Software Engineering Group

Distributed Systems

Master

TECHNISCHE UNIVERSITÄT DARMSTADT

Session Types for ABS

Topic

Distributed systems are hard to get right. Corresponding software needs to deal with transient and permanent failures affecting parts of the system. *Session types* have been proposed as a means of specifying the subtle interactions between distributed components at a high level, and of verifying corresponding code at compile-time. However, existing session type models are more geared at concurrent than distributed systems and are limited in the way they deal with failures. *Protocol types are* a variant of session types designed for distributed systems prone to failures.

Tasks

ABS (for Abstract Behavioral Specification) is a modeling language for object-oriented, concurrent, and distributed systems. The goal of this thesis is to implement support for protocol types in ABS, including:

- The analysis and design of semantics

References

R. Hähnle: The Abstract Behavioral Specification Language: A Tutorial Introduction. In Formal Methods for Components and Objects, LNCS 7866, pages 1—37, 2013.

K. Takeuchi, K. Honda, and M. Kubo: An Interaction-based Language and its Typing System. In Proceedings of the 6th International PARLE Conference on Parallel Architectures and Languages Europe (PARLE '94), pages 398–413, 1994.

K. C. Sivaramakrishnan, Mohammad Qudeisat, Lukasz Ziarek, Karthik Nagaraj, Patrick Eugster: Efficient Sessions. Sci. Comput. Program. 78(2): 147—167, 2013.

Analysis

Programming

Contact

Prof. Dr. Reiner Hähnle
haehnle@cs.tu-darmstadt.de

Prof. Dr. Patrick Eugster
peugster@dsp.tu-darmstadt.de