# Andrew M. McNutt

*Doctoral Student in Computer Science*
*Interests: InfoVis, Databases, Computational Notebooks, Dashboards*

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## Education

### University of Chicago
*Doctoral Student, Computer Science, September 2017 to Present, GPA: 3.9 / 4*
Advised by Gordon Kindlmann
Coursework: Scientific Visualization, Introduction to Databases, Topics in Distributed Analytics, Computational Linguistics, Deep Learning Systems, Statistical Machine Learning, Discrete Math

### Reed College
*Bachelor of Arts, Physics, 2010 to 2014, GPA: 3.3 / 4*
Senior Thesis: *Non-equivalent Lagrangian Mechanics*, advised by Nelia Mann
Commendation of Academic Excellence

## Professional Experience

### Uber
Data Visualization Engineer II *October 2015 to May 2017*
Worked as a embedded front-end visualization developer on a variety of teams and platforms. A few essential projects included webGl based map and charting visualization systems that allowed users to dynamically interact with millions of rows of data across a variety of formats, an analytics platform for monitoring the health and business outcomes of AB testing experiments, and a system for visualizing simulations about Vertical Takeoff and Landing devices.

### Collaborative Drug Discovery
Scientific Visualization Developer *November 2014 to October 2015*
Acted as a software developer on a wide variety of projects on all ends of a Rails based stack. Founded and ran a lunch and learn collaborative educational program for the team. Selected projects include: optimized a bayesian machine learning system, built a visualization platform for high dimensional drug discovery data, and technical writing and research for scientific publications.

## Projects

### react-vis
Developed and acted as lead maintainer on a popular react charting framework. I developed a wide variety of new chart types, brought the whole project to a new standard of code quality through rigorous testing, and supported many new developers. The project has gained more than four thousand github stars while I've acted as the primary maintainer.

### DoricDB
Developed an in browser column-based analytics database on top of IndexedDB. The aim of this project was to empower browser based applications to locally perform analytics on datasets hundreds of megabytes in size rather than tens. This project makes extensive use of web workers and modern ES6 features in order to ensure a positive user experience.

## Skills & Technologies

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|---|---|
| *Languages* | Javascript, Python, Ruby, Scala, C |
| *Visualization* | d3, Processing, webGL |
| *Databases/Analytics* | mySQL, postGRES, Redis, Browser-based NoSQL systems (eg IndexedDB etc) |
| *Web Dev* | React, Flux/Redux, Node, Backbone.js, jQuery, SCSS/Sass, Ruby on Rails, Flask |
| *ML* | Keras, Tensorflow |
| *Scientific Computing* | Mathematica, Grid Mathematica, Numpy, Pandas |
| *Design/Markup* | Latex, Omnigraffle, Photoshop, Sketch |

## Academic Publications

**A McNutt**, G Kindlmann. *Linting for Visualization: Towards a Practical Automated Visualization Guidance System* VisGuides 2018 (IEEEVIS workshop)

S Ekins, AM Clark, K Dole, K Gregory, **A McNutt**, AC Spektor, C Weatherall, N Litterman, B Bunin *Data Mining and Computational Modeling of High-Throughput Screening Datasets.* Reporter Gene Assays, pp 197–221 (2018)

AM Clark, K Dole, A Coulon-Spektor, **A McNutt**, G Grass, JS Freundlich, RC Reynolds, & S Ekins. *Open Source Bayesian Models: I. Application to ADME/Tox and Drug Discovery Datasets.* Journal of Chemical Information and Modeling (2015)

J Franklin, Y Guo, **A McNutt**, & A Morgan. *The Schrodinger-Newton system with self-field coupling.* Classical and Quantum Gravity (2015)

**A McNutt**. *Nonequivalant Lagrangian Mechanics* Undergraduate Thesis. Reed College (2014)

## Popular Press

**A McNutt**. *Advanced Visualization with react-vis.* Towards Data Science. May 21, 2018

## Presentations & Talks

*Design Patterns For Data Visualization in React.* React Chicago, August 29, 2018, Chicago, Illinois.

*Nonequivalant Lagrangian Mechanics.* Reed Physics Seminar, April 8, 2014, Reed College, Portland, Oregon.

*The Schrodinger-Newton System with Self-Coupling.* Reed Physics Seminar, September 18, 2013, Reed College, Portland, Oregon.

## Teaching Experience

**University of Chicago**
Teaching Assistant *September 2017 to Present*
*CMSC 12100 - Computer Science with Applications 1.* Duties included teaching a weekly computation lab, grading assignments, vetting assignments and labs, and offering hands on one on one help in office hours. Languages and libraries covered: Python, NumPy, Pandas.
*CMSC 15100 - Introduction to Computer Science 1.* Duties included teaching a weekly lab, grading assignments. Languages and libraries covered: Racket
*CMSC 23900 - Data Visualization.* Primary teaching assistant. Duties included lecturing, constructing curricula, writing exams as well as homework and lab assignments, grading, running labs, holding office hours, and facilitating the construction of course outputs (such as printed posters). Languages and libraries covered: Javascript, d3.js, React, and auxiliary libraries in the react/d3 ecosystems.
*CAPP 30121 - Computer Science with Applications 1* Duties included teaching a weekly computation lab, grading assignments, vetting assignments and labs, offering office hours, and leading discussions. Languages and libraries covered: Python, NumPy, Pandas.

**Uber**
Lecturer *October 2015 to May 2017*
Wrote curricula and taught weekly classes for new engineers about visualization, and offered a bi-weekly session for all new employees on effective data presentation.

**Reed College**
Teaching Assistant *August 2012 to Jan 2013*
Physics 101 - General Physics I. Duties included administration and facilitation of course architecture and preparation of physical demos.