Kevin Christian Wibisono

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Research Interests

- Transformers and in-context learning.
- Causal inference with text as treatment or outcome.
- Regression discontinuity designs.

Computing Skills

- Proficient in Python (including Tensorflow, PyTorch, Pandas, Numpy and PySpark), R (including tidyverse), and SQL.

Education

University of Michigan *Ann Arbor, MI, USA*
Ph.D. in Statistics (GPA: 4.00/4.00) *2021 - 2026 (expected)*
- Supervised by Yixin Wang, Ph.D.
- Received the *Rackham International Student Fellowship* for demonstrating exceptional academic and professional promise.
- Anticipated graduation date: 05/26.

Columbia University *New York, NY, USA*
M.S. in Data Science (GPA: 4.00/4.00) *2019 - 2020*
- Capstone project: *Improving Automatic Event Understanding Through Sequential and Non-sequential Deep Learning Architectures* (supervised by Yuval Marton, Ph.D. and Asad Basheer Sayeed, Ph.D.).

National University of Singapore *Singapore*
B.Sc. (First Class Honors) in Applied Mathematics and Statistics (GPA: 4.90/5.00) *2015 - 2019*
- Honors thesis: *Approximate Solutions to the Multivariate Behrens-Fisher Problem* (supervised by Zhang Jin-Ting, Ph.D.).
- Completed the *Special Programme in Mathematics*, a program specially designed for students with a strong passion and aptitude for mathematics.
- Received the *Ho Family Prize* as the best student in Applied Mathematics.

Publications

Accepted

Wibisono, K. C. and Wang, Y. (2024). *In-Context Learning from Training on Unstructured Data: The Role of Co-Occurrence, Positional Information, and Training Data Structure*. Neural Information Processing Systems (acceptance rate: 26%).

Ignaccolo, C., Wibisono, K. C., Plunz, R., and Sutto, M. (2024). *Tweeting During the Pandemic in New York City: Unveiling the Evolving NYC's Sentiment Landscape Through a Spatiotemporal Analysis of Geolocated Tweets*. Journal of Urban Technology.

Wibisono, K. C. and Wang, Y. (2023). *On the Role of Unstructured Training Data in Transformers' In-Context Learning Capabilities*. NeurIPS Workshop on Mathematics of Modern Machine Learning.

Wibisono, K. C. and Wang, Y. (2023). *Bidirectional Attention as a Mixture of Continuous Word Experts*. Uncertainty in Artificial Intelligence (acceptance rate: 31%).

In Preparation

Wibisono, K. C., Mukherjee, D., Banerjee, M., and Ritov, Y. *Estimation and Inference for the Average Treatment Effect in a Score-Explained Heterogeneous Treatment Effect Model*.

Wibisono, K. C. and Wang, Y. *Causal Inference with Textual Treatments or Outcomes via Maximizing Contrasts*.

Wibisono, K. C. and Wang, Y. *Sequential Data Modeling via Exponential Family Embeddings with Attention*.

Work Experience

Uber *Sunnyvale, CA, USA*

PhD Software Engineer Intern (Rider Structural Pricing) *May - Aug 2024*

- Applied causal inference techniques to analyze the paycheck effect and its impact on demand and price elasticity.
- Enhanced Uber's demand model by adding paycheck features, improving predictive performance and business metrics.
- Implemented and refined large language model-based data augmentation methods, achieving notable improvements in test AUC and accuracy based on experiments conducted on Uber's demand data.

Walmart (Sam's Club) *Bentonville, AR, USA*

Junior Data Scientist (Fraud) *Feb - Jun 2021*

- Improved fraud detection system via model stacking and feature engineering, reducing financial losses by around 30%.

Data Scientist Intern (Pricing) *Jun - Aug 2020*

- Developed item-scoring algorithms to inform strategic price investment decisions for each Sam's Club.
- Adapted and implemented natural language processing algorithms to improve item elasticity predictions.

Portcast *Singapore*

Data Scientist Intern *May - Aug 2018*

- Devised methods to improve existing cargo demand forecasting models of leading shipping companies.
- Enhanced forecasting accuracy via market signal experimentation, reducing mean absolute percentage errors by 5 to 15%.

Centre for Social Development Asia, National University of Singapore *Singapore*

Research Intern *May - Aug 2017*

- Collaborated with a multidisciplinary team of undergraduate students to analyze the state of charity governance in Singapore, resulting in the publication *An Overview of Charity Governance in Singapore*.

Traveloka *Jakarta, Indonesia*

Data Analyst Intern *May - Jul 2016*

- Developed dashboards to summarize the effectiveness of organic searches in generating hotel sales.

