

XING HAN

Phone: (+1) 512-987-5026 ◊ Email: aaronhan223@utexas.edu ◊ Homepage ◊ LinkedIn ◊ Google Scholar

EDUCATION

The University of Texas at Austin

Aug. 2017 - Aug. 2023 (Expected)

M.S. - Ph.D. in Electrical and Computer Engineering

GPA: 3.84/4.00

Advisor: Prof. Joydeep Ghosh

The University of Edinburgh

May 2017

Bachelor of Engineering, Electronic Engineering

Graduated with First Class Honors

RESEARCH SUMMARY

I am interested in developing principles and practices 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 a 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. (2023). Designing Robust Transformers using Robust Kernel Density Estimation. *Under Review*.
2. **Han, X.**, Ren, T., Hu, J., Ghosh, J., Ho, N. (2023). Efficient Forecasting of Large Scale Hierarchical Time Series via Multilevel Clustering. *Under Review*.
3. **Han, X.**, Tang, Z., Ghosh, J., Liu, Q. (2023). Split Localized Conformal Prediction. *Under Review*.
4. **Han, X.**, Hu, J., Ghosh, J. (2023). Dynamic Combination of Heterogeneous Models for Hierarchical Time Series. *Under Review*.
5. **Han, X.**, Hu, J., and Ghosh, J. (2023). A Novel Control-Variates Approach for Performative Gradient-Based Learners with Missing Data. *Under Review*.
6. Makhija, D., **Han, X.**, Ho, N., Ghosh, J. (2022). Architecture Agnostic Federated Learning for Neural Networks. *International Conference on Machine Learning (ICML), 2022*.
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. 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*.

13. 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

1. 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*.
2. Multimodal Objective Sensing To Assess Individuals with Context, (2018); IARPA-funded project.

SELECTED AWARDS

B.Eng. First Class Honors (10% selection rate) *July 2017*
Outstanding Graduates (3% selection rate) *June 2017*
Edinburgh University Department Scholarship *2015-2017*
China National Scholarship (2% selection rate) *2013-2014*

INVITED TALKS

Hierarchical Time Series Forecasting at IIF Workshop on Forecast Reconciliation *2023*
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*

ACADEMIC SERVICE

Conference Reviewer: ICLR 2020-2023; NeurIPS 2020-2022; AISTATS 2021-2023; ICML 2021-2023; IJCNN 2023; Journal Reviewer: Pattern Recognition

GRADUATE LEVEL COURSE WORKS

Probability and Stochastic Process, Convex Optimization, Data Mining, Information Theory, Deep Learning, Deep Probabilistic Modeling, Fair Transparent Machine Learning, Reinforcement Learning.

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
Language	Mandarin, English, French (beginner)
Others	L ^A T _E X, Shell Script, ROS, SQL

REFERENCES

1. **Joydeep Ghosh**, Schlumberger Centennial Chair Professor (Advisor) jghosh@utexas.edu
The University of Texas at Austin
2. **Nhat Ho**, Assistant Professor minhnhat@utexas.edu
The University of Texas at Austin
3. **Jing Hu**, Staff Data Scientist jing_hu@intuit.com
Intuit AI
4. **Qiang Liu**, Associate Professor lqiang@cs.utexas.edu
The University of Texas at Austin