

Charles K. Garrett

PhD Student
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Education

The University of Texas at Arlington (01/2010 - present)

PhD Advisor: Ren-Cang Li

Purdue University (08/2005 - 05/2007)

MS Mathematics

Texas Christian University (08/2001 - 12/2004)

BS Mathematics, Minor Computer Science

Awards

SIAM Travel Award (02/2012)

This travel award enabled me to go to the Parallel Processing for Scientific Computing conference (PP12) hosted by SIAM to present work I did as an intern at Oak Ridge National Laboratory.

Enhanced Graduate Teaching Assistant (08/2011 - present)

This is awarded to outstanding teaching assistants and covers all tuition costs and awards the student with a larger stipend than the usual teaching assistant.

GAANN Fellowship (01/2010 - 05/2011)

This fellowship covered part of my costs for graduate school.

IMSM Workshop (07/19/2010 - 07/27/2010)

An all expenses paid graduate research workshop at North Carolina State University where teams of six students worked on problems from various industries. Our team worked on a project about decoding brain signals in quadriplegic patients to enable more mobility and interaction with their surroundings.

Andrews Fellowship (08/2005 - 05/2007)

Covered all costs and included a stipend for graduate school at Purdue University.

Work Experience

The University of Texas at Arlington (08/2011 - present)

Arlington, TX

I currently teach and recently taught Calculus 2 to a class of 80 to 90 students.

Oak Ridge National Laboratory (06/2011 - 08/2011)

Oak Ridge, TN

My main responsibility for this internship was to implement a numerical code for a kinetic entropy model in a heterogenous parallel environment including a GPU.

The University of Texas at Arlington (01/2010 - 05/2010)

Arlington, TX

I taught college algebra to a class of 60 students.

Howell Instruments, Inc. (08/2007 - 12/2009)

Fort Worth, TX

I wrote Windows based software to support government contracts pertaining to jet engine performance as well as wrote embedded software for some of our products. I also analysed gas turbine performance for helicopter and jet engines.

E2020, Inc. (06/2007 - 07/2007)

Phoenix, AZ

I gave a full set of video taped lectures for an algebra class to be viewed on the internet.

Saint Mary's High School (04/2007 - 05/2007)

Phoenix, AZ

When a teacher had to leave before the end of the academic year, I took over her classes for the remainder of that year. The courses were Calculus, Precalculus, and Algebra, which had over 120 students altogether.

Tarrant County College (01/2005 - 06/2005)

Fort Worth, TX

I taught three classes over the course of the spring semester and the first summer semester. The classes were Arithmetic and Algebra I.

Research Interests

Numerical Solutions of Ordinary Differential Equations

Numerical Linear Algebra

Elementary Function Computations

High Performance Computing

Computer Abilities

I can program in C, C++, and Java very efficiently.

I am fairly proficient with Matlab.

I can work in Windows, Linux, and MacOS environments well.

I am proficient at programming NVIDIA GPUs using CUDA.

I have some knowledge about OpenMP.

Papers

GIP Integrators for Matrix Riccati Differential Equations

Charles K. Garrett and Ren-Cang Li (in progress)

http://www.uta.edu/math/preprint/rep2011_05.pdf

Low Order Polynomial Approximations to Sine and Cosine for Fast Computations

Charles K. Garrett (Technical Report)

Neural Decoding and Modulation in Patients with Tetraplegia

Charles Kristopher Garrett, Matthew Labrum, Martial Longla, Guy-vanie Marcias Mikonkana, Varada Sarovar, Guolin Zhao (2010)

This is part 6 of the Sixteenth Mathematical and Statistical Modeling Workshop for Graduate Students.

<http://www.ncsu.edu/crsc/reports/ftp/pdf/crsc-tr10-16.pdf>

Presentations

Using a GPU in the Parallelization of a Simple Entropy-Based Moment Model
Contributed Lecture at the SIAM Conference on Parallel Processing for Scientific Computing (02/2012)

Parallelization Problem on an NVIDIA GPU

Presentation at Texas Christian University (02/2012)

Parallelization Problem on an NVIDIA GPU

Presentation at the Applied Math Seminar at the University of Texas at Arlington (11/2011)

GIP Integrators for Matrix Riccati Differential Equations

Poster Presentation at the SIAM Conference on Computational Science and Engineering (02/2011)

Neural Decoding in Patients with Tetraplegia

Presentation at the Applied Math Seminar at the University of Texas at Arlington

(10/2010)

Community/University Involvement

Midcities Math Circle (04/2010 - present)

The midcities math circle is a group dedicated to helping middle and high school students learn the art of mathematical problem solving. I am currently one of the faculty helpers of this organization. The website for the math circle is <http://midcitiesmathcircle.org/>.

Putnam Club (02/2011 - 05/2011)

I created a small club for undergraduate students at the University of Texas at Arlington to help them with the Putnam competition.