Teaching and Mentorship Experience

Research Mentor, **University of Michigan**

1. *Undergraduate Research Program in Statistics (URPS)* *Winter and Fall 2024*
    - Supervised three undergraduate students in a research project exploring large language models' geographical knowledge. Currently leading a follow-up project on the same topic.

Graduate Student Instructor, **University of Michigan**

1. *STATS 306: Introduction to Statistical Computing* (upper undergraduate level) *Fall 2023*
    - Designed and taught weekly lab sections (~40 students), held office hours, prepared and graded homework, and graded exams.
2. *STATS 206: Introduction to Data Science* (lower undergraduate level) *Fall 2022 and Winter 2023*
    - Taught weekly lab sections (~40 students), held office hours, and graded homework and exams.
3. *STATS 415: Data Mining and Statistical Learning* (upper undergraduate level) *Winter 2022*
    - Designed and taught weekly lab sections (~40 students), held office hours, and graded homework and exams.
4. *STATS 250: Introduction to Statistics and Data Analysis* (lower undergraduate level) *Fall 2022*
    - Taught weekly lab sections (~40 students), held office hours, and graded homework and exams.

Teaching Assistant, **Columbia University**

1. *INAF U6614: Data Analysis for Policy Research Using R* (graduate level) *Fall 2020*
    - Designed and taught weekly lab sections (~20 students), developed course website, held office hours, and graded homework and projects.
2. *CSOR W4231: Analysis of Algorithms* (upper undergraduate/graduate level) *Spring 2020*
    - Held office hours, and graded homework and exams.

Teaching Assistant, **National University of Singapore**

1. *MA1512: Differential Equations for Engineering* (lower undergraduate level) *AY 2018/19 Semester 2*
    - Designed and taught weekly tutorial classes (~60 students), and held office hours.
2. *MA1100: Fundamental Concepts of Mathematics* (lower undergraduate level) *AY 2018/19 Semester 1*
    - Designed and taught weekly tutorial classes (~60 students), held office hours, and graded exams.

Awards

2023 **Rackham International Student Fellowship**, University of Michigan

2020 **Top 1.5%**, Baidu and Xi'an Jiaotong University International Big Data Competition

2019 **Second Runner-Up**, Columbia University Data Science Hackathon
Ho Family Prize (Best Graduate in Applied Mathematics), National University of Singapore

2017 **Top 250**, William Lowell Putnam Mathematical Competition
First Runner-Up, ALMA College Mathematics Challenge

2015 **Undergraduate Scholarship (Full Funding)**, Singapore Ministry of Foreign Affairs

2014 **Silver Medal**, Asian Pacific Mathematics Olympiad

2013 **Bronze Medal**, International Mathematical Olympiad
Silver Medal, Asian Pacific Mathematics Olympiad

2009 **Satyalancana Wira Karya (Medal for Providing an Example of Meritorious Personality)**, Government of the Republic of Indonesia

Presentations and Posters

Presentations

2024 **Joint Statistical Meetings**, Portland, OR, USA
2024 **Michigan Student Symposium for Interdisciplinary Statistical Science**, Ann Arbor, MI, USA
2023 **Joint Statistical Meetings**, Toronto, ON, Canada

Posters

2024 **Midwest Speech and Language Days**, Ann Arbor, MI, USA
2024 **Michigan Student Symposium for Interdisciplinary Statistical Science**, Ann Arbor, MI, USA
2023 **NeurIPS Workshop on Mathematics of Modern Machine Learning**, New Orleans, LA, USA
2023 **Michael Woodroofe Memorial Conference**, Ann Arbor, MI, USA
2023 **Uncertainty in Artificial Intelligence (UAI)**, Pittsburgh, PA, USA
2023 **ICSA Applied Statistics Symposium**, Ann Arbor, MI, USA
2023 **Midwest Machine Learning Symposium**, Chicago, IL, USA

Outreach and Professional Development

Service and Outreach

2023 **Neural Information Processing Systems**, Volunteer
2023 **ICSA Applied Statistics Symposium**, Volunteer
2021 - 2022 **University of Michigan Indonesian Society**, Events Director
2020 **Columbia University Data Science Institute**, Student Ambassador and Mentor
2019 - 2020 **Columbia Indonesian Society**, Assistant Vice President of Training and Development

Journals, Conferences and Workshops Refereed

2024 **Cities**
2024 **Neural Information Processing Systems (NeurIPS)**
2024 **ICML Workshop on In-Context Learning**
2024 **ICML Workshop on Theoretical Foundations of Foundation Models**
2023 - 2024 **Artificial Intelligence and Statistics (AISTATS)**