He (Iris) WANG

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

EDUCATION

University of Chinese Academy of Sciences | 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
Supervisor: Prof. Jie LU

ShanghaiTech University — Shanghai, China
*B.Eng in Computer Science and Technology, as **Outstanding Graduate*** — *Sep. 2015 - June 2019*
Overall GPA: 3.65/4.00 (last 60 units: 3.90/4.00); Major GPA: 3.75/4.00

University of California, Berkeley — Berkeley, CA
Summer Sessions Student — *July 2017 - Aug. 2017*
Peace and Conflict Studies course, GPA: 4.00/4.00

RESEARCH INTERESTS

My research interests are in the area of **networked and multi-agents systems**, from the perspective of **optimization**, **machine learning**, **control** and **game theory**.

PUBLICATIONS

Preprints/Under Review

[1] **H. Wang**, C. Shi, J. Liu and J. Lu, "A Stochastic Block-Wise Gradient-Tracking-Based Algorithm for Distributed Optimization", under preparation to *IEEE Transactions on Control of Network Systems (TCNS)*.

[2] X. Wu, **H. Wang** and J. Lu, "Distributed Algorithms for Convex Optimization Problems with Coupling Constraints", under the 2nd round review in *IEEE Transactions on Automatica Control (TAC)*.

[3] Z. Li, H. Hu, **H. Wang**, L. Cai, K. Zhang and H. Zhang, "Why Politicians Tweet: Discovering Causal Backgrounds for Politicians' Tweets from News Articles", under the 1st round review in *Information Processing and Management*.

Conference Publications

[4] S. Han, **H. Wang**, S. Su, Y. Shi and F. Miao, "Stable and Efficient Reward Reallocation for Cooperative Policy Learning of Connected Autonomous Vehicles", submitted to *IEEE International Conference on Robotics and Automation (ICRA)*, 2022.

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

[6] 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.

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

[8] 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.

RESEARCH EXPERIENCE

Lab of Decision, Optimization, and Control for Intelligent Agents — ShanghaiTech University
Supervised by Prof. Jie LU, on Distributed Optimization — *Aug. 2018 - Present*

- Proposed a communication-efficient distributed optimization algorithm [1] by **coordinate descent methods**.
- Employed **data-driven approaches** for distributed optimization algorithms via **graph neural networks** [5], which reduced the communication rounds of base algorithms by approximately 80%.
- Investigated primal-dual algorithms [2][6] to solve distributed optimization problems **with coupled constraints**, and established an $O(1/k)$ rate of convergence for proposed algorithms.
- Approximated **distributed Fenchel dual gradient methods** to alleviate computational costs [7], which accelerated 100× compared with the original algorithm in terms of running time.

Summer Research Internship — University of California, San Diego
Supervised by Prof. Yuanyuan SHI, on Multi-Agent Reinforcement Learning — *June 2021 - Sep. 2021*

- Incorporated **cooperative game theory techniques** to improve **multi-agent reinforcement learning** performance with respect to stability and maximizing social welfare.
- Applied our designed reward reallocation mechanism to connected and autonomous vehicles [4].

FinTech Project Group — ShanghaiTech University
Supervised by Prof. Haipeng ZHANG, on Data Mining — *Oct. 2019 - June 2020*

- Proposed a framework [3] for inferencing reasons behind politicians' tweets by finding critical components in tweets and news articles, and establishing causal links between them via **attention-based neural networks**.

ShanghaiTech Multi-Agent Systems Research Team (SMART Lab) — ShanghaiTech University
Supervised by Prof. Dengji ZHAO, on Algorithmic Game Theory — *Oct. 2017 - June 2018*

- Proposed a novel model [8] 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 315 human players and AIs.

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*

ACADEMIC ACTIVITIES

Conference Presentation — Online
IEEE Conference on Decision and Control (CDC) — *Dec. 2021*
IEEE International Conference on Control & Automation (ICCA) — *Oct. 2020*

Conference Attendee — Online
IEEE Conference on Decision and Control (CDC) — *Dec. 2021 & Dec. 2020*
Annual Learning for Dynamics and Control Conference (L4DC) — *June 2021*

AWARDS

China National Scholarship (Top 0.2% Nationwide), Ministry of Education in China, 2021.
Outstanding Student (Top 5%), ShanghaiTech University, 2020 & 2018 & 2016.
Outstanding Graduate, ShanghaiTech University, 2019.
Academic Excellence Scholarship, ShanghaiTech University, 2018.
Merit Student (Top 10%), ShanghaiTech University, 2017.
Advanced Individual for Social Engagement (Top 1%), Shanghai Municipal Education Commission, 2016.

SERVICE

Conference Volunteer — Shanghai, China

- 2018 *ShanghaiTech Symposium on Information Science and Technology (SSIST)*
- 2018 *ShanghaiTech Workshop on Information, Learning and Decision (SWILD)*
- 2017 *Chinese Multi-Agent System Seminar*

Social Practice Program — Huishui, Guizhou, China
Group Leader — *June 2016 - Sep. 2016*

- Investigated the relationship between education and poverty in remote areas of China, interviewed many local students, and recorded their lives to figure out the underlying problems in such areas.
- Won the third prize in the social practice competition of undergraduates in Shanghai.

SKILLS

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