Brendan Chambers

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EDUCATION

PhD University of Chicago, Committee on Computational Neuroscience 2016
- Topic: Motif analysis and temporal patterns in a neural communication network

BA Oberlin College, Department of Computer Science 2011

RESEARCH EXPERIENCE

University of Chicago Postdoctoral Fellow 2017
- Transferred machine learning strategies to develop better causal inference tools
- Supervised & mentored two undergraduates, now placed into research jobs

University of Chicago PhD Candidate 2011 - 2016
- Compared network topologies and developed statistical nulls to control for sparseness
- Developed statistical methods to map network communication traffic and infer causal links
- Designed and implemented state-of-the-art spiking network simulations

Oberlin College Honors Scholar 2010
- Developed attention-steered deep auto-encoder for recognizing distorted text

Rockwell Collins Engineering Summer intern 2009
- Supported virtual sensing project & documented C++ code

SELECTED PROJECTS

Mapped the full corpus of a popular computational biology journal using natural language processing 2018
- Developed custom web-scraper to harvest the complete history of PLoS Computational Biology
- Built a database of pre-processed text for analysis in multiple formats: SQLite, JSON, and Pandas
- Computed word-embedding encodings and quantified text similarity between all article pairs

Reported racial inequity in a statewide alleged gang-member database 2018
- Black residents of Illinois were overrepresented four-fold on the list compared to census data
- New entries to the database were even more skewed towards racial inequity

Identified voting blocs in legislative bodies (Chicago City Council, State Legislature of Iowa) 2018
- Developed custom web-scrapers to obtain voting data
- Analyzed rubber-stamp structure in voting records

Investigated racialized sentiment in Twitter statuses 2017
- Built databases of tweets using multiple methods: Streaming API, REST API, web-scraping
- Identified linguistic communities within tweets about Congressman John Lewis

SKILLS

Programming Languages (years)
- Python (4) JavaScript/ES6 (1) Scheme (1) Java (4) Matlab (6)

Data Analysis
- Motif counting, community detection, designing statistical nulls, clustering, natural language processing

Machine Learning
Deep autoencoders, recurrent neural networks, stochastic optimization

AWARDS

Symposium speaker at interdisciplinary conference for network science NetSci 2017
Recognized among 50 Most-Downloaded Articles, PLOS Computational Biology 2017
University of Chicago Laura Thorne Donnelley Fellow 2017
Hot Topics Nominee, Society for Neuroscience 2016
NSF IGERT Fellow for Integrative Training in Neural Control 2012
NSF S-STEM Scholar for Computation and Modeling 2011