

DAVID BREWSTER

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EDUCATION

University of Illinois at Urbana-Champaign
B.S. Mathematics
B.S. Computer Science

August 2016 - Present
Dean's List

TOOLS

Programing Languages C/C++, Python, TypeScript, F#, Java, Golang
Frameworks Numpy, Torch, Node.js, React

CONCENTRATIONS

Biological Computation • Randomized Algorithms • Statistical Learning

RESEARCH EXPERIENCE

Biological Computation Group
Research Assistant

May 2019 - Present
Champaign, IL

- Investigating the computational complexity of protein folding under various models
- Using different representations of self-avoiding walks to improve sampling methods
- Experimenting with hydrolysis using Nanoscale Molecular Dynamics (NAMD)

Carl R. Woese Institute for Genomic Biology
Research Assistant

November 2016 - March 2017
Champaign, IL

- Worked in collaboration with Argonne National Laboratory on the Exascale Computing Project (ECP)
- Assisted in developing the ECP Cancer Distributed Learning Environment (ECP-CANDLE) benchmarks
- Used a Spectral Graph Convolutional Network for sparse cancer data

PROFESSIONAL EXPERIENCE

Citadel Securities
Software Engineering Intern

May 2019 - August 2019
New York, NY

- Worked on the full stack of a couple of websocket streamers for the Options Market Making (OMM) traders
- Created a profile manager service which is being incorporated into all existing OMM UIs as an alternative to NTFS based storage
- Implemented an interface to deploy requested strategies conditioned on specific keywords in news articles

Citadel
Software Engineering Intern

September 2018 - December 2018
Chicago, IL

- Developed the full stack of a websocket application for traders that shows aggregated tick data from various stock exchanges
- Created, refactored, and improved performance in a few data loaders
- Added new functionality to a couple of internal market data libraries used throughout the company

Two Sigma IQ
Software Engineering Intern

May 2018 - August 2018
New York, NY

- Supported the automation of data ingestion pipelines by writing various web services
- Helped with quality control on processed datasets by recording statistical trends

Microsoft
Software Engineering Intern

January 2018 - April 2018
Redmond, WA

- Added a tool to the Update Management section of the Azure Portal which utilized Kusto QL auto-clustering of error messages
- Significantly reduced the amount of time taken for users to diagnose failed updates on their computers

Google
Software (Site Reliability) Engineering Intern

May 2017 - August 2017
New York, NY

- Created a tool to predict cache hits/misses on different Memcached instances
- Developed a TensorFlow server that continuously trains on recent cache lookups in order to improve predictions

Volume Technologies
Software Engineer

October 2016 - May 2017
Champaign, IL

- Worked on queue detection by analyzing accelerometer data from mobile devices
- Wrote a streaming Twitter feed display which was used at a local venue

Gloucester Parks, Recreation, and Tourism
Software Engineering Intern

September 2015 - June 2016
Gloucester, VA

- Wrote an Android application for the yearly county festival

TEACHING EXPERIENCE

Software Design Studio
Senior Staff Member

August 2017 - Present
Champaign, IL

- Wrote scripts for staff usage
- Graded and critiqued student programming assignments

Honors Intro to Computer Science
Homework Writer

August 2017 - December 2017
Champaign, IL

- Designed various interview style programming problems for a class of 200+ students
- Wrote a multi-processing autograder for the homework assignments

PROJECTS

Pong RL Playground

- C++ Atari Pong multi-threaded environment for testing different Reinforcement Learning methods
- Implemented Monte Carlo and TD(λ) methods
- Used PyGame for visualization

NEAT Blocks

- TypeScript Reinforcement Learning environment which uses HyperNEAT to optimize Q-table function approximator

Falling Blocks

- TypeScript game which uses Evolutionary Computation in order to avoid falling blocks

GDAX (Coinbase Pro) Wrapper

- Golang library which wraps the GDAX API
- Implemented online linear regression using live data from the GDAX websocket API

PROGRAMMING SITES

- Project Euler — Computational Mathematics — 140+ problems solved
- Rosalind — Computational Biology — 60+ problems solved

MEMBERSHIPS

- Illinois Programming League (IPL) — team placed 13th out of ~ 100 at 2017 Mid-Central Regional ICPC
- Blacks and African Americans in Computing (BAAC @ Illinois) — member