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IDE Support For Example Embedding

Ohad Barzilay

We use empirical qualitative software engineering research to characterize Example Embedding (EE) as a software activity—a collection of fine-grained techniques, which, together, assemble an abstract key notion in software development. This unique perspective lays the foundations for building an activity catalogue, forming new software practices, affecting the development process, and motivating IDE enhancements. This empirically driven approach highlights IDE contextual usage with respect to the software development "eco system" in order to increase developers' productivity.

joint work with Orit Hazzan and Amiram Yehudai

Refactoring of Statecharts

Moria Abadi

Statecharts are an important tool for specifying the behavior of reactive systems, and development tools can automatically generate object-oriented code from them. As the system is refactored, it is necessary to modify the associated statecharts as well, performing operations such as grouping or ungrouping states, extracting part of a statechart into a separate class, and merging states and transitions.
Refactoring tools embedded in object-oriented development environments are making it much easier for developers to modify their programs. However, tool support for refactoring statecharts does not yet exist. As a result, developers avoid making certain changes that are too difficult to perform manually, even though design quality deteriorates.

Methodologically, statecharts were meant to enable a systems engineer to describe a complete system, which would then be refined into a concrete implementation (object-oriented or other). This process is not supported by object-oriented development environments, which force each statechart to be specified as part of a class. Automated tool support for refactoring statecharts will also make this kind of refinement possible.

This paper describes a case study that shows the usefulness of refactoring support for statecharts, and presents an initial catalog of relevant refactorings. We show that a top-down refinement process helps identify the tasks and classes in a natural way.

joint work with and Yishai Feldman