

Architectural Level Resource Estimation and Modeling

DEMO ABSTRACT

Estimating resource requirements (i.e. power dissipation) to run multimedia applications on embedded devices currently requires a myriad of tools on our working environment. The process so far has been divided into three different stages. First we do bitstream encoding, in which we give our three test-videos nine different compression levels, giving us in all twenty-seven different streams to test our decoder.

Our multimedia decoder is then run as an ARM processor simulation under a PC keeping track of all the processor parameters as if the program was being run on a cell phone, for example (decoding each one of the videos we encoded earlier). The results of this runs are fed into another program that will further extract information from them, in our case, the number of logical bus transitions, which are directly linked to power dissipation. The overall results are finally parametrized in order to obtain a model of the multimedia component. Additionally, we are running actual hardware tests on the Dell Axim Pocket PC, which has an ARM-based architecture.

We should stress that we are also currently working in parallel on developing an integrated methodology that could potentially turn this modeling process into a single-click operation.

Tools used:

- H264 codec software
- ARM Developer Suite
- Power Monitor trace file analyzer
- Intel Vtune analyzer
- Dell Axim Pocket PC