HIPEAC MEMBER CHRISTOPHE DUBACH RECEIVES INTEL EARLY CAREER FACULTY HONOR PROGRAM AWARD

This annual award is designed to help Intel connect with the best and brightest early career faculty members at the top universities around the world.

Christophe Dubach, lecturer at the University of Edinburgh, UK, has been selected as a recipient of the Intel 2012 Early Career Faculty Honor Program Award. This award provides financial and networking support to faculty members who show great promise as future academic leaders in disruptive computing technologies. This year, a total of 75 highly qualified candidates applied for the award. The selected winners were from 9 European and 11 US universities including Carnegie Mellon, UC Berkeley, Cornell and MIT.

Christophe's research interests lie in the area of software/hardware runtime adaptation for heterogeneous systems. His current focus is on dynamic adaptation for heterogeneous multicore processors. The support from this award will allow Christophe to establish a stronger link with Intel and work towards addressing some of the major challenges facing industry.

Christophe (on the right) receiving his award at Intel Barcelona.

HIPEAC STUDENT PEJMAN LOTFI-KAMRAN RECEIVES INTEL DOCTORAL STUDENT HONOR PROGRAMME FELLOWSHIP

The fellowship is granted to Pejman Lotfi-Kamran from EPFL for his contributions on scale-out processors

Datacenters are the backbone of cloud computing. Emerging cloud workloads like web search and social networking are scale-out in nature. Scale-out workloads run on thousands of servers, each processing a shard of a massive memory-resident dataset, to serve independent client requests. Because the combination of processors and memory dominates server acquisition and operating costs, datacenters require processors that efficiently use the memory and maximize throughput per dollar of ownership expense.

The PhD thesis of Pejman Lotfi-Kamran, who is a PhD candidate at EPFL, targets the design of server processors optimized for scale-out workloads. These workloads have three main characteristics that can be leveraged to reach high processor efficiency: abundant request-level parallelism, large instruction footprint, and large memory-resident datasets. These characteristics favor server processors with many cores for high parallelism, a modestly sized last-level cache (LLC) and low-latency interconnects for rapid instruction delivery; and rich off-chip bandwidth for data transport. Pejman demonstrated that processors based

on many lean cores provide superior throughput to conventional "fat-core" server processors. His research relies on two critical observations: First, large LLCs waste precious silicon real estate that could have been better used to integrate more cores. Second, the organization of a many-core processor has a significant impact on its performance. Existing many-core chips, such as those by Tilera, sacrifice much of the on-die real estate to LLC and employ a tiled organization that incurs a high on-chip communication overhead. In contrast, Pejman proposes a many-core processor based on the notion of pods. A pod is a module that tightly couples many cores to a modestly sized LLC through a low-latency interconnect. The proposed processor integrates many pods where each pod is a self-contained server-on-a-chip running a full software stack. Pejman formulated a methodology to determine the optimal number of cores and LLC capacity to integrate in a pod for peak throughput. The proposed design, called the Scale-Out Processor, delivers peak throughput in today's process technology and affords near-ideal scalability as the technology scales.

Pejman receiving his award at Intel Barcelona.

Pejman is one of the recipients of the Intel doctoral student honor programme fellowship for the 2012-2013 academic year. This award is given to exceptional PhD candidates pursuing leading-edge innovation in fields related to Intel's business and research interests in the European Union, Switzerland and Russia. This is a prestigious and highly competitive program with a limited number of fellowships awarded annually. Recipients of this award are recognized as being amongst the best in their areas of research.