Embedding Processes in a Declarative Programming Language

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Abstract

While declarative programming languages are based on the idea to specify the static relationships of problems, the right modeling of the dynamic behavior is equally important for many practical applications. To support a high-level specification of both aspects of computational systems, we propose the embedding of a process-oriented specification language in a multi-paradigm declarative language. Since this embedding is done in a seamless way, the features of the declarative base language can be exploited on the one hand to specify the computational needs in single state transitions in the dynamic system, and on the other hand to reuse the abstraction facilities of the base language for the specification of the structure of dynamic systems.

In this talk we show an implementation of these ideas in the multi-paradigm declarative language Curry. This implementation has been used for a prototypical implementation of embedded and distributed systems in a high-level manner.