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# JIAN GAO

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## SUMMARY

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CS PhD with 13 years' experience in machine learning, published 18 papers, presented at 9 international conferences, filed 5 patents. Completed 150+ peer reviews for top conferences & journals such as T-ITS, INTERSPEECH, ICASSP, etc. Area Chair of ASR in Amazon Machine Learning Conference (2021-2023).

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## RESEARCH INTERESTS

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- LLM Ranking Model for RLHF, LLM Human Evaluation
- ASR Transcription Error Detection & Correction, Audio-Text Alignment
- Voice Conversion, Computer Vision, Time-series Data Prediction
- Transaction Fraud Detection, Attack Simulation, Feature Engineering, Online Learning
- Adversarial Machine Learning, Deep Generative Models, Robust Optimization, Game Theory

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## EDUCATION

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**Ph.D.** Computer Science, New York University ..... Jan 27, 2020

*Dissertation: Game-Theoretic Approaches for Generative Modeling.* (Advisor: Hamidou Tembine, GPA: 4.0)

**M.S. & B.S.** Pattern Recognition & Intelligent Systems, Tongji University ..... Mar 31, 2015

*T: An Affine Invariant Approach for Dense Wide-baseline Image Matching.* (Advisor: Fanhuai Shi, GPA: 3.8)

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## WORK EXPERIENCE

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**Applied Scientist II**, 07/2020 to Present

**Amazon.com LLC.** – Seattle, WA

- Alexa AI – Transcription Error Detection & Correction, Audio-Text Alignment, LLM Reward Model
- Payment Risk – Transaction Fraud Prevention, Attack Simulation, Feature Engineering, Online Learning

**Data Analytics Intern**, 05/2019 to 08/2019

**Hitachi America, Ltd** – Santa Clara, CA

- Time series data analysis - solar & wind power forecasting (paper [6])
- Designed a system for renewable energy and demand forecasting

**Computer Vision Intern**, 05/2018 to 08/2018

**Phillips Lighting** – Boston, MA

- Synthetic Speech Generation, Emotional Voice Conversion (paper [2])
- Google street view image object detection and classification using Mask R-CNN
- Automated generation of artistic indoor images using GANs (IP Filing Incentive Award, U.S. patent filed)

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## RESEARCH EXPERIENCE

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PhD program, **Learning & Game Theory Laboratory**, NYU & NYUAD, 2015-2020

- Nonparallel emotional speech conversion, generative model for style transfer using GAN & autoencoders
- Deep generative learning, GANs, distributionally robust optimization (book chapter [3])
- Game Theory model in Wireless Networks and Mobile Communications (got best paper award [10])
- Vehicle tracking, video analysis, object detection, Intelligent Transportation Systems (paper [1][12])
- Signal processing, filtering, sequential prediction, aircraft tracking (U.S. Air Force Research Project)

Master program, **Image & Vision Computing Laboratory**, Tongji University, 2012-2015

- Developed a system for image-based plant leaf detection and classification
- Dense wide-baseline matching, stereo matching, camera calibration for 3D scene reconstruction

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## PROGRAMMING SKILLS

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- Python, C/C++, R, Linux, Git, AWS, Jupyter
- PyTorch, Keras, Pandas, Scikit-learn, XGBoost

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## PATENTS & INVENTIONS

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- Virtual Walkthrough Shopping Experience with Generative Content Personalization, 2020, 63/039,990
- Multi-layer Hybrid Model Power Generation Prediction Method and Computing System, 2020, 16/818,177
- Automated generation of artistic and photo-realistic synthetic lighting scene images and realizations using generative networks, 2019, 62/854,716
- An Affine invariant approach for wide baseline stereo image matching, 2014, CN104167000B
- A rotation and scale invariant method for wide baseline stereo image matching, 2014, CN103700099A

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## PUBLICATIONS

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1. **Jian Gao**, Hanbo Sun, Cheng Cao, Zheng Du, “Human Transcription Quality Improvement”, INTERSPEECH 2023
2. Hanbo Sun, **Jian Gao**, Xiaomin Wu, Anjie Fang, Cheng Cao, “Human Transcription Error Correction”, AMLC 2023
3. **Jian Gao**, Deep Chakraborty, Hamidou Tembine, and Olaitan Olaleye, “Nonparallel Emotional Speech Conversion,” INTERSPEECH 2019, Graz, Austria, September 2019.

