

## Work History

### Principal Engineer: [Performance Star](#)

2019 -

Analysis and fault detection for semiconductor manufacturing machines. Wavelets, genetic programming, recurrent neural nets, probabilistic programming, gaussian processes, autograd. (Python, Torch, Java, Keras, Numpy, Pandas, Scikit-Learn)

### Data Scientist: [Facebook](#)

2018 - 2019

Worked with the World.AI team to ingest and digest OpenStreetMap diffs. Helped create accurate population density maps of Africa combining census data and satellite imagery. (Python, Presto, Giraph, Hadoop, Hive, Gluster, C++, Java, JavaScript)

### Senior Staff Engineer: [IQVIA](#)

2017 - 2018

Built general diagram of things charting engine with arbitrary depth axis-aligned recursively nested, interactive, animated charts. Chart components and databinding specified by an XML-based markup language used by a team of 100+ engineers in India to build client specific applications. (C#, JavaScript)

### CTO, Co-Founder: [LBD Data](#)

2008 - 2018

Built a suite of mobile video software for [police](#) and [public transit](#). The suite is used throughout the United States. (C#, Winforms, WPF, libavcodec, OpenStreetMap, OpenCV, Amazon S3, DynamodDB, SQL, JavaScript, HTML5, C++)

### Assistant Professor, Mathematics: [Franklin & Marshall College](#)

2014 - 2017

Taught math!

### Senior Software Engineer: [Markit on Demand](#)

2010 - 2011

Optimized middleware supporting hundreds of developers. (C#, C++)

### Kernel Engineer: [Synaptics](#)

2009 - 2010

Improved reliability of [TouchPad driver](#). (C#, C++)

### Software Engineer: [Markit on Demand](#)

2007 - 2009

Charts, reports, and tools for the financial services industry. (C#, C++, HTML5, JavaScript)

### Scientific Programmer: [Titan National Security](#)

2006 - 2007

Created software to model the effects of electromagnetic pulses on military systems. (C++, C#)

## Research

### PhD, Mathematics: [Arizona State University](#)

2011 - 2013

- discrete math, combinatorics, graph coloring, games and algorithms
- 30+ [publications](#) in top-tier discrete mathematics and philosophy journals
- [Erdős number 2](#)