essential for comprehensive software correctness and seamless integration.

The goal of this thesis is to develop a framework that automates the translation of C/C++ code into formal models and vice versa.

Recommended Prior Knowledge

- C or C++ programming
- Embedded Systems
- Real-Time Operating Systems

Thesis Type

- Bachelor's Thesis
- Master's Project
- Master's Thesis

Student Target Groups

- Information and Computer Engineering (ICE)
- Electrical Engineering (EE)

Goals & Tasks

- Develop set of rules for translating C/C++ code to formal model tool UPPAAL
- Automate the translation of code to models and models to code
- Proof of concept: RTOS C code implementations

Optional (depending on thesis type):
- Translation of C code to UPPAAL models
- Translation of UPPAAL models to C code
- Proof of concept on RTOS code implementations
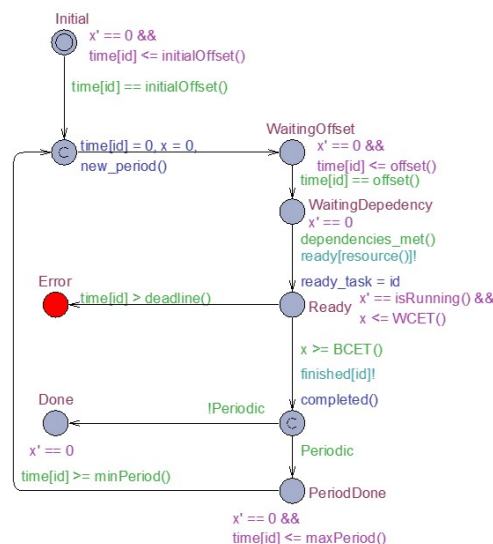
Contact & Information

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