

XING HAN

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EDUCATION

The University of Texas at Austin

Ph.D. in Electrical and Computer Engineering

Advisor: Prof. Joydeep Ghosh

Aug. 2017 - Present

GPA: 3.83/4.00

The University of Edinburgh

Bachelor of Engineering, Electronic Engineering

May 2017

Graduated with First Class Honors

RESEARCH INTERESTS

I am interested in developing principles and practice of trustworthy machine learning. Specifically, I have been focused on (1) *Uncertainty quantification*: to better capture the epistemic uncertainty in common predictive modeling and classification problems. (2) *Robustness*: to strengthen the models defense on adversarial attack or distribution drift, and provide safety guarantee via constructing certified robustness. (3) *Interpretability*: to build human understandable explanations for model decisions, with particular focus on non i.i.d. data such as time series or sequential data.

PUBLICATIONS AND PREPRINTS

1. **Han, X.**, Ren, T., Nguyen, T., Nguyen, K., Ghosh, J., Ho, N. (2022). Robustify Transformers with Robust Kernel Density Estimation. *Submitted*.
2. Lundin, J., Schoppe, O., **Han, X.**, Sollami, M., Lonsdorf, B., Ross, A., Woodward, D., Rohde, S. (2022). Machine-Learning Based Generation of Text Style Variations for Digital Content Items. *US Patent 2022/0245322 A1*.
3. Makhija, D., **Han, X.**, Ho, N., Ghosh, J. (2022). Architecture Agnostic Federated Learning for Neural Networks. *International Conference on Machine Learning (ICML), 2022*.
4. **Han, X.**, Ren, T., Hu, J., Ghosh, J., Ho, N. (2022). Efficient Forecasting of Large Scale Hierarchical Time Series via Multilevel Clustering. *Submitted*.
5. **Han, X.**, Tang, Z., Ghosh, J., Liu, Q. (2022). Split Localized Conformal Prediction. *Submitted*.
6. **Han, X.**, Hu, J., Ghosh, J. (2021). MECATS: Mixture-of-Experts for Probabilistic Forecasts of Aggregated Time Series. *Submitted*.
7. **Han, X.**, and Lundin, J. (2021). Multi-Pair Text Style Transfer for Unbalanced Data via Task-Adaptive Meta-Learning. *ACL MetaNLP Workshop, 2021*.
8. **Han, X.**, and Ghosh, J. (2021). Model-Agnostic Explanations using Minimal Forcing Subsets. *International Joint Conference in Neural Networks (IJCNN), 2021*.
9. **Han, X.**, Dasgupta, S., and Ghosh, J. (2021). Simultaneously Reconciled Quantile Forecasting of Hierarchically Related Time Series. *Artificial Intelligence and Statistics (AISTATS), 2021*.
10. Liu, X., **Han, X.**, Zhang, N., and Liu, Q. (2020). Certified Monotonic Neural Networks. *Neural Information Processing Systems (NeurIPS), 2020*. **Spotlight**
11. **Han, X.**, Feng, Y., Zhang, N., and Liu, Q. (2020). Transparent Interpretation with Knockout. *ICML Workshop on Human Interpretability in Machine Learning (WHI), 2020*. **Spotlight**
12. **Han, X.**, Ye, M., and Liu, Q. (2019). Variance Reduction for Missing Data Problems. Manuscript

13. Lin, S., Mattingly, S.M., **Han, X.**, Audia, P., et al. (2019). Sensing Personality to Predict Job Performance. *CHI Workshop on The Future of Work*, 2019.
14. Gutierrez, A., Chang, M.L., **Han, X.**, Chang, K.C. (2018). Effects of Integrated Intent Recognition and Communication on Human-Robot Collaboration. *International Conference on Intelligent Robots and Systems (IROS)*, 2018.

PROFESSIONAL EXPERIENCE

Google *Sunnyvale, California*
 Research Intern (Host: Dr. Xu Gao) *May 2022 - Sept. 2022*

- Built different forecasting models to improve workload prediction at machine and VM level
- Developed effective reconciliation methods for time series with dynamically changing hierarchy

Intuit *Mountain View, California*
 Data Scientist Intern (Mentor: Dr. Jing Hu) *June 2021 - Sept. 2021*

- Developed hierarchical time series forecasting models that improved forecasting accuracy
- Improved efficiency of forecasting pipeline by writing concurrent and multi-GPU program

Salesforce *San Francisco, California*
 Research Intern (Mentor: Dr. Jessica Lundin) *June 2020 - Aug. 2020*

- Implemented state-of-the-art text style transfer models and designed a web-based UI for demo
- Researched on text style transfer on small and unbalanced dataset. Implemented a Bayesian task adaptive meta learning algorithm to fine-tune pre-trained language models

CognitiveScale *Austin, Texas*
 Applied Scientist Intern (Mentor: Dr. Suyog Jain) *May 2018 - Aug. 2018*

- Implemented session-based recommendation algorithms and achieved state-of-the-art performance
- Lead a team project of 5 interns to research “Ethical AI” and pitched a business idea to company

PATENTS AND PROJECTS

Multimodal Objective Sensing To Assess Individuals with Context *Feb. - Dec. 2018*

Kaggle: AdTracking Fraud Detection Challenge [Report] *Mar. - Apr. 2018*

INVITED TALKS

Mixture-of-Experts for Probabilistic Forecasts of Aggregated Time Series at Intuit AI *2021*

Certified Monotonic Neural Networks at Salesforce Research *2020*

Model-Agnostic Explanations using Minimal Forcing Subsets at Intuit AI *2019*

SERVICE

Conference Reviewer: ICLR 2020-2023; NeurIPS 2020-2022; AISTATS 2021-2023; ICML 2021-2022

Journal Reviewer: Pattern Recognition

TECHNICAL STRENGTHS

Programming	Python, R (proficient); Java, Matlab, Verilog, C/C++ (knowledge of)
Tools	TensorFlow, PyTorch, TensorBoard, Scikit-Learn, Pandas, Numpy, Seaborn, Prophet, etc.
Specialty	Time-series, variational inference, generative models, transformers
Others	L ^A T _E X, Shell Script, ROS, SQL