Michael Zhao (US Citizen)

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Education

Mathematics Major, Computer Science Minor — August 2013-present
University of Utah, Salt Lake City, UT — (Graduation: May 2017)
Overall GPA: 3.986
Major GPA: 4.0

Skills

Languages:

- Use consistently: Python, C++, LaTeX
- Used for multiple projects: SQL, C#, Java
- Comfortable with: R, Perl, PHP, MATLAB
- Exposure to: HTML, Android, Haskell

Environments:

- Operating Systems: Linux (use regularly), Windows
- IDEs: Vim, Qt, Eclipse, Visual Studio

Experience

Research in Industrial Projects at Hong Kong, HKUST — Summer 2015

- Researched methods to improve logo recognition and detection and developed an Android app.
- Coded the backend for a logo recognition app. Managed an Apache server and SVN repository on Ubuntu.
- Wrote code to query Bing and Flickr APIs for images of logos, and investigated methods to clean the dataset of mislabeled images. Created the codebase to cross-validate and finetune existing convolutional neural network models in Caffe, achieving 93% accuracy.
- Optimized another team's Python code, making use of multiprocessing and sparse matrices, reducing the runtime from hours to minutes.

Random Graphs and IEP, University of Utah — Spring 2015

- Implemented several standard numerical optimization algorithms in MATLAB to minimize the eigenvalue mismatch of the graph Laplacians of a BTER random graph to the "data" graph they were generated from. With Dr. Braxton Osting.
- Studied different renditions of the inverse eigenvalue problem for the graph Laplacian: first, as a parameterized inverse eigenvalue problem, and second as a Jacobi inverse eigenvalue problem.

Inverse Boundary Value Problems, University of Utah — Fall 2014

- Studied the inverse problem of determining, from boundary measurements, whether an object with unspecified geometry has undergone elastic or electrical breakdown. With Dr. Graeme Milton's intro to research class.
- Paper selected for undergraduate paper minisymposium at the SIAM Conference on Computational Science and Engineering 2014.

Internship in Brain Image Analysis, SCI Institute — May-June 2014

- Used support vector machines in R to tackle the supervised learning problem of identifying patients with autism based on fMRI data.
- Came up with a feature selection method used by all groups in the program.

Publications

- *Criteria for guaranteed breakdown in two-phase inhomogeneous bodies,* with Patrick Bardsley, Jonathan Boyles, Nathan Briggs, Zoe Koch, Michael Primrose, myself and Dr. Graeme Milton. To be submitted.

Presentations

- *Creation and Optimization of a Logo Recognition System,* August 2015. Research in Industrial Projects at Hong Kong University of Science and Technology.
- *Creation and Optimization of a Logo Recognition System,* July 2015. University of Macau.
- *Bounds on Electrical Fields in Two-Component Inhomogeneous Bodies*, March 2015. SIAM Computational Science and Engineering Minisymposia.
- *Spectra of Random Graph Models,* May 2015. University of Utah Math Department REU Symposium.
- *An inverse problem: finding boundary fields which produce breakdown,* December 2014. University of Utah Math Department REU Symposium, with Nathan Briggs.

Selected Coursework

Mathematics

- Commutative Algebra
- Algebraic Curves
- Algebraic Topology (undergrad)
- Probability, Differential Equations

Computer Science

- Models of Computation
- Machine Learning
- Data Structures & Algorithms (Java)
- Software Practices I, II (C#, C++)

Academic Honors

Eccles Distinguished Scholarship recipient (Spring 2013)
EnergySolutions Distinguished Scholarship recipient (Spring 2011)
Dean's List (2013-2014, 2014-2015)
College of Science Student Spotlight (Fall 2014)