VMKit : a Substrate for Virtual Machines
Nicolas Geoffray, Gaël Thomas, Charles Clément, Bertil Folliot and Gilles Muller

Virtual Machines optimizations require a huge amount of time. Although they share some common principles, such as a Just In Time Compiler or a Garbage Collector, this opportunity for sharing has not been exploited in current VMs.

VMKit is a first attempt to build a common substrate that eases the development of high-level VMs by reusing existing projects: LLVM, GNU Classpath, Mono Library, Boehm GC, GCC, Posix Threads.

Implementation of three VMs

VMKit has been successfully used to build three VMs: a Java Virtual Machine (JnJVM), a Common Language Runtime (N3) and a Lisp-like runtime with type inference. Our high level VMs are only 20,000 lines of code, it took one of the author a month to develop a Common Language Runtime and implementing new ideas in the VMs was remarkably easy [IJVM - DSN09].