Time Regions and Effects for Resource Usage Analysis (Abstract)*

Naoki Kobayashi
Tokyo Institute of Technology
email:kobayasi@cs.titech.ac.jp

Various resources such as files and memory are associated with certain protocols about how they should be accessed. For example, a memory cell that has been allocated should be eventually deallocated, and after the deallocation, the cell should no longer be accessed. Igarashi and Kobayashi recently proposed a general type-based method to check whether a program follows such resource access policies, but their analysis was not precise enough for certain programs. In this paper, we refine their type-based analysis by introducing a new notion of time regions. The resulting analysis combines the merits of two major previous approaches to type-based analysis of resource usage – linear-type-based and effect-based approaches.

*The original paper appeared in Proceedings of ACM SIGPLAN International Workshop on Types in Languages Design and Implementation (TLDI'03), pp.50–61, 2003