Yan Pan

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Education

Carnegie Mellon University, Pittsburgh, PA
B.S. in Computer Science, Aug 2019 – May 2023 (expected)
- Additional Major in Mathematical Sciences
- Current GPA: 3.97/4.0

Research Interest

- Non-Convex and Convex Optimization
- Deep Learning Theory
- Online Learning and Optimization
- Sketching and Numerical Linear Algebra
- Robust Machine Learning

Research Experience

Adaptive Gradient Methods for Non-Convex Optimization, Nov 2021 – Present
Undergraduate Researcher, advised by Yuanzhi Li
- Working on improving the convergence rate of adaptive algorithms with assumptions on diagonal geometry of objective function.
- Studied new mathematical notions of smoothness and Lipschitzness in non-convex optimization.
- Conducted experiments to verify hypotheses about the Hessian of neural networks.

Multimodal Machine Learning for Social Interactions, Feb 2021 – Present
Undergraduate Researcher, advised by Louis-Philippe Morency
- Proposed a new method to generate descriptive paragraph of image based on fill-in-the-blank language model and scene graphs.
- Implemented several multimodal transformer models and conducted experiments on multimodal datasets.
- Granted CMU Summer Undergraduate Research Fellowship.

Honors & Awards

- 8th Place, International Collegiate Programming Contest East Central NA Regional, 2022
- 167th Place (Top 5.6%), William Lowell Putnam Mathematical Competition, 2021
- CMU Summer Undergraduate Research Fellowship, 2021
- CMU SCS Dean's List, High Honors, All Semesters, 2019 – 2021
- Global Finalist, Shing-Tung Yau High School Science Award – Computer Award, 2018
- Finalist, International Mathematical Modeling Challenge, 2018
- Outstanding, International Mathematical Modeling Challenge Greater China, 2018

Teaching Experience

Carnegie Mellon University
Undergraduate Teaching Assistant
- 10-725 Convex Optimization (Spring 2022, Fall 2021)

Selected Coursework

Carnegie Mellon University (†Graduate)

- Computer Science: Algorithms for Big Data†, A Theorist's Toolkit†, Convex Optimization†, Machine Learning†, Quantum Computation, Algorithm Design and Analysis, Computer Graphics, Computer Vision, Theoretical Computer Science, Data Structures and Algorithms
- Mathematics: Graph Theory, Probability, Real Analysis, Algebraic Structures, Game Theory, Statistical Inference

Skills

Programming Languages	Python, C++, C, MATLAB, SML, Haskell, Java
Libraries	PyTorch, TensorFlow, Keras, Scikit-Learn, OpenCV, OpenGL
Software Tools	LaTeX, Git, Vim
Natural Languages	English (Proficient), Chinese (Native)

Last updated: March, 2022