

Jimyeong Kim

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Research Interests

My research interests are in optimization theory and its applications, with a focus on the convergence theory of decentralized optimization applied to robotics control. Additionally, I am interested in mathematical analysis of algorithms in reinforcement learning.

Education

- Feb. 2024 **Ph.D. in Mathematics, Sungkyunkwan University**, Suwon, Republic of Korea
Thesis title: *Convergence Results for the Decentralized Gradient Descent and the Gradient-push with Event-triggered Communication* (Advisor: **Woocheol Choi**)
- Aug. 2018 **B.S in Mathematics, Sungkyunkwan University**, Suwon, Republic of Korea

Research Papers

Optimization Theory and its Applications

- 2023 **Gradient-push algorithm for distributed optimization with event-triggered communications**, IEEE Access, vol 11, pp. 517-534, with Woocheol Choi
- An Adaptive Dual-level Reinforcement Learning Approach for Optimal Trade Execution**, arXiv:2307.10649, submitted, with Soohan Kim, Hong Kee Sul, Youngjoon Hong
- On the convergence analysis of the decentralized projected gradient descent**, arXiv:2303.08412, submitted to SIAM J. Optim under major revision, with Woocheol Choi
- 2022 **On the convergence of decentralized gradient descent with diminishing stepsize, revisited**, arXiv:2203.09079, submitted, with Woocheol Choi

PDE

- 2022 **Quantum revivals and fractality for the Schrödinger equation**, arXiv:2105.12510, submitted to Rep. Math. Phys under minor revision, with Gunwoo Cho, Seongyeon Kim, Yehyun Kwon, Ihyeok Seo
- On the radius of spatial analyticity for the Klein-Gordon-Schrödinger system**, J. Differential Equations. 321, pp. 449-474
- 2021 **Lower bounds on the radius of spatial analyticity for the Kawahara equation**, Anal. Math. Phys. 11 (1) 28, with Jaeseop Ahn, Ihyeok Seo
- 2020 **On the radius of spatial analyticity for defocusing nonlinear Schrödinger equations**, Discrete Contin. Dyn. Syst. 40 (1), pp. 423-439, with Jaeseop Ahn, Ihyeok Seo

Research Projects

- 2022 **Optimal Trade Execution for VWAP Trading Based on Deep Learning Strategy**, Funded by SK C&C and KB Securities

Talks

- Jan. 2024 East Asian Core Doctoral Forum on Mathematics 2024, Fudan University, Shanghai, China

Talks (continued)

- Aug. 2023 10th International Congress on Industrial and Applied Mathematics, Waseda University, Tokyo, Japan
- Nov. 2022 KSIAM 2022 Annual Meeting, Jeju SONO Calm, Jeju, Republic of Korea
- Aug. 2019 7th East Asian Conference in Harmonic Analysis and Applications, Chung-Ang University, Seoul, Republic of Korea

Programming Skills

Python, Matlab

Honors and Awards

- 2023 BK21 Focused Research Scholarship, Sungkyunkwan University
- 2022 BK21 Innovative Research Scholarship, Sungkyunkwan University
 BK21 Encouragement Scholarship, Sungkyunkwan University
- 2021 BK21 Focused Research Scholarship, Sungkyunkwan University
- 2015 A bronze prize, Korean College Students Mathematical Competition, Korea Math Society