YAN SUN

1815 John F Kennedy Blvd, Philadelphia, PA 19103
765-775-3724, yan.sun@pennmedicine.upenn.edu

Website | Google Scholar | Github | LinkedIn

EDUCATION

Purdue University *August 2017 - May 2022*
Ph.D. in Statistics *West Lafayette, IN*
Dissertation: Sparse Deep Learning and Stochastic Neural Network
Zhejiang University *September 2013 - June 2017*
B.S. in Mathematics and Applied Mathematics *Hangzhou, China*
Qiushi Pursuit Science Class of Chu Kochen Honors College

EMPLOYMENT

University of Pennsylvania *May 2023 - Now*
Post-doctoral Fellow *Philadelphia, PA*

- Research on model calibration: asymptotic properties of calibration error.

Amazon AEE-ML Team *June 2022 - March 2023*
Applied Scientist I *Seattle, WA*

- Apply multi-task neural network model to Import Fee Deposit(IFD) prediction, classify zero or none-zero IFD and predict the IFD value at the same time.
- Refine model validation logic to automatically verify the model performance.

Amazon AEE-ML Team *May 2021 - August 2021*
Applied Scientist Intern *Seattle, WA*

- Apply neural network model with different structures to Import Fee Deposit(IFD) prediction.
- Incorporate new country level features to build unified model over country groups.

TEACHING EXPERIENCE

Teaching Assistant at Purdue

- Instructor of STAT 225: Introduction To Probability Models *August 2018 - May 2019*
- Teaching Assistant of STAT 301: Elementary Statistical Methods *August 2017 - May 2018*

RESEARCH EXPERIENCE

Post-doctoral Fellow **University of Pennsylvania**
Mentors: Dr. Ian Barnett, Dr. Edgar Dobriban, Dr. Pratik Chaudhari *May 2023 - Now*

- Asymptotic properties of calibration error of machine learning models.

Ph.D. Researcher **Purdue University**
Advisor: Dr. Faming Liang *August 2017 - May 2022*

- Theoretical properties of Bayesian Neural Network(BNN): posterior consistency, variable selection consistency, posterior normality.

- Markov Chain Monte Carlo(MCMC) method: extend stochastic gradient MCMC methods to deal with discrete variables.
- Network pruning: apply BNN with sparse inducing priors to network pruning.
- Stochastic Neural Network: design new kernel expanded stochastic neural network model.

PUBLICATION

1. Zhang, Mingxuan, **Sun, Yan** and Liang, Faming(2023). Sparse Deep Learning for Time Series Data: Theory and Applications. *Advances in neural information processing systems* (2023)
2. Liang, Siqi, **Sun, Yan** and Liang, Faming(2022). Nonlinear Sufficient Dimension Reduction with a Stochastic Neural Network. *Advances in neural information processing systems* (2022).
3. **Sun, Yan**, and Liang, Faming(2022). A Kernel-Expanded Stochastic Neural Network. *Journal of the Royal Statistical Society: Series B (Statistical Methodology),* 84(2), 547-578.
4. **Sun, Yan**, Xiong, Wenjun and Liang, Faming(2021). Sparse Deep Learning: A New Framework Immune to Local Traps and Miscalibration. *Advances in neural information processing systems* 34 (2021)
5. **Sun, Yan**, Song, Qifan and Liang, Faming(2021). Learning Sparse Deep Neural Networks with Spike-and-Slab Priors. *Statistics & Probability Letters*, 109246.
6. **Sun, Yan**[1], Song, Qifan[1] and Liang, Faming(2021). Consistent Sparse Deep Learning: Theory and Computation. *Journal of the American Statistical Association*, 1-15.
7. Song, Qifan, **Sun, Yan**, Ye, Mao and Liang, Faming(2020). Extended Stochastic Gradient MCMC for Large-Scale Bayesian Variable Selection. *Biometrika*, 2020 July.
8. Ye, Mao [1]and **Sun, Yan** [1](2018). Variable selection via penalized neural network: a drop-out-one loss approach. In *International Conference on Machine Learning*, pp. 5620–5629, 2018.

Work in Progress

9. Zhang, Mingxuan, **Sun, Yan**, and Liang, Faming. Magnitude Pruning of Large Pretrained Transformer Models with a Mixture Gaussian Prior. Paper submitted to International Conference on Artificial Intelligence and Statistics (AISTATS 2024)
10. Liang, Faming, Kim, Sehwan and **Sun, Yan**. Extended Fiducial Inference: Toward an Automated Process of Statistical Inference. Paper submitted to *Journal of the Royal Statistical Society: Series B (Statistical Methodology).*
11. **Sun, Yan**, Liang, Faming. Statistical Inference for Deep Learning via Stochastic Modeling. Paper submitted to *International Conference on Learning Representations(ICLR 2024)*
12. **Sun, Yan**, Edgar Dobriban, Ian Barnett, Pratik Chaudhari. Confidence Interval for the Calibration Error. Manuscript in Preparation

HONORS AND AWARDS

- Bilsland Dissertation Fellowship, 2022. Purdue Depeartment of Statistics
- William J. Studden Publication Award, 2021 and 2022. Purdue Department of Statistics.
- Virgil Anderson and Gloria Fischer Graduate Fellowship, 2021. Purdue Department of Statistics.