Jinxian Wu

Ph.D. Candidate
School of Automation
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Statement

Jinxian Wu is a third-year Ph.D. student at the BIT. His research focuses on distributed model predictive control (DMPC), specifically on the iterative DMPC methods for linear/nonlinear systems with nonlinear coupled constraints or costs, and the distributed optimization methods for DMPC.

Education

Beijing Institute of Technology (BIT), Beijing, China 2022 - 2026 (expc.)
Ph.D. candidate in School of Automation
Research Directions: Optimization in DMPC; Iterative DMPC
Supervisor: Prof. Li Dai

Beijing Institute of Technology (BIT), Beijing, China 2019 - 2022
M.Eng. in School of Automation, June 2022
Research Directions: Fuzzy clustering; Fuzzy association rule mining
Supervisor: Prof. Li Dai

Qingdao University (QDU), Shandong, China 2015 - 2019
B.Eng. in Automation, June 2019

Publications (* : corresponding author)

Journal Papers

[J5] **Jinxian Wu**, Li Dai, & Yuanqing Xia. (2024). Iterative Non-Convex Distributed MPC with Flexible Termination Strategy, *IEEE Transactions on Automatic Control*, accepted, (**Full paper**).

[J4] **Jinxian Wu**, Li Dai, Songshi Dou, & Yuanqing Xia. (2024). Accelerated Successive Convex Approximation for Nonlinear Optimization-Based Control, conditionally accepted by *IEEE Transactions on Automatic Control* as Technical note.

[J3] **Jinxian Wu**, Li Dai, & Yuanqing Xia. (2024). Iterative Distributed Model Predictive Control for Heterogeneous Systems with Non-convex Coupled Constraints. *Automatica*, 166, 111700, **(Regular Paper)**.

[J2] **Jinxian Wu**, Li Dai, & Yuanqing Xia. (2024). Iterative Distributed Model Predictive Control for Nonlinear Systems with Coupled Non-convex Constraints and Costs, *International Journal of Robust and Nonlinear Control*, 34(11), 7220-7244.

[J1] Li Dai, Yaling Ma, Runze Gao, **Jinxian Wu**, & Yuanqing Xia. (2023). Cloud-based Computational Model Predictive Control Using a Parallel Multi-block ADMM Approach. *IEEE Internet of Things Journal*, 10(12), 10326 - 10343.

Conference Papers

[C2] Zixuan Fan, **Jinxian Wu**, Li Dai, & Yuanqing Xia. (2023). Trajectory Planning Based on MINVO Basis for Autonomous Vehicles in Lane Change Scenarios. In *Proceedings of the 2023 Chinese Control Conference*. IEEE.

[C1] **Jinxian Wu**, Li Dai, Yaling Ma, Weidong Zou, & Yuanqing Xia. (2021). Distributed Fuzzy Clustering Based Association Rule Mining: Design, Deployment and Implementation. In *Proceedings of the 2021 China Automation Congress*. (**Best paper award**)

Manuscripts

[M5] **Jinxian Wu**, Li Dai, Songshi Dou, Yunshan Deng, & Yuanqing Xia. (2025). Distributed Quasi-Newton Method for Nonlinear Optimization-Based Control, submitted to *Automatica* as Regular paper.

[M4] Songshi Dou, **Jinxian Wu***, Shengyu Zhang, Xianhao Chen, & Lawrence K. Yeung. (2025). Towards QoS-aware and Predictable Load Balancing in Low Earth Orbit Mega-Constellations with Matchmaker, submitted to *IEEE Transactions on Mobile Computing*.

[M3] Yunshan Deng, Yuanqing Xia, Zhongqi Sun, **Jinxian Wu**, Jie Lin, & Li Dai. (2025). Nonlinear Model Predictive Control using Sequential Convex Programming, submitted to *IEEE Transactions on Automatic Control*.

[M2] Chenlong Fu, **Jinxian Wu**, Li Dai, & Yuanqing Xia. (2025). Distributed MPC-based Trajectory Tracking Control for a Multi-quadrotor UAV Slung Load System, submitted to *Journal of the Franklin Institute*.

[M1] Pushen Cai, Huahui Xie, **Jinxian Wu**, & Li Dai. (2024). Distributed Model Predictive Control of Multi-Agent Systems for Tracking Periodic Unreachable Trajectory with Collision Avoidance, submitted to *Journal of the Franklin Institute*.

Patents

[P1] Li Dai, Yaling Ma, Runze Gao, **Jinxian Wu** et al. (2022). An automotive energy management method based on container and model predictive control. Chinese Patent, CN202210816336.X.

Talks & Presentations

"Distributed Fuzzy Clustering Based Association Rule Mining: Design, Deployment and Implementation", *2021 China Automation Congress*, Kunming, Yunnan, China, August 2022.

Teaching Experience

Theory and Application of Stochastic Process (Fall 2019, Teaching assistant)

Active Research Grants

Principal Investigator, *Optimization-based control for resource-constrained autonomous unmanned systems*, BIT Research and Innovation Promoting Project (Grant No.2024YCXY035), November 2024 to November 2025.

Honors & Awards

Outstanding Ph.D. Student (Top 1%), Beijing Institute of Technology 2024

Outstanding Graduates (Top 1%), Beijing Institute of Technology 2022

Best Paper Award of CAC 2021 (Top 1%), Chinese Association of Automation 2021

Outstanding Master Student (Top 1%), Beijing Institute of Technology 2021