Minhyuk Jang

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Education

Seoul National University **Mar. 2019 – PRESENT**

B.S. in Mechanical Engineering, Interdisciplinary Major in Artificial Intelligence (GPA: 4.18/4.3) *Seoul, South Korea*

**Include 18 months of military service*

Research Interests

- Control Theory (Robust Control, Optimal Control, Nonlinear Control and its Applications)
- UAV Control and System Design (Multirotor, VTOL)

Publications

- **Minhyuk Jang**, Astghik Hakobyan, and Insoon Yang. *Wasserstein Distributionally Robust Control and State Estimation for Partially Observable Linear Systems*, Advances in Neural Information Processing Systems (NeurIPS), 2024 (submitted)
- **Minhyuk Jang**. *Stability Analysis of Disturbance Observer under Model Uncertainty with Different System Degrees between True and Nominal Systems*, Institute of Control, Robotics and Systems (ICROS, Domestic Conference), 2024 (submitted)

Experience

SNU Control and Optimization Research (CORE) Lab **Mar 2023 – PRESENT**

Research Intern - Advisor : Prof. Insoon Yang *Seoul, South Korea*

- Developed unified algorithm for Wasserstein Distributionally Robust Control and State Estimation in partially observable linear stochastic systems, where the probability distributions of disturbances and measurement noises are unknown
- Formulated a tractable semidefinite programming problem that iteratively determines the worst-case covariance matrices of all uncertainties, significantly enhancing the scalability and efficiency of the proposed algorithm

NEARTHLAB **Jan 2024 – Feb 2024**

Aerospace Engineering Intern, GNC Team *Seoul, South Korea*

- Developed DOB and LQR based position/velocity controllers in C++ & ROS2 and tested through Gazebo simulation
- Integrated the flight controller with a companion computer for offboard flight control of quadrotors, implemented DOB+LQR and DOB+PID controllers, and conducted extensive outdoor flight experiments

Leadership / Extracurricular

Bulnabi - SNU Drone Club **Sep 2023 – PRESENT**

Hardware / Control Team Leader *Seoul, South Korea*

- Designed and conducted Quadrotor Build and Fly seminars (3+) covering sensor calibrations, hardware knowledge, building quadrotors, usage of Ground Control Station, and flight log analysis
- Directed the preparation for the Korea Robot Aircraft Competition, focusing on system design of VTOL and autonomous flight missions. Conducted numerous outdoor flight experiments to stabilize fixed wing phase, quadrotor phase, transition, and back transition phases

Senior KATUSA(Korean Augmentation to the United States Army) **Sep 2021 – Mar 2023**

Sergeant, 8th Army, Camp Humphreys *Pyeongtaek, South Korea*

- Led and managed a 10-solider squad, ensuring their training, well-being, and mission preparedness
- Operated within a U.S. Army office, collaborating extensively with American colleagues on a daily basis
- Applied language proficiency to deliver crucial translation and interpretation support during Combined Exercises, promoting cross-cultural comprehension and enhancing mission achievements

Relevant Coursework

- Nonlinear System Theory(Graduate, A+)
- Advanced Control Techniques(A+)

Technical Skills

Programming: C/C++, Python, MATLAB, JAVA
Libraries/Softwares: PX4-Autopilot, ROS2, SolidWorks, MuJoCo, PyTorch, LaTeX
Languages: Korean(native), English(TOEFL 106 : R:30 / L:30 / S:23 / W:23)

Honors / Awards

Kwanjeong Scholarship **2021**
Recipient of a full tuition scholarship along with a stipend for two years *Seoul, South Korea*

ARCOM(Army Commendation Medal) **2022**
United States Department of the Army *Camp Humphreys*