Andrew M. McNutt

PhD Student in HCI & Visualization

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EDUCATION

University of Chicago

PhD, Computer Science, 9/2017 to Present   Advised by Ravi Chugh
Masters of Science, Computer Science, 9/2017 to 10/2019   GPA 3.9 / 4

Reed College

Bachelor of Arts, Physics, 2010 to 2014   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 pending patent. Gave presentations in the research workshop and to the company at large.

University of Chicago

Graduate Researcher — September 2017 to Present

Developed a mixed modality low-code/no-code visual analytics application, an algorithm for generating a particular novel visualization using gradient descent, and a system for automated analysis of matplotlib charts. Constructed methods for displaying multi-tag digital humanities data, debugging distributed clustering algorithms, and visualizing threaded conversations on the internet. Utilized quantitative and qualitative methods to analyze logging data.

Uber

Data Visualization Engineer II — October 2015 to May 2017

Developed webGl-based mapping and charting systems that enable users to dynamically interact with millions of data points, an analytics platform for monitoring business outcomes for 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, which during my tenure gained thousands of Github stars and is 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 subsequently 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 for a coupled Newton-Schrodinger with self-interaction with a focus on the development of bound states.

PUBLICATIONS (PEER REVIEWED)

KondoCloud: Improving Information Management in Cloud Storage via Recommendations Based on File Similarity

Will Brackenbury, *Andrew McNutt*, Kyle Chard, Aaron Elmore, Blase Ur. ACMUIST. October 2021. Conference Paper.

Visualization for Villainy

Andrew McNutt, Lilian Huang, Kathryn Koenig. alt.vis. October 2021. Workshop Paper.

On The Potential of Zines as a Medium for Visualization

Andrew McNutt. IEEE VIS Short Papers. October 2021. Short Conference Paper.

What are Table Cartograms Good for Anyway? An Algebraic Analysis

Andrew McNutt. Computer Graphics Forum—Proceedings of the Eurographics Conference on Visualization. June 2021. Journal Paper. ★ Honorable Mention for Best Paper ★ (Single award juried selection)

Integrated Visualization Editing via Parameterized Declarative Templates

Andrew McNutt, Ravi Chugh. Proceedings of the ACM Annual Conference on Human Factors in Computing Systems. May 2021. Conference Paper.

Supporting Expert Close Analysis of Historical Scientific Writings: A Case Study for Near-by Reading

Andrew McNutt, Agatha Kim, Sergio Elahi, Kazutaka Takahashi. 2020 IEEE 5th Workshop on Visualization for the Digital Humanities (VIS4DH). October 2020. Workshop Paper.

A Minimally Constrained Optimization Algorithm for Table Cartograms

Andrew McNutt, Gordon Kindlmann. VIS 2020: InfoVIS Poster Track. October 2020. Poster. ★ Honorable Mention for Best Poster Research ★ (juried)

Surfacing Visualization Mirages

Andrew McNutt, Gordon Kindlmann, Michael Correll. Proceedings of the ACM Annual Conference on Human Factors in Computing Systems. April 2020. Conference Paper. ★ Honorable Mention for Best Paper ★ (top 5%)

Divining Insights: Visual Analytics Through Cartomancy

Andrew McNutt, Anamaria Crisan, Michael Correll. Proceedings of alt.CHI. April 2020. Extended Abstract.

Linting for Visualization: Towards a Practical Automated Visualization Guidance System

Andrew McNutt, Gordon Kindlmann. 2nd IEEE VIS Workshop on Creation, Curation, Critique and Conditioning of Principles and Guidelines in Visualization ("VisGuides"). October 2018. Workshop Paper.

Data Mining and Computational Modeling of High-Throughput Screening Datasets

Sean Ekins, Alex M Clark, Krishna Dole, Kellan Gregory, *Andrew McNutt*, Anna Coulon Spektor, Charlie Weatherall, Nadia K Litterman, Barry A Bunin. Reporter Gene Assays. 2018. Book Chapter.

The Schrodinger-Newton System with Self-field Coupling

Joel Franklin, Youdan Guo, *Andrew McNutt*, Allison Morgan. Journal of Classical and Quantum Gravity. 2015. Journal Paper.

Open source Bayesian models. 1. Application to ADME/Tox and Drug Discovery Datasets.

Alex M. Clark, Krishna Dole, Anna Coulon-Spektor, *Andrew McNutt*, George Grass, Joel S. Freundlich, Robert C. Reynolds, Sean Ekins. Journal of Chemical Information and Modeling. 2015. Journal Paper.

PUBLICATIONS (NON-PEER REVIEWED)

Textual Analysis & Comparison National Forms of Scientific Texts: Goethe + de Candolle
Agatha Kim, *Andrew McNutt*, S. Sergio Elahi, Kazutaka Takahashi, Robert J Richards. MindBytes Research Symposium. November 2019. Poster. ★ Best Poster in Visualization ★

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

THESES

Design and Analysis of Table Cartograms: Simultaneous-Multipurpose Tabular Area-Encoding Displays
Andrew McNutt (Advised by Gordon Kindlmann). Masters Thesis. University of Chicago. 2019.

Nonequivalent Lagrangian Mechanics
Andrew McNutt (Advised by Nelia Mann). Undergraduate Thesis. Reed College. June 2014.

