DAVID BREWSTER

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EDUCATION

University of Illinois at Urbana-Champaign   August 2016 - Present
B.S. Mathematics   *Dean's List*
B.S. Computer Science

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

Illinois Combinatorics Lab for Undergraduate Experiences   January 2020 - Present
Researcher   *Champaign, IL*

· Discovering sampling techniques over reduced words

Biological Computation Group   May 2019 - Present
Researcher   *Champaign, IL*

· Investigating the computational complexity of protein folding under various models
· Using different representations of self-avoiding walks to improve sampling methods

Carl R. Woese Institute for Genomic Biology   November 2016 - March 2017
Research Assistant   *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   May 2019 - August 2019
Software Engineering Intern   *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   September 2018 - December 2018
Software Engineering Intern   *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   May 2018 - August 2018
Software Engineering Intern   *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   January 2018 - April 2018
Software Engineering Intern   *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   May 2017 - August 2017
Software (Site Reliability) Engineering Intern   *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 $\sim$ 100 at 2017 Mid-Central Regional ICPC
- Blacks and African Americans in Computing (BAAC @ Illinois) — member