

Yixiao HUANG

yixiao.huang@my.cityu.edu.hk | Mobile: +1 734 882 8969, +86 186 7037 8617

EDUCATION

City University of Hong Kong

B.E. in Information Engineering CGPA: 3.98 / 4.3 (**rank 1/91**)

Sept, 2019 – Jun, 2023

SELECTED PROJECTS (In reverse chronological order)

Understanding the optimization foundation of self-attention mechanism

Visiting Scholar

July, 2023 - now

Supervisor: **Dr. Samet Oymak (University of Michigan, Ann Arbor)**

- Investigated the role of attention on the task of predicting the next token given the input sequence and proved that the implicit bias of self-attention is captured by a novel SVM formulation with the aid of graph theory.
- Designed and conducted various experiments to analyze the global/local convergence behavior of attention under different assumptions.

On the Effective and Efficient Attack for l_0 Bounded Adversarial Perturbation.

Research assistant

Aug, 2023 - Oct, 2023

Supervisor: **Dr. Chen LIU (CityU)**

- Proposed an effective and efficient attack algorithm to generate l_0 bounded adversarial perturbation.
- Conducted extensive evaluation experiments and implemented the baseline sparse attack algorithms.

PUBLICATIONS

1. Yingcong Li*, Yixiao Huang*, Muhammed Emrullah Ildiz, Ankit Singh Rawat, Samet Oymak, “**Mechanics of Next Token Prediction with Transformers**”. In submission, 2023. (* equal contribution)
2. Xuyang Zhong, Yixiao Huang, Chen Liu, “**Sparse-PGD: An Effective and Efficient Attack for l_0 Bounded Adversarial Perturbation**”. In submission, 2023.
3. Yixiao Huang, Xiaoli WU, Rosa H. M. Chan and Pooled Resource Open-Access ALS Clinical Trials Consortium, “**Stratification and Survival Prediction for Amyotrophic Lateral Sclerosis Patients**”. IEEE-EMBS International Conference on Biomedical and Health Informatics (BHI), 2022, pp. 1-5, doi: 10.1109/BHI56158.2022.9926946. [pdf]
4. Yiren Liu, S. Joe Qin, Xiangyu Zhao, Yixiao Huang, Shenglong Yao, Guo Han. “**Dynamic Statistical Learning with Engineered Features Outperforms Deep Neural Networks for Smart Building Cooling Load Predictions**”. NeurIPS Workshop on I Can’t Believe It’s Not Better (ICBINB), 2022. [pdf].

HONORS AND AWARDS

The College of Engineering Dean’s Scholarships

Maximum of 5 recipients in the College of Engineering every year

Aug, 2022

The 46th International Collegiate Programming Contest - Asia Kunming Regional

Silver Medal (Rank 40th/697)

April, 2022

Chi-Li Pao Foundation Scholarships for Academic Outstanding Students

Maximum of 2 recipients in the College of Engineering every year

Aug, 2021

TUTORING

EE2331 - Data Structures and Algorithms

In-class tutoring

Fall, 2022

- Responsible for assisting in teaching and answering students' questions.

MA1201 - Calculus and Basic Linear Algebra II

After-class tutoring

Fall, 2020

- Served as a tutor in helping 12 students review and consolidate the course content every week.

CAMPUS EXPERIENCE

CityU Mandarin Debating Team

Captain

Apr, 2021 – Apr, 2023

- Handled the daily operations and weekly training of the team containing over 30 students
- Led the team to compete in local and international Mandarin debating competitions

CityU Mainland Football Team

Captain

Jul, 2021 – Jul, 2022

- Led the team to participate in the Hong Kong University Mainland Football Tournament and managed weekly training.

SKILLS AND CAPABILITIES

Programming Language: Python (Advanced), C++ (Advanced), PyTorch (Advanced), Java (Proficient), SQL (Proficient), Matlab (Proficient).

Language: Mandarin (Native), English (Proficient, TOEFL: 105 (S:24), GRE: 326), and Cantonese (Proficient).