Scott Grauer-Gray

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SUMMARY

Masters graduate with research publications, industry and teaching experience, and a record of academic excellence. Primary interests include GPU computing as well as other hardware accelerators, program optimization, computer vision, and graphics.

EDUCATION

Masters in Computer and Information Sciences (CISC), University of Delaware, Newark, DE; September 2006-May 2015
GPA: 3.9 / 4.0   Advisor: Dr. John Cavazos

Bachelor of Science in Computer Science, minor in math, University of Massachusetts, Amherst, MA; Sept 2002-Aug 2006
Graduated Summa Cum Laude with a GPA of 3.8/4.0

COMPUTER SKILLS

C/C++, CUDA, OpenCL, Python, Java, Matlab, Visual Studio, SQL, Eclipse, OpenGL, OpenCV, ImageJ, HTML, Git, JIRA

INDUSTRY EXPERIENCE

Senior Software Engineer
Faro Technologies, December 2015-February 2019

Worked on image processing with Vantage Laser Tracker stereo cameras, including implementation of ActiveSeek features to lock laser on intended target and on navigation to targets that are relatively close together, as well as camera compensation and user interface for camera view. Worked on firmware using C++ and user interface using Java Swing. Also developed software tool to retrieve exact location of LEDs on a probe using a microscope in its development environment.

Intern
Intel, July 2013-July 2014

Worked on augmented reality proof-of-concept application using Intel graphics. Specific work included hole-filling of areas w/ unknown depth from a depth camera and optimization of application across hardware from low-power Intel Atom processor to high-power Intel Core w/ Iris Pro graphics.

Intern
nVidia, summer 2011

Worked on NPP CUDA library, specifically on optimizing functions used for parallel processing of 1D signals; these functions implemented addition, division, exponent, square root, and arctan operations on each signal element.

RESEARCH EXPERIENCE

Dr. John Cavazos' Lab, University of Delaware: June 2009 – May 2014

Worked on code transformations to optimize CUDA kernels which are run on the GPU, including using different modes of storage (local memory, shared memory, and registers) and loop unrolling, and applying these transformations to optimize CUDA belief propagation implementation, worked on framework to generate code transformations to optimize any given CUDA or OpenCL program using directives in the HMPP toolkit from CAPS Enterprise, and worked on using GPUs to speed up financial applications via native CUDA/OpenCL as well as using OpenACC and HMPP directives.

**Video/Image Modeling and Synthesis Laboratory (run by Dr. Chandra Kambhamettu),
University of Delaware: September 2006-June 2009**

Worked on tracking the motion of sea ice from satellite imagery, traveled to APLIS '07 ice camp. Implemented stereo/motion algorithms with the goal of tracking cloud motion from a sequence of satellite imagery, and explored using GPU for real-time processing. Developed GPU belief propagation implementation using CUDA for stereo processing and motion estimation and modified the implementation to use less storage without significantly impacting output accuracy.

PUBLICATIONS

•   S. Grauer-Gray, W. Killian, R. Searles, J. Cavazos. Accelerating Financial Applications on the GPU. To Appear in Sixth Workshop on General Purpose Processing using GPUs, 2013.

•   S. Grauer-Gray, L. Xu, R. Searles, S. Ayalasomayajula, J. Cavazos. Auto-Tuning a High-Level Language Targeted to GPU Codes. Proceedings of Innovative Parallel Computing (InPar), 2012.

•   Z. Yu, C. Thorpe, X. Yu, S. Grauer-Gray, F. Li, J. Yu. Dynamic Depth-of-Field on Live Video Streams: A Stereo Solution. In Computer Graphics International (CGI), 2011.

•   S. Grauer-Gray, J. Cavazos. Optimizing and Auto-Tuning Belief Propagation on the GPU . In 23rd International Workshop in Languages and Compilers for Parallel Computing (LCPC), 2010.

•   S. Grauer-Gray, C. Kambhamettu. Hierarchical Belief Propagation To Reduce Search Space Using CUDA for Stereo and Motion Estimation . In IEEE Workshop on Applications of Computer Vision (WACV), 2009.

•   S. Grauer-Gray, C. Kambhamettu, K. Palaniappan. GPU Implementation of Belief Propagation Using CUDA for Cloud Tracking and Reconstruction. In 5th IAPR Workshop on Pattern Recognition in Remote Sensing (PRRS), 2008.

TEACHING EXPERIENCE

Instructor
University of Delaware, summer 2009

Taught CISC 101, an introductory computer science course titled "Computer and Information Systems". Responsible for lectures, assignments, evaluation, assisting students in office hours, and supervising a TA.

Teaching Assistant (TA):
University of Delaware, January 2007-May 2010; September 2012-December 2012, September 2014-May 2015

Held lab sessions, office hours, and graded assignments; served as TA for CISC 101, titled "Computer and Information Systems", CISC 106, titled "General Computer Science for Engineers", CISC 181, titled "Introduction to Computer Science II", CISC 220, titled "Data Structures", CISC303, titled "Automata Theory", CISC 320, titled "Introduction to Algorithms", and CISC 401/601, titled "Elements of the Theory of Computation", and CISC 481/681, titled "Artificial Intelligence".

Tutor:
University of Massachusetts, September 2003-May 2006

Tutored undergraduate students in a variety of courses, including computer science, calculus, physics, and statistics.

COURSEWORK

Graphics and Vision: Computer Graphics, Computer Vision, Computational Photography, Rendering and Image Synthesis, Computational Geometry

Systems: Operating System, Computer Architecture, Compiler Construction, Program Analysis and Transformation, Computer Networks, Multicore Architectures

AI and Learning: Artificial Intelligence, Computational Linguistics

Theory: Algorithm Design and Analysis, Elements of Theory of Computational