Taoan Huang

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Personal Information

Gender: Male
Citizenship: China
Date of Birth: October 15, 1996
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Education

Institute for Interdisciplinary Information Sciences, Tsinghua University
- Sep. 2015 - Present
- Selected to Tsinghua Xuetang Special Pilot CS Class, directed by Prof. *Andrew Yao*.

School of Computer Science, Carneige Mellon University
- Feb. 2018 - Jul. 2018
- Research intern hosted by Prof. Fei Fang.

Computer Science Department, The University of Hong Kong
- Jul. 2018 - Aug. 2018
- Research intern hosted by Prof. Zhiyi Huang.

Research Interest

My research interest lies in artificial intelligence, computational game-theory, computational sustainablity, and mechainism design. I hope to better understand how AI can address social issues and facilitate economic activities using tools from game theory, optimization, and machine learning.

Research Experience

- Apr 18 - Nov 18: **Green Security Game with Community Engagement.**
  Description: We provide the first study in security game that takes into account community engagement. We propose a novel two-stage game model, provide complexity results, develop exact, approximate and heuristic algorithms for solving the game. The algorithms and analysis can provide useful insights and guidance to law enforcement agencies in allocating the budget and recruiting informants to protect wildlife.
  Mentor: Prof. Fei Fang
- Apr 18 - Sep 18: **Dynamic Trip-Vehicle Dispatch with Scheduled and On-Demand Requests.**
  Description: We introduce a novel two-stage model for dynamic trip-vehicle dispatch problem that takes into account both scheduled and on-demand requests, propose algorithms for both stages with theoretical guarantees and demonstrate the effectiveness of the algorithms through extensive experiments. Our algorithms surpassed the state-of-the-art algorithm used by a major ride-hailing company.
  Mentor: Prof. Fei Fang
- Jul 18 - Aug 18: **Online Algorithms in Real-World Task Assignments.**
  Description: Develop online algorithms with theoretical guarantees for real-world task assign-

ments, including food delivery problem and pre-scheduled trip booking problem.
Mentor: Prof. Zhiyi Huang

- Mar 18 - Apr 18: **Multimodal Ridesharing.**
  Description: We study ridesharing problem where scheduled and on-demand requests are considered.
  Mentor: Prof. Fei Fang
- Jul. 17 - Dec 17: **Research on game theory and mechanism design.**
  Description: Various topics, including predicting human behavior in repeated games, allocating tasks using auction mechanism.
  Mentor: Prof. Pingzhong Tang
- Mar. 17 - Aug. 17: **Acoustic Scene Classification.**
  Description: To classify a test recording into one of predefined classes that characterizes the environment in which it was recorded – for example "park", "street", "office". A technical report "A Multi-Scale Deep Convolutional Neural Network for Acoustic Scene Classification" posted on DCASE2017.
  Mentor: Prof. Jian Li
- Jul. 16 - Sep. 16: **Research intern at Megvii Inc.**
  Descrpition: Human feature detection and classification.
  Mentor: Dr. Gang Yu

Publications

- Green Security Game with Community Engagement
  Taoan Huang, Rohit Singh, Fei Fang.
  In AIWC-18: Artificial Intelligence for Wildlife Conservation Workshop held at IJCAI 2018.

Working Papers

- Dynamic Trip-Vehicle Dispatch with Scheduled and On-Demand Requests
  Taoan Huang, Bohui Fang, Hoon Oh, Xiaohui Bei, Fei Fang.
  In submission to AAMAS 2019.
- Green Security Game with Community Engagement
  Taoan Huang, Tianyu Gu, Rohit Singh, Fei Fang.
  In submission to AAMAS 2019.
- Multimodel Ridesharing Problm
  Hoon Oh, Taoan Huang, Fei Fang.
  Working paper.

Selected Extracurricular Activities

Lecturer of Olympiad in Informatics:

I was constantly invited by my former instructor of Olympiad in Informatics to give lectures in algorithms and programming (audience size differs from 30 to 80) at high schools in Fujian Province, China. The period of my teaching was from grade 9 to my junior year.

Honors and Awards

- Tsinghua Xuetang Program Fellowship, 2015-2018
- Outstanding in Volunteering (Tsinghua University), 2017-2018

- Outstanding in Sports (Tsinghua University), 2017
- Freshman Scholarship (Tsinghua University), 2015
- Gold Medal in National Olympiad in Informatics (China Computer Federation), 2014

Skills

Programming

- Languages: C/C++, Python, Pascal
- Libraries & Softwares: Gurobi, LaTeX, Tensorflow, Keras

Language

- Chinese (native), English (fluent)