Zhang Yichen

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Educational Background

Ph.D. | **Major in *Control Science and Engineering*** **2024.09-**

Beijing University of Posts and Telecommunications, School of Intelligent Engineering and Automation

- **Academic Advisor：** Prof. Tang Yutao
- **Research Interests：** Distributed Computing and Online Optimization

M.Sc. (recommended) | **Major in *Control Science and Engineering*** **2021.09-2024.06**

Beijing University of Posts and Telecommunications, School of Artificial Intelligence

- **Academic Advisor：** Prof. Tang Yutao
- **Research Interests：** Distributed Computing, Distributed Optimization, Distributed Control
- **Key Courses:** Nonlinear Control, Matrix Theory and Methods

B.Eng. | **Major in *Measurement and Control Technology and Instrument*** **2017.09-2021.06**

Beijing University of Posts and Telecommunications, School of Automation

- **Key Courses：** Principles of Automatic Control, Modern Control Theory

Academic Publications

- Y. Tang, **Y. Zhang**, R. Li, and X. Wang. On measurement disturbances in distributed least squares solvers for linear equations. Submitted for publication.
- **Y. Zhang**, Y. Tang, Z. Tu and Y. Hong. Distributed projection algorithm for solving variational inequalities over time-varying unbalanced digraphs. ***Control Theory and Technology(SCI-4, IF:1.4),*** 22: 431–441, 2024.
- **Y. Zhang**, Y. Tang. Distributed projection algorithm for solving variational inequalities. In Proc. of 8th International Conference on Network Intelligence and Digital Content (IC-NIDC): 285–289, Beijing, 2023.
- **Y. Zhang**, R. Li, and Y. Tang. Solving linear equations with disturbance rejection. In Proc. of 41st Chinese Control Conference (CCC): 4926–4931, Hefei, 2022.
- R. Li, **Y. Zhang**, Y. Tang, and S. Li. Observer-based leader-following consensus for positive multi-agent systems over time-varying graphs. ***Journal of the Franklin Institute(SCI-3 区, IF:4.1),*** 360(17): 13380–13394, 2023.
- K. Zhu, **Y. Zhang**, and Y. Tang. Distributed optimization with inexact oracle. ***Kybernetika(SCI-4, IF: 0.5),*** 58(4): 578—592, 2022.
- Z. Jiang, C. Xu, **Y. Zhang**, Y. Tang. Minimization of finite sums with disturbed gradients. In Proc. of 43rd Chinese Control Conference (CCC): 5955–5959, Kunming, 2024.
- X. Zheng, **Y. Zhang**, C. Hu, and Y. Tang. Online Nash equilibrium seeking with time-varying payoff functions. In Proc. of 14th Asian Control Conference (ASCC): 2402–2406, Dalian, 2024.

Research Experience

Optimal Coordination for Nonlinear Multi-agent Systems by a Hierarchical Design and Its Applications

Participant, *National Natural Science Foundation of China*, No.61973043 2021.09-2023.12

- The main research includes solving linear algebraic equations with disturbance rejection and distributed algorithms for solving variational inequalities under general communication graphs. ***Two academic papers are published. Two academic papers are under review.***

Research on Distributed Game Strategy in Electricity Market

PI, *BUPT innovation and entrepreneurship support program*, 2023-YC-A188 2022.11-2023.11

- The main research includes developing distributed algorithms to seek Nash equilibrium point in the electricity market under "Nash-Cournot" model. ***One academic paper is published***.

Decentralized Machine Learning Algorithm Design

PI, *BUPT innovation and entrepreneurship support program (Undergraduate)*, 201904011 2019.06-2020.06

- The main research includes extending the conventional gradient-descent method to distributed scenario by introducing consensus-based mechanism.

The Effect and Compensation of Disturbance on the Performance of Distributed Optimization Algorithms

Assistant, *BUPT innovation and entrepreneurship support program (Undergraduate)*,202321014 2023.06-

- The main work includes guiding undergraduate students to analyze and reject disturbance in distributed optimization problem. ***One academic paper is under review.***

Coordinated Control and Optimization of Nonlinear Multi-agent Systems via Generalized Output Regulation

Participant, *National Natural Science Foundation of China*, No. 61503033 2018.01-2018.12

- The main research includes designing a distributed primal-dual algorithm for solving linear equation.

Oral Presentation at IC-NIDC Parallel Sessions 2023.11

- I gave an oral presentation in English on the published paper "Distributed projection algorithm for solving variational inequalities" in November 2023

Oral Presentation at CCC Parallel Sessions 2022.07

- I gave an oral presentation in English on the published paper "Solving linear equations with disturbance rejection" in July 2022.

Master Dissertation：Distributed Algorithm for Solving Variational Inequalities 2022.12-2024.06

- Based on the existing research of distributed optimization and game theory, this paper focuses on the design and performance analysis of distributed algorithms for solving variational inequalities. The main work includes developing distributed algorithm for solving variational inequalities problem and common solutions to variational inequalities problem, convergence analysis under different network topologies and different monotonicity conditions, and the application of distributed algorithm in different specific problems like optimization problem, Nash equilibrium problem, and so on.

Rewards

- The Third Prize of "Huawei Cup" The 18th China Post-Graduate Mathematical Contest in Modeling 2022
- The First Prize Scholarship 2021-2023
- The Second prize of Beijing Undergraduates' innovation and Entrepreneurship Training Project 2020
- The Third Prize Scholarship 2017-2019
- Advanced Individual of Cultural and Sports Activities 2018
- Outstanding Individual of Student Association 2018

Personal Skills

Language proficiency： CET-6(507, 2018), TOEFL-IBT (86, 2024). With good listening, speaking, reading and writing skills, I have written 5 English academic papers and made English presentation at international conferences for many times

Computer： Proficient in LaTeX, Matlab, Python and other programming languages