Cedric Nugteren

Curriculum Vitae

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Year of birth:
1986

Nationality:
Dutch

Summary

I received my Bachelors (Electrical Engineering) and Masters (Embedded Systems) from Eindhoven University of Technology. In April 2014, I successfully defended my PhD thesis at the same university. During my PhD I gained experience through two internships: with the OpenCL compiler group of ARM in Cambridge (UK), and with the cuFFT team of NVIDIA in Santa Clara (CA). After my PhD, I started working as a GPU consultant at the SURFsara supercomputing centre.

My main expertise is GPU programming (CUDA/OpenCL). On top of this, I have also experience with compilers, HPC, processor architecture, and performance modelling. I am also interested in modern and elegant accelerator programming models, such as OpenMP 4.0, SyCL and Boost.Compute.

My passion is developing beautiful and performant C++11 codes, possibly accelerated by GPUs.

Work experience

05/2014 - Current **GPU/Supercomputing consultant,** *SURFsara*, Netherlands
I am a consultant for the Dutch supercomputing/HPC centre, specialised in accelerator programming (Xeon Phi, GPU). I have worked on codes from various scientific domains, including finite element methods, fluid dynamics, and quantum chemistry.

01/2014 - 04/2014 **Intern,** *NVIDIA Santa Clara,* California
I worked for four months as a GPU programmer at the NVIDIA headquarters within the math libraries group, developing and performance tuning the CUDA Fast Fourier Transform library (cuFFT).

08/2012 - 12/2012 **Research intern,** *ARM Cambridge,* UK
During a 4-month HiPEAC internship I performed research within the Mali OpenCL compiler team. The result is a machine-code level mathematical performance model for the Mali low-power GPUs.

11/2009 - 11/2010 **Scientific Programmer,** *Eindhoven University of Technology,* Netherlands
Within the Electronic Systems group, I worked full-time as a scientific programmer, which included research into processor architecture (GPUs, SIMD) targeted at image and video processing applications.

10/2009 - 12/2014 **Founder and owner of Kinento,** *Kinento,* Netherlands
Kinento is a privately owned e-commerce company. Three PHP extensions to Magento were developed and maintained. From 2015 onwards, they are open-sourced and available for free on GitHub.

Education

11/2010 - 04/2014 **PhD,** *Eindhoven University of Technology,* Netherlands
Under the supervision of prof. H. Corporaal, I performed research on GPUs. This covered most aspects of GPUs, including architecture, compilers, performance modelling, and programmability. This has led to two journal articles, a patent application, and several publications in international conferences and workshops. My PhD thesis is titled 'Improving the Programmability of GPU Architectures'.

08/2007 - 08/2009 **MSc. in Embedded Systems,** *Eindhoven University of Technology,* Netherlands

08/2004 - 08/2007 **BSc. Electrical Engineering,** *Eindhoven University of Technology,* Netherlands

Skills

General

Highly motivated/driven, strong presenting/documenting skills, well organised, sociable, creative

Languages

Dutch (native speaker), English (very good), French (good), Spanish (basic)

Computer proficiency

Main languages: C, C++/C++11, CUDA, OpenCL, Ruby

Miscellaneous: CMake, Git

Selected publications

In 2014

- C. Nugteren, H. Corporaal. **Bones: An Automatic Skeleton-Based C-to-CUDA Compiler for GPUs.** *ACM TACO 11, 4, Article 35*. 2014.
- C. Nugteren, G.J. van den Braak, H. Corporaal. **A Study of the Potential of Locality-Aware Thread Scheduling for GPUs.** *In MuCoCoS '14*. Springer, 2014.
- C. Nugteren. **Improving the Programmability of GPU Architectures.** *PhD-thesis, Eindhoven University of Technology*. 2014.
- C. Nugteren, G.J. van den Braak, H. Corporaal, H. Bal. **A Detailed GPU Cache Model Based on Reuse Distance Theory.** *In HPCA '14*. IEEE, 2014.

In 2013

- C. Nugteren, R. Corvino, H. Corporaal. **Algorithmic Species Revisited: A Program Code Classification Based on Array References**. In *MuCoCoS '13*. IEEE, 2013.
- C. Nugteren, P. Custers, H. Corporaal. **Algorithmic Species: An Algorithm Classification of Affine Loop Nests for Parallel Programming**. *ACM TACO 9, 4, Article 40.* 2013.

In 2012

- C. Nugteren, H. Corporaal. **The Boat Hull Model: Enabling Performance Prediction for Parallel Computing Prior to Code Development**. In *CF '12*. ACM, 2012.
- C. Nugteren, H. Corporaal. **Introducing 'Bones': A Parallelizing Source-to-Source Compiler Based on Algorithmic Skeletons**. In *GPGPU-5*. ACM, 2012.

In 2011

- C. Nugteren, G.J. v.d. Braak, H. Corporaal, B. Mesman. **High Performance Predictable Histogramming on GPUs**. In *GPGPU-4*. ACM, 2011.

Referees

- Henk Corporaal, *PhD advisor at Eindhoven University of Technology*
- Anton Lokhmotov, *Internship supervisor at ARM*
- Alex Fit-Florea, *Teamleader at NVIDIA*