

Jesse M. Zhang

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Education

Stanford University

Stanford, CA

MS/PHD IN ELECTRICAL ENGINEERING (RESEARCH ADVISOR: DAVID TSE, GPA: 4.02/4.30)

Sep. 2014 - Present

Selected Courses: Mining Massive Data Sets, Artificial Intelligence, Statistical Modeling, Statistical Inference, Algorithms, Convex Optimization, Probabilistic Graphical Models, Machine Learning, Statistical Signal Processing, Linear Dynamical Systems

Tufts University

Medford, MA

BS IN ELECTRICAL ENGINEERING (GPA: 3.96/4.00)

Sep. 2010 - May 2014

Selected Courses: Digital Signal Processing, Digital Image Processing, Feedback Control Systems, Communications, Data Structures

Projects

Denoising single-cell RNA-seq datasets using deep autoencoders

Fall 2015

- Used deep autoencoder to clean and cluster a single-cell dataset for Artificial Intelligence final project (used Keras and scikit-learn).

Prediction of significant price changes in trading cards

Fall 2014

- Crafted and analyzed a dataset of card prices using SVM and logistic regression for Machine Learning final project (used MATLAB).

Active noise-canceling iPhone application

Fall 2013 - Spring 2014

- Modeled ambient noise and designed noise cancellation algorithms for senior capstone project (used MATLAB and Xcode).

Experience

Stanford Molecular Imaging Instrumentation Laboratory

Stanford, CA

EE PHD ROTATION STUDENT

Sep. 2014 - Dec. 2014

- Simulated small animal CZT PET system with variable aperture using GATE software.
- Created MATLAB algorithms for testing normalization methods on simulated data.

MC10, Inc.

Cambridge, MA

R&D INTERN

May 2014 - Aug. 2014

- Implemented machine learning and signal processing algorithms using MATLAB and Python for accelerometer data analysis.
- Built and presented an algorithm that was selected to become the core feature of the company's first application on the market.

MIT Lincoln Laboratory

Lexington, MA

EE INTERN/CO-OP

Jun. 2013 - May 2014

- Developed MATLAB algorithms for denoising and automatically extracting traces from high-frequency ionogram images.
- Created graphical user interface in MATLAB to facilitate ionogram image processing.

Tufts Academic Resource Center

Medford, MA

HEAD TUTOR

Aug. 2012 - May 2014

- Tutored and led group study sessions for physics, chemistry, calculus III, differential equations, and linear algebra.

Publications

Fast and accurate single-cell RNA-Seq analysis by clustering of transcript-compatibility counts

COLLABORATION WITH V. NTRANOS, G. KAMATH, L. PACTER, AND D. TSE

Submitted Jan. 2016 to **Genome Biology**

- Developed novel concept with Ntranos and Kamath for clustering cells in single-cell RNA-Seq datasets without quantification of genes.
- Analyzed two recent single-cell datasets using iPython, Bash, and a variety of existing quantification tools (see GitHub)

Lysine-specific demethylase 1 has dual functions as a major regulator of AR transcriptional activity

COLLABORATION WITH C. GAI, H. H. HE, M. BROWN, S. P. BALK, X. S. LIU ET AL.

Published Dec. 2014 in **Cell Reports**

- Conducted wet lab experiments and performed computational analyses to define role of LSD1 in prostate cancer.

Skills

Software MATLAB, Python, Jupyter, CVX, scikit-learn, Bash, R, C++, Git, LaTeX, Hadoop

Genomics Tools SAMtools, bedtools, UCSC Genome Browser, Tuxedo Suite, eXpress, Trinity, BLAT