Jesse M. Zhang

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Education

Stanford University *Stanford, CA*

MS/PhD in Electrical Engineering (**Research advisor:** David Tse) *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. Pachter, and D. Tse *Accepted Apr. 2016 by **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