Myeongseok Ryu

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Myeongseok Ryu is under Ph.D. course. (compiled on February 8, 2026)

RESEARCH INTERESTS

Control Theory
Adaptive Control, Optimal Control

Neural Network-based Control
Neuro-Adaptive Control, Reinforcement Learning

Contraction Theory

Online Optimization

PROFILE & LOGOS

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST), Korea *September 2025 – Present*
CCS Graduate School of Mobility
Ph.D. of Science in Mobility Engineering
- Supervisor: Prof. Kyunghwan Choi, KAIST

~~**Gwangju Institute of Science and Technology (GIST), Korea**~~, (*Withdrew for further studies*) *March 2025 – May 2025*
~~School of Mechanical Engineering~~
~~*Ph.D. of Science in Mechanical Engineering*~~

Gwangju Institute of Science and Technology (GIST), Korea *March 2023 – February 2025*
School of Mechanical Engineering
Master of Science in Mechanical Engineering
- Thesis: Constrained Optimization-Based Neuro-Adaptive Control (CoNAC) for Euler-Lagrange Systems
- Supervisor: Prof. Kyunghwan Choi, GIST

Incheon National University (INU), Korea *March 2017 – February 2023*
Department of Mechanical Engineering
Bachelor of Engineering

PROFESSIONAL EXPERIENCE

Korea Advanced Institute of Science and Technology (KAIST), Korea *May 2025 – August 2025*
Researcher, MIC Lab, CCS Graduate School of Mobility
– Research on Neural Network-based Control for Mobility Systems

SKILLS

Languages:	Korean, English
Programming:	Matlab/Simulink, Python, C/C++
Implementation:	**Simulation** CarMaker, ROS
	Others Git, LaTeX, Jekyll

PUBLICATIONS

Papers Under Review

2. Vector-Space Optimization for Contraction Theory-Based Control Design: An Energy-Based Effective Space Approach
Myeongseok Ryu, Kyunghwan Choi, Sesun You*
***International Federation of Automatic Control (IFAC)**, 2026*

1. Constrained Optimization-Based Neuro-Adaptive Control (CONAC) for Euler-Lagrange Systems Under Weight and Input Constraints
Myeongseok Ryu, Donghwa Hong, Kyunghwan Choi*
***IEEE Transactions on Systems, Man, and Cybernetics**, 2025*

International Conference Papers

5. All-Wheel Steering Vehicle Control Based on Contraction Theory with Neural Network
Myeongseok Ryu, Kyunghwan Choi*
***IEEE International Conference on Advanced Motion Control (AMC)**, (accepted, in press), 2026*

4. Physics-Informed Online Learning of Flux Linkage Model for Synchronous Machine
Seunghun Jang, **Myeongseok Ryu**, Kyunghwan Choi*
***Annual Conference of the IEEE Industrial Electronics Society (IECON)**, pp. 1-7, 2025*

3. Constrained Optimization-Based Neuro-Adaptive Control (CONAC) for Synchronous Machine Drives Under Voltage Constraints
Myeongseok Ryu, Niklas Monzen, Pascal Seitter, Kyunghwan Choi, Christoph M. Hackl*
***Annual Conference of the IEEE Industrial Electronics Society (IECON)**, pp. 1-7, 2025*

2. Imposing a Weight Norm Constraint for Neuro-Adaptive Control
Myeongseok Ryu, Jiyun Kim, Kyunghwan Choi*
***European Control Conference (ECC)**, pp. 380-385, 2025*

1. A Comparative Study of Reinforcement Learning and Analytical Methods for Optimal Control
Myeongseok Ryu, Junseo Ha, Minji Kim, Kyunghwan Choi*
***International Workshop on Intelligent Systems (IWIS)**, pp. 1-5, 2023*

Domestic Conference Papers

3. Approximation-based Steering Controller with Deep Neural Network
Myeongseok Ryu, Kyunghwan Choi*
제어로봇시스템학회 *(ICROS), pp. 884-885, 2024*

2. Integrated Motion Control of Four in-Wheel Motor Actuated Vehicles Considering Path Tracking, Ride Comfort, and Energy Efficiency
Myeongseok Ryu, Kyunghwan Choi*
한국자동차공학회 추계학술대회 *(KSAE), pp. 490, 2023*

1. Data-driven Modeling of Model Residuals for Linear Model Predictive Control of Nonlinear Systems
Myeongseok Ryu, Kyunghwan Choi*
제어로봇시스템학회 *(ICROS), pp. 837-838, 2023*

Preprint Papers

1. CNN-based End-to-End Adaptive Controller with Stability Guarantees
Myeongseok Ryu, Kyunghwan Choi*
***Arxiv**, 2024*

GRANTS AND AWARDS

IEEE International Workshop on Intelligent Systems (IWIS) *July 2025*
Best Presentation Paper Award

European Control Association (EUCA) *June 2025*
Student Support 400 EUR

Graduate International Research Experience Fellowship (GIST-IREF) *October 2024*
Research Support 16 million KRW (approx. 12,000 USD)

Institute of Control, Robotics and Systems (ICROS) *June 2023*
Best Paper Award

INU MATLAB Cody Challenge *June 2021*
Top Prize