

Much Ado about Almost Nothing: Compilation for Nanocontrollers

Henry G. Dietz, Shashi D. Arcot, and Sujana Gorantla

To appear at the *16th Workshop on Languages and Compilers for Parallel Computing (LCPC03)*, College Station, TX, 2-4 October 2003

Abstract

Advances in nanotechnology have made it possible to assemble nanostructures into a wide range of micrometer-scale sensors, actuators, and other novel devices... and to place thousands of such devices on a single chip. Most of these devices can benefit from intelligent control, but the control often requires full programmability for each device's controller. This paper presents a combination of programming language, compiler technology, and target architecture that together provide full MIMD-style programmability with per-processor circuit complexity low enough to allow each nanotechnology-based device to be accompanied by its own nanocontroller.