ePUMA: a NovelEmbedded Parallel DSP Platform for Predictable Computing

Jian Wang, Joar Sohl, Olof Kraigher, Dake Liu
Department of Electrical Engineering
Linköping University, Sweden
{jianw, joar, kraigher, dake}
@isy.liu.se

Abstract

In this paper, a novel parallel DSP platform based on master-multi-SIMD architecture is introduced. The platform is named ePUMA [1]. The essential technology is to use separated data access kernels and algorithm kernels to minimize the communication overhead of parallel processing by running the two types of kernels in parallel. ePUMA platform is optimized for predictable computing. The memory subsystem design that relies on regular and predictable memory accesses can dramatically improve the performance according to benchmarking results. As a scalable parallel platform, the chip area is estimated for different number of co-processors. The aim of ePUMA parallel platform is to achieve low power high performance embedded parallel computing with low silicon cost for communications and similar signal processing applications.