Embeddings Among Concurrent Programming Languages

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Abstract

In a previous paper [1] we developed an algebraic framework for language comparison based on language embeddings, which are mappings that preserve certain aspects of both the syntactic and the semantic structure of the language. We provided separation results by demonstrating the nonexistence of various kinds of embeddings among languages. In this talk we survey the framework and complement the separation results with positive results, i.e., demonstrate embeddings among various well-known concurrent languages. Together the positive and negative results induce a preordering on the family of concurrent programming languages that quite often coincides with previous intuitions on the “expressive power” of these languages.

[1] Shapiro, E., Separating Concurrent Languages with Categories of Language Embeddings, in *Proceedings of 23rd Annual ACM Symposium on Theory of Computing*, ACM, 1991.