Tianyu (John) Zhang

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Education

- **Carnegie Mellon University School of Computer Science** — Pittsburgh, PA
  B.S. in Artificial Intelligence, Minor in Computational Finance; GPA: 3.88, Dean's List — *Expected May 2022*
  - **CS**: *Algo Des & Anls/ Parallel Algo/ Computer Sys/ Software Design/ Functional Prog/ Theoretical CS
  - **AI**: *Scalable ML/ *Computer Vision/ Intro to ML/ AI: Representation and Problem Solving
  - **Math**: Discrete Math/ Linear Algebra/ Multivariate Calculus/ Probability Theory/ Modern Regression

Research and Working Experience

- **ByteDance (TikTok Recommendation Team)** — Beijing, China
  Machine Learning Algorithm Intern — *June 2020 - Aug 2020*
- **Tsinghua Tongfang Nuctech AI Research Center** — Beijing, China
  Machine Learning Intern — *May 2019 - Jul 2019*
  - **Baggage Re-Identification for Smart Security Inspection**: Extensively investigated past architectures for person and vehicle re-identification (re-ID) tasks. Implemented multiple architectures and evaluated their performance for baggage re-ID. Achieved a 0.76 accuracy of CMC rank-1 (improving the baseline by a 0.34 margin in accuracy and about 100x in speed) on the overall re-ID task (image retrieval from the 500-baggage gallery) on the Multi-View Baggage dataset.
  - **Testing Framework Development**: Developed a fork upon the open-source deep-person-reid framework for the team's future research and deployment workflow, including features such as activation visualization, training checkpoint management, Comet.ml integration, and CLI tools.
- **TechX Academy** — Shanghai, China
  Head Academic Staff — *May 2018 - Aug 2019*
  - **Instructor of *Theory of Computation***: Co-taught the 5-day seminar on theoretical computer science, covering topics such as discrete math fundamentals, computability (DFA and TM), and efficiency (polynomial reduction and P vs. NP). Designed slides, handouts, and assignments.
  - **TA for AI Courses**: TA-ed 10-day main courses. Designed homework and assessments for neural net basics, Markov Decision Process, Q-learning in *Deep Reinforcement Learning* (2018), and feature extraction, SVM, DP & Seam Carving in *Computer Vision* (2019). Led Q&A sessions and graded homework.
  - **Academy Experience Design**: Directed the Academic Team of TechX 2019. Led the processes of course design, staff search, and infrastructure setup for 5 courses.
- **BNDS Mathematical Modeling Lab** — Hong Kong / Beijing, China
  Research Student & Contestant. Selected projects: — *Sep 2016 - Mar 2018*
  - **Venue Selection of International Conferences Based on Time Difference and Flight Fatigue**: Explored the influence of jet lag and flight fatigue on travelers; built models to provide strategies for international conference venue selection. (IMMC2017, Finalist, MATLAB/Mathematica, https://github.com/johnzhang1999/IMMC2017-INTL);
  - **Predicting the Distributions of Language Speakers and Its Application in Office Site Selections**: Borrowing from the SIR model from epidemiology and the gravitational model from physics, built a model to analyze the spread of languages; utilized AHP to analyze and offer recommendations of global office setup for international corporations. (MCM2018, Meritorious, Python/MATLAB, Repo /MCM2018);

Selected Projects

AsmVM: An extensible Assembly interpreter. (Java, 17-214 Project. Due to policy, view code upon request.)
Carcassonne: A multi-player tile-laying board game. (Java, 17-214 Project. Due to policy, view code upon request.)
Pop!: A group-based crowd-sourcing notification app. (JavaScript+Python, https://github.com/johnzhang1999/Pop)
Microbiome: K-mer search enabled fast bacterial DNA sequence retrieval. (Python, Repo /microbiome)
Blind++: A wearable system that helps the visually impaired locate objects. (Python, TechX 2017 First Place)
MagUnity: An electromagnetism engine implementation for Unity. (C#, CASTIC 2017 Second Prize)

Programming Skills

Languages: Python, Java, C, JS, SML, MATLAB **Technologies**: Pytorch, Tensorflow, React, Gradle, LaTeX