

Student Project Announcement:

SPI-Bus Protocol for Embedded Systems

Development and implementation of a verified transport layer protocol for a given SPI bus hardware.

Today, even medium sized embedded systems consist of multiple components that are interconnected by buses. Technically, these buses are typically rather simple, mainly for reasons such as cost. For this reason, software is responsible for handshake, timing, and properties such as collision freedom.

In this project, the candidate should conduct a model-based development of a transport layer protocol for the SPI bus. The protocol shall be implemented on a certain embedded system currently under development. The main research interest is in the question whether correctness of, e.g., the handshake procedure can be established for the model and carried over to the implementation.

The candidate should have a fair background in software-engineering, interest in software development for embedded systems (in C), and at best some background in formal methods.

Note: This is a joint project with company SeCa GmbH (<http://www.seca-online.de>). The project is supposed to be conducted as part of a 9 month internship ("Werkstudent") where the candidate is employed as a student worker at SeCa.

Degree: MSc

Tutor(s): Dr. B. Westphal, Prof. Dr. A. Podelski

URL: <http://swt.informatik.uni-freiburg.de/research/theses>