YOUNGJAE MIN (민영제)

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INTERESTS

Reliable AI & Autonomy, Learning-Based Control, Continual Learning, Optimization

EDUCATION

Massachusetts Institute of Technology — From June 2023
Ph.D. Candidate in Aeronautics and Astronautics — Advisor: Professor Navid Azizan
- Also in Interdisciplinary Doctoral Program in Statistics

Massachusetts Institute of Technology — Sep. 2021 - May 2023
S.M. in Aeronautics and Astronautics — Advisor: Professor Navid Azizan

Korea Advanced Institute of Science and Technology — Mar. 2014 - Feb. 2020*
B.S. in Electrical Engineering, Mathematical Sciences (*summa cum laude*) (*two years in military)

RESEARCH EXPERIENCE

Laboratory for Information and Decision Systems, MIT — From Sep. 2021
Research Assistant | Advisor: Prof. Navid Azizan
- Learning and control with provable input-output constraint satisfaction [P1, C2]
- Online/continual learning robust to catastrophic forgetting [P4, P3, C1, C4]

CI Mobility Research Team, Honda Research Institute, CA — May 2025 - Aug. 2025
Research Intern | Advisor: Sangjae Bae
- Motion planning via integrated offline RL and online planning [P2]

Laboratory for Information and Control Systems, KAIST — Feb. 2019 - July 2021
Undergrad. Researcher | Advisor: Prof. Han-Lim Choi
- Real-time 3-D mapping of dynamic environments [C3, C5]
- Learning and planning of dynamical systems [C6, J1, J2]

Inference and Information for Data Science Lab, KAIST — Mar. 2018 - Jan. 2019
Undergrad. Researcher | Advisor: Prof. Hye Won Chung
- Representational capability of neural networks [C7]

Signal Kinetics Group, Media Lab, MIT — June 2018 - Sep. 2018
Visiting Researcher | Advisor: Prof. Fadel Adib
- Non-contact vital sign monitoring via mmWave radar

Networking & Mobile Systems Lab, KAIST — June 2017 - Feb. 2018
Undergrad. Researcher | Advisor: Prof. Sung-Ju Lee
- Indoor person localization via Wi-Fi signals

PUBLICATIONS

*(P: preprint, C: conference proceedings, J: journal articles, *equally contributed)*

[P1] "HardNet: Hard-Constrained Neural Networks with Universal Approximation Guarantees," *preprint*
Youngjae Min, Navid Azizan [arXiv: 2410.10807]
NeurIPS 2025 Workshop on COML (selected for Oral Presentation)

[P2] "HOLO-MPPI: Multi-Scenario Motion Planning via Hierarchical Policy Optimization," *preprint*
Youngjae Min, Jovin D'sa, Faizan M Tariq, David Isele, Navid Azizan, Sangjae Bae

[P3] "SketchOGD: Memory-Efficient Continual Learning," *preprint*
Youngjae Min, Benjamin Wright, Jeremy Bernstein, Navid Azizan [arXiv: 2305.16424]

[P4] "ORFit: Efficient One-Pass Learning for Overparameterized Models," *preprint*
Youngjae Min, Namhoon Cho, Navid Azizan

[C1] "Π-ORFit: One-Pass Learning with Bregman Projection"
Namhoon Cho, **Youngjae Min**, Hyo-Sang Shin, Navid Azizan
ACC 2024 (Invited Session) - *American Control Conference*

[C2] "Data-Driven Control with Inherent Lyapunov Stability"
Youngjae Min, Spencer M. Richards, Navid Azizan
CDC 2023 (Invited Session) - *IEEE Conference on Decision and Control* [arXiv: 2303.03157]

[C3] "DS-K3DOM: 3-D Dynamic Occupancy Mapping with Kernel Inference and Dempster-Shafer Evidential Theory," Juyeop Han*, **Youngjae Min***, Hyeok-Joo Chae, Byeong-Min Jeong, Han-Lim Choi
ICRA 2023 - *IEEE International Conference on Robotics and Automation* [arXiv: 2209.07764]

[C4] "One-Pass Learning via Bridging Orthogonal Gradient Descent and Recursive Least-Squares"
Youngjae Min, Kwangjun Ahn, Navid Azizan
CDC 2022 (Invited Session) - *IEEE Conference on Decision and Control* [arXiv: 2207.13853]

[C5] "Kernel-Based 3-D Dynamic Occupancy Mapping with Particle Tracking"
Youngjae Min, Do-Un Kim, Han-Lim Choi
ICRA 2021 - *IEEE International Conference on Robotics and Automation*

[C6] "Informative Planning of Mobile Sensor Networks in GPS-Denied Environments"
Youngjae Min, Soon-Seo Park, Han-Lim Choi
SciTech 2020 - *AIAA Science and Technology Forum and Exposition* [arXiv: 1909.11046]

[C7] "Shallow Neural Network can Perfectly Classify an Object following Separable Probability Distribution"
Youngjae Min, Hye Won Chung
ISIT 2019 - *IEEE International Symposium on Information Theory* [arXiv: 1904.09109]

[J1] "Online Gaussian Process State-Space Model: Learning and Planning for Partially Observable Dynamical Systems," Soon-Seo Park, Young-Jin Park, **Youngjae Min**, Han-Lim Choi
IJCAS 2022 - *International Journal of Control, Automation and Systems* [arXiv: 1903.08643]

[J2] "A Distributed ADMM Approach to Non-Myopic Path Planning for Multi-Target Tracking"
Soon-Seo Park*, **Youngjae Min***, Jung-Su Ha, Doo-Hyun Cho, Han-Lim Choi
Access 2019 - *IEEE Access* [arXiv: 1807.11068]

HONORS & AWARDS

KEF Scholarship, *Kwanjeong Educational Foundation*	2023 - 2027
MIT SoE MathWorks Fellowship, *MIT School of Engineering & MathWorks Inc.*	2025 - 2026
Global Leadership Award, *KAIST*	2020
KAIST Presidential Fellowship, *KAIST*	2014 - 2020
GE Foundation Scholar-Leaders Program, *Fulbright / GE Foundation*	2015 - 2019
KFAS Undergraduate Student Scholarship, *Korea Foundation for Advanced Studies*	2015 - 2019

PROFESSIONAL ACTIVITIES

Reviewing : American Control Conference (ACC), IEEE Conference on Decision and Control (CDC), IEEE Control Systems Letters (L-CSS), IEEE International Conference on Robotics and Automation (ICRA), IEEE Robotics and Automation Letters (RA-L), International Conference on Learning Representations (ICLR), Learning for Dynamics & Control (L4DC)