

BRIAN HIE

brianhie@mit.edu

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA

Computer Science and Artificial Intelligence Laboratory (CSAIL)

Electrical Engineering and Computer Science, Ph.D. candidate 2017-Present

- ♦ GPA: 5.0/5.0; Areas of concentration: Machine learning, algorithms, computational biology

Stanford University, Palo Alto, CA

Computer Science, B.S. with Honors and Distinction 2012-2016

Minor in English Literature

- ♦ GPA: 3.9/4.0; Areas of concentration: Computational biology, machine learning, distributed systems
- ♦ Honors thesis: "Complex genomic patterns characterize variants in transcription factor binding associated with gene expression"

Oxford University, Oxford, UK

Visiting Student at Magdalen College 2015

- ♦ Studied the poetry and sermons of John Donne and other early modern English literature.

RESEARCH EXPERIENCE

Massachusetts Institute of Technology, Cambridge, MA

Bonnie Berger Laboratory, CSAIL and Mathematics 2017-Present

- ♦ Developed secure cryptographic pipelines for collaborative deep learning that scale to large data sets, applied to drug-target interaction prediction.
- ♦ Applying novel algorithmic techniques to derive better biological insight from single cell RNA-sequencing data sets.

Stanford University, Palo Alto, CA

Hunter Fraser Laboratory, Biology 2013-2016

- ♦ Computationally investigated the role of genetic and epigenetic factors in gene expression regulation.
- ♦ Used a machine learning classifier to predict the association between transcription factor binding quantitative trait loci (TF bQTLs) and gene expression.
- ♦ Explored the relationship between genotype and the formation and function of circular RNAs.

Stanford University, Palo Alto, CA

Shakeosphere Project, Digital Humanities 2016

- ♦ Applied graph-theoretic algorithms to elucidate the evolution of social networks of early modern English authors, printers, publishers, and booksellers.

The Scripps Research Institute, San Diego, CA

Peter Vogt Laboratory, Cancer Research 2011

- ♦ Investigated the relationship between PI3-kinase and the STAT3 transcription factor in multiple human cancer cell lines.

University of California San Diego, San Diego, CA

Michael Todd Laboratory, Structural Engineering

2010

- ♦ Analyzed high frequency signals to detect progressive damage in steel structural components using piezoelectric sensors and computational algorithms.

WORK EXPERIENCE

Illumina, Inc., San Diego, CA

Bioinformatics Scientist Intern

2018

- ♦ Analyzed large genomic data sets by developing novel unsupervised and semi-supervised machine learning methods.

Salesforce.com, Inc., San Francisco, CA

Software Engineer, Cloud Infrastructure

2016-2017

- ♦ Developed algorithms and a distributed pipeline that scaled to petabytes of system log and metric data to generate accurate key performance indicators visible to top company leadership.

Microsoft Corporation, Redmond, WA

Software Engineering Intern, Azure Compute and Microsoft Research

2015

- ♦ Developed a simulated Azure data center used to investigate different distributed scheduling algorithms and their impact on utilization and availability.
- ♦ Used Hadoop-like framework (COSMOS) to mine real-world data to generate realistic workloads on the Azure simulator.

Synaptics, Inc., San Jose, CA

Systems Architecture/Algorithms Intern

2014

- ♦ Developed and implemented algorithm for optimal touchscreen finger tracking by solving the minimum weight bipartite matching problem.
- ♦ Updated large firmware code bases on multiple Android phone models to support new capacitive image frame processing module.

Stanford Solar Car Project, Palo Alto, CA

Embedded Code Team Member

2012-2013

- ♦ Developed an embedded state machine controlling the solar car's driver interface, including the steering wheel display, button board controls, and CAN bus communication.

PUBLICATIONS

B. Hie, B. Bryson, and B. Berger.

"Panoramic stitching of heterogeneous single cell transcriptomic data."

(Submitted).

2018

B. Hie, H. Cho, and B. Berger.

"Realizing private and practical pharmacological collaboration."

Science (In Press).

2018

A.K. Tehranchi, **B. Hie**, M. Dacre, I.M. Kaplow, K.P. Pettie, P.A. Combs, and H.B. Fraser.

"Fine-mapping cis-regulatory variants in diverse human populations."

eLife (In Press).

2018

A.K. Tehranchi, M. Myrthil, T. Martin, **B. Hie**, D. Golan, and H.B. Fraser.

"Pooled ChIP-seq links variation in transcription factor binding to complex disease risk."

Cell, 3:41 (2016).

2016

AWARDS

Hoefer Prize for Writing in the Major, Nominated, *Stanford University*

2016

Tau Beta Pi Engineering Honors Society

2015

Lunsford Award for Oral Presentation, Nominated, *Stanford University*

2014

Boothe Prize for Excellence in Writing, Honorable Mention, *Stanford University*

2013

President's Award for Academic Achievement, *Stanford University*

2013

National Merit Scholarship Finalist

2012