Melvyn Ian Drag

Curriculum Vitae

Highlights

Desire to work on challenging problems that require clever algorithm design as well as intimate knowledge of specific languages. Mathematically sophisticated computer scientist. Skilled in OOP, functional programming, GPU computing, web development, and data visualization. Favorite algorithms are the Conjugate Gradient Method, Huffman Coding, and the Horner Rule.

Sample Programming Projects

8 Color Network	Network analysis tool for studying the evolution of unstructured networks with local interactions.
Epithelium	Master's Thesis. Simulator of the development of epithelial tissue.
Python Chess	Implemented advanced moves such as pawn promotion in an unfinished game found on github.
Assault Cube - MyMod	Modified version of a popular first person shooter. Added maps, changed physics, modified graphics, etc.
Heat Solver	PDE solver with many visualization options.

Relevant Work Experience

August 2015 — **Instructor**, The Ohio State University, Columbus.
Taught two summer classes: *Essentials of Numerical Methods* and *Introduction to Python Programming*.

Jan 2015 - September 2015 — **Modeler/Engineer**, Battelle Memorial Institute, Columbus.
Development of powerful terrorism risk analysis tool in C++, Python and MPI. Co-Developer of Excel-based risk tool with rich functionality provided through VBA macros. Simple system administration tasks. Regular user of Oracle / Postgres / Access DBs.

2014-Present — **GRE Instructor, Marketing Agent**, The Princeton Review, Columbus.
Highly rated instructor. Presenter at marketing events.

Fall 2014 — **Calculus Recitation Instructor**, The Ohio State University, Columbus.
Highly rated instructor.

Fall 2008 - Spring 2013 — **Mathematics Tutor**, New Jersey City University, Hudson County Community College, Jersey City.
Tutored all levels of undergraduate mathematics

Fall 2008 - Spring 2013 — **Private Mathematics Tutor**, New Jersey.
Tutored high school and college students on a one on one basis.

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Education

Summer 2015 **Workshop and Tutorial on PETSc**, *Argonne National Lab*, Learn to use the PETSc library for solving partial differential equations.

2013–2015 **Master of Mathematical Science: Computational Science.**, *The Ohio State University*, Analytical and numerical methods for PDEs, parallel computing, advanced algorithms. Master's thesis: Epithelial tissue simulation. Investigation of pros and cons of various implementations of a model. Exploration of parallelization strategies.

2008-2012 **BA Mathematics**, *New Jersey City University*, Undergraduate mathematics degree with classes in Abstract Algebra, Differential Equations, Number Theory, Vector Calculus, and other fundamental mathematical subjects, Several credits short of double major in Spanish.

Summer 2010 **Study Abroad**, *Universidad San Francisco de Quito, Ecuador*, Summer classes in chemistry and Spanish composition.

Academic Awards

2015 Rhodes Graduate Fellowship for Computational Scientists, OSU

Summer 2014 Travel grant from OSU to attend Scipy conference in Austin (scientific computing in Python conference.)

2013-2014 Graduate Fellowship, OSU

2012 Grossnickle Scholarship, NJCU. For the senior with the highest GPA.

2008-2012 Presidential Scholarship (Full Tuition), NJCU

2011 12th place out of approximately 100 at the Garden State Undergraduate Mathematics Contest

Computer skills

Essential Familiarity with multiple programming paradigms and parallelization strategies.

Proficient C++, Python, CUDA, openMP, LaTeX, Linux, bash, Excel, SQL, git.

Basic JAVA, Haskell, Scheme, MPI, Awk, Windows, HTML5, WebGL, d3.js, and more.

Recent Presentations

2015 OSU and NJCU. "Implementing the Conjugate Gradient Method in Python: A Tutorial."

2015 Battelle. "Finite Difference Methods for Modeling Diffusion."

2015 Battelle. "Epithelial Tissue Simulation."

2014 PyOhio conference. "Solving the Heat Equation in Python".

2014 Columbus Code Camp. "Soft Error Vulnerability in Sparse Matrix Vector Products".

2014 OSU. "A Tour of Linear Algebra Libraries in C++ and Python".

2014 Python Monthly Meeting. "Cache efficient Python".

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Languages

English **Mothertongue**

Spanish **Fluent**

Portuguese, Italian **Reading and Listening Proficiency.**

Interests

- Foreign languages with interesting movies and radio programs and rich literatures.
- Dog training.
- Raising my twin boys!

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