He (Iris) WANG

393 Middle Huaxia Road, Pudong New Area, Shanghai, P.R. China, 201210
◇ Tel: (+86)18621835258 ◇ Email: wanghe@shanghaitech.edu.cn

EDUCATION

ShanghaiTech University — Shanghai, China
M.S. Candidate in Information and Communication Engineering — *Sep. 2019 - July 2022 (expected)*

- Overall GPA: 3.88/4.00; Major GPA: 4.00/4.00.
- Major courses: *Convex Optimization*, *Data Science*, *Linear and Nonlinear Systems*.
- Awards: *China National Scholarship* and *Outstanding student of ShanghaiTech University*.
- Research experiences: distributed optimization [1][2][3][4], social media analysis [5] and multi-agent systems [6].

ShanghaiTech University — Shanghai, China
B.Eng in Computer Science and Technology, as ***Outstanding Graduate*** — *Sep. 2015 - June 2019*

- Overall GPA: 3.65/4.00; Major GPA: 3.75/4.00.
- Major courses: *Introduction to Programming*, *Data Structure and Algorithms*, *Linear Algebra*, *Probability and Statistics*, and *Computer Systems*.
- Awards: *Academic Excellence Scholarship* and *Outstanding/Merit Student of ShanghaiTech University*.
- Research experiences: multi-agent systems and mechanical design [7].

University of California, Berkeley — Berkeley, CA
Summer Sessions Student — *July 2017 - Aug. 2017*

- GPA: 4.00/4.00.
- Course: *Peace and Conflicts Studies*, about how to mediate interpersonal relationship.

TEACHING EXPERIENCE

Teaching Assistant — ShanghaiTech University
Delivering tutorials, correcting homework and exams, providing Q & A in office hours

· MATH1112 Linear Algebra (with 100 students). — *Sep. 2019 - Jan. 2020*
· SI100B Introduction to Information Science and Technology (with 201 students). — *Feb. 2019 - June 2019*
· CS100 Introduction to Programming (with 349 students). — *Sep. 2018 - Jan. 2019*

RESEARCH INTERESTS

My research interests lie in the area of networked dynamic systems, with the focus on **distributed/decentralized optimization** and **multi-agent decision-making**.

PUBLICATIONS

Distributed/Decentralized Optimization

[1] X. Wu, **H. Wang** and J. Lu, "Distributed Optimization with Coupling Constraints", to appear in *IEEE Transactions on Automatica Control (TAC)*, 2023.

- Integrated two primal-dual methods and a virtual-queue-based method to handle constraints, and established an $O(1/k)$ rate of convergence in terms of optimality and feasibility.

[2] **H. Wang**, Y. Shen, Z. Wang, D. Li, J. Zhang, K. Letaief and J. Lu, "Decentralized Statistical Inference with Unrolled Graph Neural Networks", in *IEEE Conference on Decision and Control (CDC)*, 2021.

- Employed data-driven approaches for distributed optimization algorithms via graph models, which reduced the communication rounds of base algorithms by approximately 80%.

[3] X. Wu, **H. Wang** and J. Lu, "A Distributed Proximal Primal-Dual Algorithm for Nonsmooth Optimization with Coupling Constraints", in *IEEE Conference on Decision and Control (CDC)*, 2020.

- Investigated primal-dual algorithms to solve distributed optimization problems with coupled constraints, and established an $O(1/k)$ rate of convergence for proposed algorithms.

[4] **H. Wang** and J. Lu, "An Inexact Fenchel Dual Gradient Algorithm for Distributed Optimization", in *IEEE International Conference on Control & Automation (ICCA)*, 2020.

- Approximated distributed Fenchel dual gradient methods to alleviate computational costs, by replacing the costly inner optimization problem with a single projected gradient operation.

Social Media Analysis

[5] Z. Li, H. Hu, **H. Wang**, L. Cai, K. Zhang and H. Zhang, "Why does the president tweet this? Discovering reasons and contexts for politicians' tweets from news articles", in *Information Processing and Management*, 2022.

- Developed a first end-to-end framework discovering causal backgrounds for politicians' tweets from news articles. The experiment results correspond well with political journalists' analysis.

Multi-agent Decision-making

[6] S. Han, **H. Wang**, S. Su, Y. Shi and F. Miao, "Stable and Efficient Shapley Value-Based Reward Reallocation for Multi-Agent Reinforcement Learning of Autonomous Vehicles", accepted to *IEEE International Conference on Robotics and Automation (ICRA)*, 2022.

- Designed a fair and efficient reward reallocation mechanism to encourage cooperation and to improve the performance of connected autonomous vehicles.

[7] Y. Zhang, **H. Wang**, J. Huang and D. Zhao, " Simulations vs. Human Playing in Repeated Prisoner's Dilemma", in *International Conference on Principles and Practice of Multi-Agent Systems (PRIMA)*, 2018.

- Proposed a novel model that mimics the real-world dynamics of the repeated prisoner's dilemma games and designed an online game to collect real data by interacting between simulators and human players.

AWARDS

Advanced Individual for Social Practice, ShanghaiTech University, 2016.

SKILLS

Technical Skills	CVX, CVXPY, Office, LaTeX
Programming Language	Python, C, MATLAB
Standardized Tests	TOEFL: 102 (Speaking: 22/Writing: 25), GRE: 328 (V: 160/Q: 168/A: 4.0)