Martin Jinye Zhang

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Education

- **Stanford University** — Stanford, CA
  PhD Candidate (5th year), Dept. of Electrical Engineering, Advisor: David Tse — *Sep 2014 - Present*
- **Stanford University** — Stanford, CA
  Master of Science, Dept. of Electrical Engineering — *Sep 2014 - Jul 2017*
- **Tsinghua University** — Beijing, China
  Bachelor of Engineering, Dept. of Electrical Engineering — *Sep 2010 - Jul 2014*

Research Interest

My background is in statistics and machine learning. My research focuses on the development of statistical methods for the inference in various high-throughput genetic data like GWAS, RNA-seq, single-cell RNA-seq, cell-free RNA-seq, and multi-omics. I am particularly interested in methods that systematically aggregate different datasets, algorithm acceleration via adaptive sampling, and empirical Bayes modeling.

Publications

(* equal contributions)

1. **Martin Zhang**, James Zou, and David Tse. "Adaptive Monte Carlo Multiple Testing via Multi-armed Bandits", *ICML 2019*.
2. **Martin Zhang**, Fei Xia, and James Zou. "AdaFDR: a Fast, Powerful and Covariate-Adaptive Approach to Multiple Hypothesis Testing", preliminary version accepted as the Cell Systems best paper in *RECOMB 2019* and received the RECOMB Best Paper Award, under review in *Nature Communications*, 2018.
3. **Martin Zhang***, Vasilis Ntranos*, and David Tse. "One read per cell per gene is optimal for single-cell RNA-Seq", under review in *Nature Communications*, 2018.
4. Abubakar Abid*, **Martin Zhang***, Vivek K. Bagaria, and James Zou, "Exploring Patterns Unique to a Dataset with Contrastive Principal Component Analysis", *Nature Communications*, 2018.
5. Wenyu Zhou*, M. Reza Sailani*, Kvin Contrepois*, Yanjiao Zhou*, Sara Ahadi*, Shana Leopold, **Martin Zhang**, ⋯, George M. Weinstock, Michael Snyder, "Longitudinal multi-omics of host-microbe dynamics in prediabetes", *Nature 2018*.
6. Vivek Bagaria*, Govinda Kamath*, Vasilis Ntranos*, **Martin Zhang***, and David Tse, "Medoids in Almost Linear Time via Multi-armed Bandits", *AISTATS 2018*.
7. Fei Xia*, **Martin Zhang***, James Zou, and David Tse, "NeuralFDR: Learning Discovery Thresholds from Hypothesis Features", *NeurIPS 2017*.
8. **Martin Zhang**, and Zhijian Ou, "Block-wise MAP Inference for the Determinantal Point Processes with Application to Change Point Detection", *SSP 2016*.
9. **Jinye Zhang**, Laming Chen, Petros T. Boufounos, and Yuantao Gu, "On the Theoretical Analysis of Cross Validation in Compressive Sensing", *ICASSP 2014*.

Talks

1. "Adaptive Monte Carlo Multiple Testing via Multi-armed Bandits", ICML 2019.
2. "AdaFDR: a Fast, Powerful and Covariate-Adaptive Approach to Multiple Hypothesis Testing", RECOMB 2019.
3. "Optimal sequencing-budget allocation for single-cell RNA-seq", CISS 2019.
4. "Adaptive Monte Carlo Multiple Testing via Multi-armed Bandits", ITA 2019.

Professional Services

1. Reviewer for *Journal of Genetics and Genomics*, *NeurIPS 2016*, *NeurIPS 2019*.
2. 2015 - present: organizer for Information Systems Laboratory Colloquium, EE, Stanford.

Skills

- **Proficient**: Python, R, Matlab, Hadoop, Bash
- **Familiar**: PyTorch (for deep learning), SQL, C++

Internships

- **Grail, Inc. (early cancer detection via cell-free DNA)** Menlo Park, CA
  Bioinformatician *Jun - Sep, 2018*
  - **Project**: cancer patient classification via cell-free RNA.
- **Genapsys, Inc. (next generation high-throughput sequencer)** Redwood city, CA
  Research Scientist *Jun - Sep, 2017*
  - **Project**: sensor signal clustering.
- **Baidu, Inc.** Beijing, China
  R & D Engineer, Department of Natural Language Processing *Sep 2013 - Feb 2014*
  - **Project**: query-parsing or Baidu's voice assistant.

Relevant Courses

- **Stanford**: theory of statistics; theory of probability; applied statistics; statistical learning theory; information theory; statistical signal processing; linear dynamic systems; convex optimization; design and analysis of algorithms; mining massive datasets; deep learning; analytical methods in biotechnology.
- **Tsinghua**: signals and systems; stochastic process; communications and networks; digital signal processing; machine learning and pattern recognition; digital image processing;

Distinctions

1. RECOMB best paper award, 2019
2. RECOMB travel award, 2019
3. Cell Systems best papers of RECOMB 2019
4. NeurIPS travel award, 2017
5. Inventec Fellow, Stanford Graduate Fellowship (SGF), Stanford University 2015
6. Numerical Technologies Award in Electrical Engineering (Numerical Technologies Founders Graduate Fellowship), Stanford University, 2015
7. Ranked 2/79 in the EE Ph.D. qualifying exam, Stanford University, 2015
8. Outstanding Undergraduate Thesis "Speech Diarization Based on the Determinantal Point Processes", Tsinghua University, 2014
9. Comprehensive Excellence Scholarship in Electronic Engineering, Tsinghua University, 2013
10. First award in Beijing College Student Physics Competition, 3/186 in Department of Electronic Engineering, Tsinghua University, 2011
11. First Prize Provincial and Bronze Medal National, Chinese Physics Olympiad, 2009