4. **Jian Gao**, Fraud Simulation & On the Fly Learning in Transaction Fraud Prevention, AMLC 2021
5. **J. Gao** and H. Tembine, "Distributed Mean-Field-Type Filters for Traffic Networks," in IEEE Transactions on Intelligent Transportation Systems, pp. 507-521, Feb. 2019.
6. **Jian Gao**, Yida Xu, Julian Barreiro-Gomez, Massa Ndong, Michalis Smyrnakis and Hamidou Tembine (September 5<sup>th</sup>, 2018) Distributionally Robust Optimization. In Jan Valdman, Optimization Algorithms, IntechOpen. DOI: 10.5772/intechopen.76686. ISBN: 978-1-78923-677-4
7. **Jian Gao** and Hamidou Tembine, Distributionally Robust Games: Wasserstein Metric, International Joint Conference on Neural Networks (IJCNN), Rio de Janeiro, Brazil, July 2018
8. **Jian Gao** and Olaitan Olaleye. "Automated generation of artistic and photo-realistic synthetic lighting scene images and realizations using generative networks", (ID: 2018ID80933, US Patent submitted)
9. **Jian Gao**, Panitarn Chongfuangprinya, Yanzhu Ye, Bo Yang, "A Three-Layer Hybrid Model for Wind Power Prediction", IEEE PES GENERAL MEETING, Montreal, Canada, August 2020
10. **Jian Gao** and Hamidou Tembine, Distributionally Robust Games for Deep Generative Learning, July 2018. DOI: 10.13140/RG.2.2.15305.44644
11. **Jian Gao** and Hamidou Tembine, Bregman Learning for Generative Adversarial Networks, Chinese Control and Decision Conference (CCDC), Shenyang, China, June 2018 (Best paper finalist Award)
12. Dario Bauso, **Jian Gao** and Hamidou Tembine, Distributionally Robust Games: f-Divergence and Learning, 11th EAI International Conference on Performance Evaluation Methodologies and Tools (VALUETOOLS), Venice, Italy, Dec 2017
13. **Jian Gao** and Hamidou Tembine, Empathy and Berge equilibria in the Forwarding Dilemma in Relay-Enabled Networks, International Conference on Wireless Networks and Mobile Communications (WINCOM), Rabat, Morocco, Nov 2017 (Best paper Award)
14. **Jian Gao** and Hamidou Tembine, Correlative Mean-Field Filter for Sequential and Spatial Data Processing, in the Proceedings of IEEE International Conference on Computer as a Tool (EUROCON), Ohrid, Macedonia, July 2017
15. **Jian Gao** and Hamidou Tembine, Distributed Mean-Field-Type Filter for Vehicle Tracking, in American Control Conference (ACC), Seattle, USA, May 2017
16. **Jian Gao** and Hamidou Tembine, Distributed mean-field-type filters for Big Data assimilation, in the second IEEE International Conference on Data Science and Systems (HPCC-SmartCity-DSS), Sydney, Australia, Dec 2016, pp. 1446-1453.
17. Fanhuai Shi, **Jian Gao**, Xixia Huang, An affine invariant approach for dense wide baseline image matching. International Journal of Distributed Sensor Networks (IJDSN) 12(12) (2016)
18. **Jian Gao**, Fanhuai Shi, A Rotation and Scale Invariant Approach for Dense Wide Baseline Matching. Intelligent Computing Theory - 10th International Conference, ICIC (1) 2014: 345-356