

Dynamic Source Code Analysis for Memory Hierarchy Optimization in Multimedia Applications

Realizing image and signal processing algorithms in embedded systems is a three step process including algorithmic design, implementation and mapping to a target architecture and memory hierarchy. This paper presents MemAddIn, a dynamic analysis tool for C applications that exposes the critical application's loops which deserve the designer's attention for memory hierarchy optimization. MemAddIn is based on an extension of MEMSCOPT compiler and integrates in the Visual Studio IDE offering a unified environment for the application's implementation and optimization. To conclude on the criticality of the application loops the tool utilizes two metrics which are relevant with the underlying memory architecture cost and performance.