

# Kevin Zhang

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## OBJECTIVE

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**PhD in Statistics** with a robust foundation in computer science, programming, mathematical and statistical analysis, and extensive experience in developing quantitative models for real-life applications. Seeking to leverage advanced research and technical skills in a dynamic, quantitative role.

## EDUCATION

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**Doctor of Philosophy (PhD) statistics** 2019 - 2024

University of Toronto, Toronto, Canada

Supervisors: Dr. Dehan Kong and Dr. Zhaolei Zhang

**Honours Bachelor of Science (HBSc) pathobiology, statistics, mathematics** 2015 - 2019

University of Toronto, Toronto, Canada

major GPA: 4.0/4.0, GPA: 3.9/4.0

## WORK EXPERIENCE

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**Software Developer, Robinhood** | October 2024 - Present

- **Identity Team:** Focused on fraud detection, customer onboarding, authentication, and secure storage of sensitive customer information.
- Collaborated with the data science team to develop and deploy machine learning authentication models using image and video data, supporting a large number of customers monthly.
- Leveraged tools like Bazel/Jenkins for CI/CD, Kubernetes and Docker for deployment, and gRPC for API services. Primarily worked with Python, Django, and Go to build robust and scalable solutions.

**Sessional Lecturer, University of Toronto** | May 2024 - June 2024

- Instructed STA237: Probability, Statistics, and Data Analysis I, managing a course with over 200 students.
- Coordinated a team of teaching assistants, demonstrating leadership in curriculum development and student engagement.

**Research Assistant, University of Toronto** | September 2019 - May 2024

- Led advanced machine learning research, focusing on anomaly detection and generative modeling in time series data.
- Collaborated with a multidisciplinary team of scientists from top-tier institutions, developing multiple machine learning methodologies.
- Published manuscripts for top-tier journals, showcasing expertise in statistical analysis and machine learning methodologies.
- Utilized Python and relevant ML libraries, aligning with cutting-edge data science practices.

**Teaching Assistant, University of Toronto** | September 2019 - June 2024

- Instructed undergraduate statistics courses, emphasizing machine learning and data analysis techniques.
- Mentored students in complex statistical methods, fostering analytical skills relevant to data science.

## PROJECTS

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**Population Model Using SDE and Game Theory** | University of Toronto 2021 - 2023

- Led a groundbreaking PhD research project focused on the generative modeling of scRNA-seq data, incorporating stochastic differential equations (SDE) and game theory to develop innovative population dynamics models.
- Published findings in PLOS Computational Biology, illustrating the application of diffusion models in high-dimensional data settings. Code and manuscript are accessible via GitHub and online.

**Anomaly Detection Using Optimal Transport** | University of Toronto 2021 - 2023

- Initiated and led a PhD project to develop statistical methods for anomaly detection in time series data, utilizing principles of optimal transport closely related to WGAN.
- Conducted comprehensive data analysis and developed specialized numerical algorithms to enhance detection accuracy and efficiency.
- Manuscript in progress with detailed code and methodologies available on GitHub.

## SKILLS

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- Programming Languages: Python (NumPy, Pandas, Scikit-learn, PyTorch, TensorFlow, Django), R (dplyr, ggplot), Go, MATLAB, Java, C++, SQL (MySQL, PostgreSQL), NoSQL (Cassandra)
- Software & Tools: Git, Docker, Kafka, SLURM, Linux, HTML,  $\LaTeX$ , CUDA, Redis, AWS, Databricks, Bazel, Kubernetes

## SELECTED PUBLICATIONS

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- Zhang, K., Zhu, J., Kong, D. and Zhang, Z., 2024. "Modeling Single Cell Trajectory Using Forward-Backward Stochastic Differential Equations". *PLOS Computational Biology*. [Link to article][Link to GitHub]
- Zhang, K., Zhu, J., Kong, D. and Zhang, Z., 2023. "Modeling Cell Type Development Trajectory using Multinomial Unbalanced Optimal Transport". *Journal of the American Statistical Association*, (in submission). [Link to GitHub]
- Zhu, J., Zhang, K., Kong, D. and Zhang, Z., 2023. "LLOT: application of Laplacian Linear Optimal Transport in spatial transcriptome reconstruction". *Journal of the American Statistical Association*, (in submission).