

Student job description



Keywords MIPS processors, system study

Context Within Philips Semiconductors, the Embedded Processor Group in Sunnyvale (EPG-Svl) is the sole supplier of MIPS (32/64 bit RISC) processors. It is EPG-Svl's responsibility to provide processors as intellectual property (IP) cores that can be integrated into our customers' systems-on-silicon.

Application domains for these systems-on-silicon include MPEG-(de/en)coders, set top boxes, TVs, hand held devices, global positioning systems, etc. The volume of 32/64 bit processors in the embedded markets has overtaken the volume in the PC-market, and is growing more rapidly.

EPG-Svl (micro)-architects, designs, and implements MIPS processor cores for high volume embedded markets. This market is diverse, and our core portfolio tries to address the whole spectrum of diversity. This diversity translates into different design constraints for different markets. Whereas the PC-market is mainly focussed on speed, embedded markets design constraints include:

- size (in high volume markets, size is cost)
- power consumption (affects packaging costs, and battery life of hand held devices)
- speed (both frequency and CPI)
- design complexity (short time to market)

Job description Within the architecture team of EPG-Svl there is a vacancy for a student addressing system design studies. As a supplier of cores to system-on-silicon integrators, we are interested in the influence of system parameters on our cores' performance. In shared memory, shared bus, multi-processor systems, system parameters such as memory latency, memory bandwidth, and bus utilization, will influence the design of our cores (such as cache associativity, cache line sizes, pre fetching techniques, size of internal core buffers, etc.)

The study will be performed using the Philips framework "Tool for System Simulation (TSS)". TSS allows for co-simulation of multiple cores in a system.

The study should result in design suggestions for future cores, taking into account the design constraints as mentioned above.

Duration 4-5 months

Contact persons

Universiteit Twente: Pierre Jansen,

tel. nr. +31 53 489 3717, e-mail jansen@cs.utwente.nl

EPG-Svl, human resources: Ed Avila,

tel. nr. (408) 434 7971, e-mail Edward.Avila@philips.com

EPG-Svl, technical information: Jan-Willem van de Waerdt,

tel. nr. (408) 991 3779, e-mail Jan-Willem.Van_De_Waerdt@philips.com