Rahul Garg

Email: rahul.garg@mail.mcgill.ca

Education

PhD. in Computer Science
2009 – Present

McGill University, Montreal, Canada (Supervisor: Prof. Laurie Hendren)

We have built an embedded, reusable, language independent optimizing compiler infrastructure and smart runtime system for building array-based languages targeting CPUs and GPUs. Also built an auto-tuning, portable high-performance OpenCL library called RaijinCL for matrix operations that rivals the performance of vendor BLAS on multiple GPU families.

M.Sc. in Computer Science
2006 – 2009

University of Alberta, Edmonton, Canada (Supervisor: Prof Nelson Amaral, GPA: 3.8/4.0)

Thesis work was about building a compiler framework to compile Python/NumPy code to CPUs and GPUs and introduced novel algorithms for analyzing the data to be transferred between CPU and GPU.

B.Tech. in Chemical Eng.
2002-2006

Indian Institute of Technology, Kharagpur, India (GPA: 9.0/10.0)

Thesis focused on machine learning based control systems for nonlinear chemical reactors

Internships

LISA lab, University of Montreal:
May – July 2005

Worked on a machine learning algorithm for classifying compound molecules as active or non-active based on template models generated by my algorithm from a database of labeled examples

Academic peer-reviewed papers

- " Velociraptor: An Embedded Compiler Toolkit for Numerical Programs Targeting CPUs and GPUs" accepted at PACT 2014, Rahul Garg and Laurie Hendren

- "A portable and high-performance general matrix-multiply (GEMM) library for GPUs and single-chip CPU/GPU systems" : Parallel, Distributed and Network-based Processing (PDP) 2014, Rahul Garg and Laurie Hendren

- "Compiling Python to a hybrid execution environment": GPGPU Workshop 2010. Rahul Garg and Nelson Amaral. Link : http://dl.acm.org/citation.cfm?id=1735695

- "A new compilation path: From Python/NumPy to OpenCL": PyHPC 2011 workshop. Xunhao Li, Rahul Garg and Nelson Amaral.
  Link : http://www.dlr.de/sc/desktopdefault.aspx/tabid-7649/13008_read-32723/

- "Multidimensional blocking in UPC": LCPC 2008. Barton, Cascaval, Almasi, Garg, Amaral and Farreras. Link: http://dl.acm.org/citation.cfm?id=1433050.1433056

Skillsets

- Very good knowledge of C and C++ and working knowledge of Python and MATLAB. Exposure to various languages such as Java, Scala, Common Lisp, Javascript, OCaml.

- Experienced with compiler tools and APIs including LLVM and ANTLR

- Good knowledge of APIs such as OpenCL, OpenGL, Qt

- Experienced in code optimizations on many recent GPUs and x86 CPUs