Andrew M. McNutt

PhD Candidate

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Interests: Visualization Validation, Supporting Ad Hoc Workflows through UIs (Dashboards, Notebooks, etc), Linting

EDUCATION

University of Chicago

Doctoral Student, Computer Science, 9/2017 to Present — Advised by Gordon Kindlmann

Masters Degree, Computer Science, 10/2019 — GPA 3.9 / 4

Selected Coursework: Databases, Distributed Analytics, Machine Learning, Deep Learning Systems, Scientific Visualization

Reed College

Bachelor of Arts, Physics, 2010 to 2014 — Advised by Nelia Mann, GPA 3.3 / 4

PROFESSIONAL & RESEARCH EXPERIENCE

Tableau — Research Intern (Visual Analytics) – *June 2019 to September 2019*

Developed software combining metamorphic testing techniques with contemporary visualization theory to investigate difficult to identify problems in visual analytics systems. Our efforts produced an academic paper and a patent. Gave several presentations in the research workshop and the company at large.

University of Chicago — Graduate Researcher– *September 2019 to Present*

Studied contemporary visualization theory and systems. Developed systems for automated analysis of matplotlib charts, using gradient descent to construct novel visualizations (xenographics), and visualizing threaded conversations on the internet. Constructed methods for displaying high-dimensional tag data in a digital humanities context, debugging distributed clustering algorithms, and monitoring ad-hoc parameter searches in deep learning systems.

Uber — Data Visualization Engineer II –*October 2015 to May 2017*

Developed a webGl-based mapping and charting systems that enabled users to dynamically interact with millions of rows of data, 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. Acted as the lead maintainer for an open source charting library react-vis, which, during my tenure, gained thousands of Github stars and is now downloaded hundreds of thousands of times per month.

Collaborative Drug Discovery — Scientific Visualization Developer– *November 2014 to October 2015*

Constructed a visualization platform for high dimensional data that was later developed into an academic publication. Optimized a bayesian machine learning system for human-machine teaming in the drug discovery process. Founded and ran a lunch and learn collaborative educational program.

Reed College — Undergraduate Researcher– *May 2013 to August 2013*

Studied computational simulations of Quantum Gravity as part of Joel Franklin's research group. Developed numerical solutions to the coupled Newton-Schrodinger with self-interaction problem with a specialization in the development of bound states.

SKILLS & TECHNOLOGIES

Languages: (Java|Type)Script, Python, Ruby, C, Haskell
Visualization: Tableau, vega, d3, Processing, webGL
Web Dev: Node, React/Redux, Svelte, Ruby on Rails, Flask
ML: Keras, Tensorflow, Scikit-learn
Databases: mySQL, postGRES, Redis*, MongoDB
Other: Latex, Omnigraffle, Photoshop, Sketch, React Native

AWARDS

MindBytes Research Symposium *October 2019*
Best Poster in Visualization

Graduate Council Travel Fund *October 2019*
University of Chicago

Information is Beautiful Awards *September 2019*
Long Listed for Unusual and Visual Analytics Categories

Teaching Assistant Prize *June 2019*
Nominated by Students and Awarded by Faculty
University of Chicago, Department of Computer Science

Art & Sci Expo *May 2019*
2nd Place (By Popular Vote) for Printed Media Category
University of Chicago

Commendation of Academic Excellence *May 2014*
Merit given to students exhibiting exemplary scholarship
Reed College

LEADERSHIP & TEACHING EXPERIENCE

University of Chicago
Instructor
CAPP 30239 - Data Visualization For Public Policy. 2020

Visualization Research Reading Group
Founder and Director. February 2019-Present

Teaching Assistant
CMSC 23900 - Data Visualization. 2019
CAPP 30239 - Data Visualization For Public Policy. 2019
CAPP 30121 - Computer Science with Applications 1. 2018
CMSC 23900 - Data Visualization. 2018
CMSC 15100 - Introduction to Computer Science 1. 2018
CMSC 12100 - Computer Science with Applications 1. 2017

Graduate Student Ministry (CS Grad Representatives)
Facilitator of CS Grad Weekly Coffee Break. 2018

Open Access VIS / EuroVIS
Contributor / Organizer. 2019

South Side Civic
Facilitator
Scopathon. 2019

Uber
Lecturer
Uberversity. 2016-2017
Visualization Eng-ucation. 2015-2017

Reed College
Teaching Assistant
Physics 101 - General Physics I. 2012
F.L. Griffin Mathfest. 2014

PUBLICATIONS

Surfacing Visualization Mirages
A McNutt, G Kindlmann, M Correll. ACM SIGCHI (2020) *[To Appear]*

Divining Insights: Visual Analytics Through Cartomancy
A McNutt, A Crisan, M Correll. alt.chi (2020) *[To Appear]*

Textual Analysis & Comparison. National Forms of Scientific Texts: Goethe + de Candolle
A Kim, *A McNutt*, S. Elahi, K Takahashi, RJ Richards. MindBytes (2019). ★ **Best Poster** ★

Design and Analysis of Table Cartograms: Simultaneous-Multipurpose Tabular Area-Encoding Displays
A McNutt. Masters Thesis. University of Chicago (2019)

Improving the Scalability of Interactive Visualization Systems for Exploring Threaded Conversations
A McNutt, G Kindlmann. EuroVis (2019)

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

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

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

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

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

POPULAR PRESS

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

PRESENTATIONS & TALKS

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