

TANRAN ZHENG

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HIGHLIGHTS

- Machine Learning
- Computer Vision / NLP
- Distributed ML Systems
- Python / C / C++ / SQL
- Deep Learning
- Time-series Analysis
- Hadoop / Kafka / Spark
- PyTorch / TensorFlow

EDUCATION

NEW YORK UNIVERSITY, Courant Institute of Mathematical Sciences **New York, NY**
M.Sc. in Computer Science (expected – May 2023) *Aug 2021 – Present*
Relevant Coursework: *Deep Learning* *Natural Language Processing* *Deep Learning Systems* *GPA: 3.9/4.0*
Computer Graphics *Realtime and Big Data Analytics* *Reinforcement Learning*

UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN **Champaign, IL**
M.Sc. in Financial Engineering *Aug 2014 – Dec 2015*
B.Sc. in Electrical Engineering, Minor in Business Administration *Aug 2010 – May 2014*
Relevant Coursework: *Computer Engineering, Digital Sys Design, Signal Processing, Numerical Methods* *GPA: 3.5/4.0*

STANFORD UNIVERSITY **Stanford, CA**
Graduate Certificate in Artificial Intelligence *Mar 2020 – May 2021*
Relevant Coursework: *Machine Learning, Probabilistic Graphical Models, CNN for Visual Recognition* *GPA: 4.01/4.0*

EXPERIENCE

AMAZON **Seattle, WA**
Applied Scientist Intern *Jun 2022 – Aug 2022*
The internship with Alexa Smart Home Machine Learning team focused on building machine learning models to proactively send device grouping setup recommendations (Alexa Hunches) to Alexa users.

- Developed classification models with supervised / self-supervised learning methods (Siamese, SimSiam) based on similarity between devices' deep embeddings (PyTorch, AWS, Spark)
- Designed features generated from time series usage data and text data to represent device's usage pattern
- Researched and adapted computer vision and word embedding models to generate devices' deep embeddings
- Improved the prediction accuracy of current model by 10% – 13% depending on different use cases in production

QIANHAI ALLIANCE ASSET MANAGEMENT CO., LTD **Shenzhen, China**
Senior Quantitative Investment Manager *Dec 2017 – May 2021*

- Developed machine learning based investment strategies for 8 equity mutual funds (AUM 450 million USD)
- Researched, designed, and backtested machine learning models to predict the performances of equities, which increased the annualized return of existing strategies by 20% (9 million USD asset growth)
 - Performed experiment and analysis for features selection and extraction to explain excess return of equities
 - Monitored performance metrics, performed testing, and built pipelines for machine learning models' deployment
 - Collected and preprocessed large-scale data (SQL): financial statements, market data, alternative data, etc.
- Co-developed and facilitated the transition to the first Python investment analysis framework for the company

JINAN UNIVERSITY **Guangzhou, China**
Research Assistant (Part-time) *Mar 2018 – Jan 2021*

- Conducted research on application of machine learning algorithms for large-scale time-series data analysis
- Proposed and published a new dimension reduction algorithm specifically for high-correlated time-series data

RESEARCH AND PROJECTS

Object Detection with Semi-Supervised and Self-Supervised Learning **New York University**

- Researched and implemented Semi/Self-supervised learning approaches for object detection with limited labeled data
- Achieved 45% of AP@0.5 with SwAV and Faster R-CNN in final competition with 30k labeled images (100 classes)

Semantic Role Labeling with Deep Embedding Methods **New York University**

- Developed transformer-based methods (BERT, prompt learning) to detect Partitive nouns (92.5 F-Score on PropBank)

Self-Supervised Image-to-Image Translation **New York University**

- Conducted research on Conditional-GAN and Cycle-GAN for high-resolution image colorization and style transfer
- Improved the performance of Cycle-GAN by self-supervised pre-training with only 20% of labeled data

Cooperative Multi-Agents with Reinforcement Learning **New York University**

- Explored, implemented, and improved multi-agent deep reinforcement learning models in Unity's gaming environment
- Improved the average episode reward by 5% by modifying MADDPG model and corresponding training methods

Estimating Depth from RGB Monocular images **Stanford University**

- Researched and implemented CNN methods for monocular depth estimation with RGB-D images (PyTorch, GCP)

PUBLICATIONS

- Zheng, T., "Sequential Clustering and Dimension Reduction Algorithm of Time-series Data", *CEO & CIO In Information Times*, ISSN1007-9440, 23(1): 2-8, 2020.
- Zheng, T., "Relative Severity Analysis and Time-series Prediction of COVID-19 Outbreak", *Health World*, ISSN1005-4596, 27(5): 23-28, 2020.