Yehu Chen

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CONTACT INFO

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RESEARCH INTERESTS

Machine learning, Bayesian methods, Gaussian process, Causal inference, Forecasting, and Quantitative methods

I am interested in applying Bayesian machine learning methods to quantitative research, especially causal inference, psychometrics, adaptive experimental design and forecasting. In my dissertation thesis *Advancing Modeling and Inference in Political Science with Gaussian Processes*, I investigate how to design interpretable machine learning algorithms for tackling core tasks in political science with the family of Gaussian process models, including latent issue position measurement, heterogeneous effect estimation in panel data, adaptive data acquisition in conjoint analysis.

EDUCATION

Washington University in St Louis, St Louis, MO
Ph.D. Candidate in Computational & Data Science, Sept. 2019 to Present

- Dissertation: Advancing Modeling and Inference in Political Science with Gaussian Processes
- Advisors: Roman Garnet (CSE), Jacob Montgomery (PoliSci)
- Expected graduation: Spring 2024

University of Michigan, Ann Arbor, MI
B.S in Computer Science (Summa Cum Laude), Sept. 2017 to May. 2019

Shanghai Jiaotong University, Shanghai, China
B.S.E in Electrical and Computer Engineering, Sept. 2015 - Aug. 2019

PUBLICATIONS

A Multi-Task Gaussian Process Model for Inferring Time-Varying Treatment Effects in Panel Data. Yehu Chen, Annamaria Prati, Jacob Montgomery and Roman Garnett. In the 26th International Conference on Artificial Intelligence and Statistics (*AISTATS*), 2023

GD-GPIRT: A Gaussian Process Model for Generalized Dynamic Item Response Theory. With JBrandon Duck-Mayr, Jacob Montgomery and Roman Garnett. *Under review*, AISTATS 2024

Polls, Context, and Time: A Dynamic Hierarchical Bayesian Forecasting Model for US Senate Elections. Yehu Chen, Roman Garnett and Jacob M. Montgomery. In Politcal Analysis, 2023

A Gaussian Process Framework for Structured, Flexible, and Interpretable Machine Learning Models in the Social Sciences. With Annamaria Prati, Ryan Johnson and Jacob Montgomery. In *APSA*, 2023

Compressive Big Data Analytics: An ensemble meta-algorithm for high-dimensional multisource datasets. Simeone Marino, Yi Zhao, Nina Zhou, Yiwang Zhou, Arthur W. Toga,Lu Zhao, Yingsi Jian, Yichen Yang, Yehu Chen, Qiucheng Wu, Jessica Wild, Brandon Cummings and Ivo D. Dinov. In Plos one, 2020

WORKING IN PROGRESS

Adaptive experiment design for multiple dimension treatment effect estimation in Gaussian Process preference learning. With Jacob Montgomery and Roman Garnett.

A Gaussian Process Framework for Idiographic Measurement of Psychological Traits. With Joshua Jackson, Jacob Montgomery and Roman Garnett.

Gaussian process Regression and Post-stratification for Grouped Data. With Santiago Olivella (UNC), Bryant Moy (NYU) and Jacob Montgomery.

PRESENTATIONS

Poster Sessions:
Society for Political Methodology Meeting, Stanford, CA, 2023
Information and Statistics in Nuclear Experiment and Theory, St Louis, 2023
The 26th International Conference on Artificial Intelligence and Statistics, Valencia, Spain, 2023
Society for Political Methodology Meeting, St Louis, MO, 2022
Michigan Institute for Data Science Annual Symposium (Most Likely Health Impact Postewr), U of M Ann Arbor, MO, 2018

Campus Talks:
DCDS Student Seminar, WashU St. Louis, 2022

TEACHING EXPERIENCE

Teaching Assistant, Washington University in St Louis 2019 to Present

- CSE 515T Bayesian Methods in Machine Learning: Spring 2021
- PoliSci 582 Quantitative Political Methodology II: Fall 2021

Instructor Assistant, Shanghai Jiaotong University 2016 to 2019

- Honored Mathematics I, II & III: Fall 2016, Spring 2017, Summer 2017

- VE230 Electromagnetics I: Summer 2019

Grading Assistant, University of Michigan — Fall 2018
- EECS 376 Foundation of Computer Science

WORK EXPERIENCE

Foxit Software Inc, Fremont, CA — Jul. 2018 - Aug. 2018
Software Engineer Intern

Shanghai Fudan Microelectronics Group, Shanghai, China — Winter 2017
Research Intern

SOFTWARE

gpirt R package for dynamic Gaussian process item response model for latent trait estimation with MCMC sampling (with JBrandon Duck-Mayr).

TECH SKILLS

Programming:
C, C++, C#, Python, R, Matlab, Java, JavaScript, HTML, Latex, Linux
Statistical and Machine Learning tools:
Tensorflow, pytorch, gpytorch, pyro, pymc, Stan, GPML toolbox

SERVICE

Conference Reviewer: 2023 - now
International Conference on Learning Representations (ICLR)
International Conference on Artificial Intelligence and Statistics (AISTATS)

AWARDS & HONORS

'Deans List', University of Michigan — 2017 to 2018
'Bosch' Scholarship, BOSCH, Ltd — 2015 to 2016

REFERENCES

DISTINGUISHED PROF. JEFF GILL — jgill@american.edu
Department of Government, American University

PROF. ROMAN GARNETT — garnett@wustl.edu
Department of Computer Science and Engineering, WashU St. Louis

PROF. JACOB MONTGOMERY — jacob.montgomery@wustl.edu
Department of Political Science, WashU St. Louis

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