

# BRIAN HIE

brianhie@mit.edu | github.com/brianhie | brianhie.com

## EDUCATION

**Massachusetts Institute of Technology**, Cambridge, MA

**Electrical Engineering and Computer Science, Ph.D. candidate** 2019-Present

**Electrical Engineering and Computer Science, M.S.** 2017-2019

- ♦ GPA: 4.9/5.0; 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: Machine learning, computational biology, distributed systems

## RESEARCH AND WORK EXPERIENCE

**Massachusetts Institute of Technology**, Cambridge, MA

**Computer Science and Artificial Intelligence Laboratory (CSAIL)** 2017-Present

- ♦ Applying novel algorithmic techniques that scale to large, high-dimensional data sets to derive better biological insight from single cell experiments (<https://github.com/brianhie/scanorama> and <https://github.com/brianhie/geosketch>).
- ♦ Achieved privacy-preserving and scalable neural network training on large, cryptographically hidden data sets, applied to drug-target interaction prediction (<https://github.com/brianhie/secure-dti>).

**X Development, LLC.**, Mountain View, CA

**AI/ML Resident** 2019

- ♦ Machine learning for early-pipeline moonshots.

**Illumina, Inc.**, San Diego, CA

**Machine Learning Intern** 2018

- ♦ Early stage, experimental project requiring analysis of large genomic data sets via novel unsupervised and semi-supervised statistical 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.

**Stanford University**, Palo Alto, CA

**Hunter Fraser Laboratory, Biology** 2013-2016

- ♦ Applied machine learning methods to predict associations between transcription factor binding and gene expression.
- ♦ Used statistical methods to explore 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 understand the evolution of social networks of early modern English authors, printers, publishers, and booksellers.

**Microsoft Corporation**, Redmond, WA

**Software Engineering Intern, Azure Compute and Microsoft Research** 2015

- ♦ Investigated different distributed scheduling algorithms and their impact on utilization and availability on a simulated Azure data center.

**Synaptics, Inc.**, San Jose, CA

**Systems Architecture/Algorithms Intern** 2014

- ♦ Developed and implemented an algorithm for optimal touchscreen finger tracking by solving the minimum weight bipartite matching problem.

## PUBLICATIONS

**B. Hie\***, H. Cho\*, B. DeMeo, B. Bryson, and B. Berger. (\*Equal contribution.)

*"Geometric sketching of single-cell data preserves transcriptional structure."*

*Cell Systems*. 2019

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

*"Efficient integration of heterogeneous single-cell transcriptomes using Scanorama."*

*Nature Biotechnology*, 37:685-691. 2019

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*, 8:e39595. 2019

**B. Hie\***, H. Cho\*, and B. Berger. (\*Equal contribution.)

*"Realizing private and practical pharmacological collaboration."*

*Science*, 362:6417. 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*, 165:3. 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