Jiayun WU

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RESEARCH INTEREST

Machine Learning, Trustworthy AI, Out-of-distribution Generalization, Robustness of ML Algorithms

ACADEMIC EXPERIENCE

9. 2018– Present   Department of Computer Science and Technology, Tsinghua University (THU)

- **Bachelor of Engineering** in Computer Science and Technology (Expected)
- **GPA:** 3.92/4.0; **Ranking: 2** nd /224
- **Honors/Awards:** Academic Merit Scholarship (2019, 2020 and 2021)
  First prize in China Undergraduate Physics Tournament (2019)

HIGHLIGHT of SKILLS

Programming skills: Proficient in Python and C++, Familiar with Java, Verilog, etc.
Machine learning: Proficient in Pytorch, Sklearn, Familiar with Tensorflow, etc.
Technical skills: Familiar with Linux, Docker, Kubernetes, FPGA, SRAM, etc.
Language skills: TOEFL 108.

PROFESSIONAL EXPERIENCE

12.2021 – Present   TrustworthyAI Lab, Tsinghua   **Beijing, China**

Student Researcher, Supervisor: Prof. Peng Cui

Project: Distributionally Robust Optimization with Graph Wasserstein Distance (GWDRO)
- Proposed a novel Distributionally Robust Optimization (DRO) method with the metric of Graph Wasserstein Distance, which contains the adversarial distributional shift inside the data geometry.
- Devised an optimization technique for GWDRO based on Gradient Flow.
- Theoretically proved the approximate optimality of the solution, and discovered that GWDRO was an extension of f-divergence DRO under certain choices of hyperparameters.
- Empirically validate GWDRO on both simulated and real OOD datasets, where it achieves substantial improvement over baseline DRO algorithms.
- Submitting to **Neurips 2022**.

07.2021 – 08.2021   Computational Ethics Lab, CMU   **Pittsburgh, U.S.**

Remote PTA, Supervisor: Prof. Yulia Tsvetkov

Project: Optimization of Adversarial Objective for Information Removal
- Aimed to relieve optimization difficulties for adversarial training in the context of information removal.
- Mitigated information leak by maintaining a pool of adversarial classifiers and performing experience relay.

03.2021 – 06.2021   Knowledge Engineering Lab, Tsinghua University   **Beijing, China**

Research Assistant, Supervisor: Prof. Jie Tang

Project: Large-scale Pre-training of Protein Sequences with Language Model
- Aimed to provide a large-scale pre-trained model for protein sequences to boost downstream tasks' performances.
- Participated in implementing the model-level parallel training framework, conducting the experiments and fine-tuning.
- Achieved improved performances on most downstream tasks. First version of model released on GitHub.

SELECTED COURSEWORKS

01.2022   **'Convex Optimization' for Graduate Students,** *Score: A+*

05.2021   **Course project for 'Machine Learning',** *Score: A*
- Applied pre-trained BERT to rating prediction based on reviews.
- Ranked **3** rd on the Kaggle leader board of an in-class competition.

11-12.2020   **Course project for 'Artificial Neural Network',** *Score: A+*
- Applied reinforcement learning to implementing a ranking model of answers provided by the search engine.
- Implemented and compared various reinforcement algorithms like a3c, QLearning, etc.
- Achieved far better performance than baseline method.