PATENTS

Surfacing visualization mirages
Michael Correll, *Andrew McNutt*. US20210081874A1 - Patent Pending. March 2021.

AWARDS

Special Recognition for Outstanding Review. *ACM UIST*. 2021

Graduate Council Research Fund. *UChicago Grad*. October 2021

Honorable Mention for Best Paper. *Eurographics Working Group on Data Visualization*. 2021 — (single juried selection) for What are Table Cartograms Good for Anyway? An Algebraic Analysis

Special Recognition for Outstanding Review. *ACM SIGCHI*. 2021

InfoVis Honorable Mention Poster Research. *IEEE VIS*. October 2020 — for A Minimally Constrained Optimization Algorithm for Table Cartograms

Best Paper Honorable Mention. *ACM SIGCHI*. March 2020 — (Top 5%) for Surfacing Visualization Mirages

Best Poster in Visualization. *MindBytes Research Symposium*. October 2019

Graduate Council Travel Fund. *UChicago Grad*. October 2019

Long List for Visual Analytics and Unusual Categories. *Information is Beautiful Awards*. September 2019 — for FeX: Forum Explorer and Cycles Rain Seasons in Size

Teaching Assistant Prize. *University of Chicago, Department of Computer Science*. June 2019

Divisional Teaching Award Nominee. *UChicago Physical Sciences Division* . May 2018, May 2019

2nd Place for Best in Show. *UChicago Art and Science Expo*. May 2018, May 2019

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

Presentations & Talks

How do we know what a visualization is good for? Algebraic Approaches.
RAMPVIS, August 5, 2021, Oxford, England. (Virtual)

What are Table Cartograms Good for Anyway? An Algebraic Analysis.
EuroVis, June 15, 2021, Zurich, Switzerland. (Virtual)
City University London, May 18, 2021, London, England. (Virtual)

Integrated Visualization Editing via Parameterized Declarative Templates.
SIGCHI, May 12-13, 2021, Yokohama, Japan (Virtual)

Supporting Expert Close Analysis of Historical Scientific Writings: A Case Study for Near-by Reading.
VIS4DH, October 25, 2020, Salt Lake City, Utah (Virtual)

Linting for Visualization: Towards a Practical Automated Visualization Guidance System.
VIS Guides, October 22, 2018, Berlin, Germany.

Design and Analysis of Table Cartograms: Simultaneous-Multipurpose Tabular Area-Encoding Displays.
University of Chicago, June 12, 2019, Chicago, Illinois.

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

Skills & Technologies

Languages	(Java|Type)Script, Python, Ruby, Haskell, Elm
Visualization	d3, Vega ecosystem, webGL, Tableau
Databases	postGRES, Redis, MongoDB
Web Dev	Node, React/Redux, Svelte, Ruby on Rails, Flask
Other	Latex, Omnigraffle, Sketch, Figma, Mathematica

TEACHING

Instructor

2021 Winter	Data Visualization For Public Policy	CAPP 30239	UChicago (29 students)
2020 Spring	Data Visualization	CMSC 23900	UChicago (55 students)
2020 Winter	Data Visualization For Public Policy	CAPP 30239	UChicago (24 students)
2016-2017	Uberversity Speaker		Uber
2015-2017	Visualization Eng-ucation		Uber

Teaching Assistant

2021 Summer	Introduction to Creative Coding	CMSC 19111	Pre-College Immersion (HS)
2021 Summer	Art with Science: Creative Coding		Collegiate Scholars Program (HS)
2021 Spring	Creative Coding	CMSC 11111	UChicago
2019 Spring	Data Visualization	CMSC 23900	UChicago
2019 Winter	Data Visualization For Public Policy	CAPP 30239	UChicago
2018 Fall	Computer Science with Applications 1	CAPP 30121	UChicago
2018 Spring	Data Visualization	CMSC 23900	UChicago
2018 Winter	Introduction to Computer Science 1	CMSC 15100	UChicago
2017 Fall	Computer Science with Applications 1	CMSC 12100	UChicago
2012 Fall	General Physics I	Physics 101	Reed College

SERVICE & VOLUNTEERING

REVIEWING
VIS - Full Papers ('20, '21), Short Papers ('20, '21), alt.vis ('21)
CHI - Full Papers (★ '21), alt.chi ('20)
UIST - Full Papers (★ '21)
★ - Special Recognition for Outstanding Review

EuroVis. Student Volunteer. *2021*
Chicago Public Schools CSEd Week. Speaker. *2020*
Open Access VIS / EuroVIS. Contributor / Organizer. *2019*
South Side Civic. Scopathon Facilitator. *2019*
UChicago Visualization Research Reading Group . Director. *February 2019-Present*
UChicago CS Graduate Student Ministry. Facilitator of CS Grad Weekly Coffee Break. *2018*
F.L. Griffin Mathfest. Teaching Assistant. *Spring 2014*

CERTIFICATES AND TRAININGS

UChicago College Teaching Certificate — *[In Progress]*
Training on course design, pedagogy, and inclusive teaching practices at a college level. Redesigned the Data Visualization for Public Policy syllabus, drafted lesson plans, and developed a teaching statement.

App Academy — *August 2014*
Fullstack web dev course covering Ruby (Ruby on Rails) and Javascript (Backbone). Independent project was a twitter-like micro-blogging platform for dreams, which facilitated exploration and visualization of the collective unconscious.