ASTGHIK HAKOBYAN

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Education

2021 – 2023 **Ph.D.**, *Seoul National University*, Seoul, Korea.
Major: Electrical and Computer Engineering
Research Interest: Motion Control, Safe Autonomy, Optimization
Thesis: Wasserstein Distributionally Robust Control and Optimization for Autonomous Systems (**Distinguished ECE Ph.D. Dissertation Award**)
Advisor: Prof. Insoon Yang

2018 – 2020 **M.S.**, *Seoul National University*, Seoul, Korea.
Major: Electrical and Computer Engineering
Research Interest: Motion Control, Safe Autonomy, Optimization
Thesis: Risk-Aware Distributionally Robust Optimization for Learning-Based Autonomous System (**Distinguished ECE M.S. Dissertation Award**)
Advisor: Prof. Insoon Yang

2015 – 2018 **B.S.**, *National Polytechnic University of Armenia*, Yerevan, Armenia.
Major: Automation and Control
Research Interest: Control of Robotic Systems
Final Project: Design and Analysis of SISO/MIMO Hydraulic Control Systems
Advisor: Prof. Azatuhi Ulikyan

Academic & Professional Experience

2023 – now **Research Scientist**, *Center for Scientific Innovation and Education (CSIE) Foundation*, Yerevan, Armenia.

2019 – 2022 **Teaching Assistant**, *Seoul National University*, Seoul, Korea.
- 430.456: Advanced Control Techniques (2022 Fall, 2021 Fall)
  430.310: Feedback Control Systems (2019 Fall)
  430.452A: Introduction to Robotics and Autonomous Systems (2019 Spring)

2020 – 2021 **Researcher**, *Automation and Systems Control Research Institute, Seoul National University*, Seoul, Korea.

2017 – 2018 **Application Engineer**, *National Instruments AM LLC*, Yerevan, Armenia.

2015 – 2016 **Data Integration Specialist**, *National Instruments AM LLC*, Yerevan, Armenia.

Other Activities

2022 – now **Fellow** at the Armenian Society of Fellows (ASOF)

2021 – now **Chairman** of the AGBU Young Professionals Group Korea (YP Korea)

2018 – now **Reviewer for Conferences and Journals:** IROS, ICRA, RA-L, CDC, T-RO, TAC, TSMC, ACC, AI, etc.

Selected Publications

[1] A. Hakobyan and I. Yang, "Distributionally robust differential dynamic programming with Wasserstein distance," *IEEE Control Systems Letters (L-CSS)*, 2023 (*to be presented at CDC 2023*).

[2] J. Nadales, A. Hakobyan, D. Muñoz de la Peña, D. Limon, and I. Yang, "Risk-aware Wasserstein distributionally robust control of vessels in natural waterways," *IEEE Transactions on Control Systems Technology (TCST)*, 2023 (*submitted*).

[3] A. Hakobyan and I. Yang, "Wasserstein distributionally robust control of partially observable linear stochastic systems," *IEEE Transactions on Automatic Control (TAC)*, 2023 (*accepted*).

[4] A. Hakobyan and I. Yang, "Distributionally robust optimization with unscented transform for learning-based motion control in dynamic environments," in *IEEE International Conference on Robotics and Automation (ICRA)*, 2023, pp. 3225–3232.

[5] A. Hakobyan and I. Yang, "Distributionally robust risk map for learning-based motion planning and control: A semidefinite programming approach," *IEEE Transactions on Robotics (T-RO)*, 2022.

[6] A. Hakobyan and I. Yang, "Wasserstein distributionally robust control of partially observable linear systems: Tractable approximation and performance guarantee," in *IEEE Conference on Decision and Control (CDC)*, 2022, pp. 4800–4807.

[7] J. Shin, A. Hakobyan, M. Park, Y. Kim, G. Kim, and I. Yang, "Infusing model predictive control into meta-reinforcement learning for mobile robots in dynamic environments," *IEEE Robotics and Automation Letters (RA-L)*, pp. 1–8, 2022 (*presented at IROS 2022*).

[8] A. Hakobyan and I. Yang, "Toward improving the distributional robustness of risk-aware controllers in learning-enabled environments," in *IEEE Conference on Decision and Control (CDC)*, 2021, pp. 6024–6031.

[9] A. Hakobyan and I. Yang, "Wasserstein distributionally robust motion control for collision avoidance using conditional value-at-risk," *IEEE Transactions on Robotics (T-RO)*, vol. 38, no. 2, pp. 939–957, 2021.

[10] A. Hakobyan and I. Yang, "Learning-based distributionally robust motion control with Gaussian processes," in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2020, pp. 7667–7674.

[11] A. Hakobyan and I. Yang, "Wasserstein distributionally robust motion planning and control with safety constraints using conditional value-at-risk," in *IEEE International Conference on Robotics and Automation (ICRA)*, 2020, pp. 490–496.

[12] A. Hakobyan, G. C. Kim, and I. Yang, "Risk-aware motion planning and control using CVaR-constrained optimization," *IEEE Robotics and Automation Letters (RA-L)*, vol. 4, no. 4, pp. 3924–3931, 2019 (*presented at IROS 2019*).

Languages

Armenian	**Native**
Russian	**Fluent**
English	**Fluent (TOEFL iBT 107)**
Korean	**Fluent (TOPIK 6)**
Chinese	**Moderate (HSK 3)**

Honors & Awards

2023	**Distinguished ECE Ph.D. Dissertation Award (2023)**
2022 Spring-Fall	**SNU Global Scholarship (GS)**
2021 Fall	**Tuition Scholarship from the SNU Development Fund**
2021 Spring	**SNU Global Scholarship (GS)**
2020	**Distinguished ECE M.S. Dissertation Award (2020)**
2018 – 2020	**Korean Government Scholarship Program (KGSP)**
2015 – 2018	**Armenian Government Academic Scholarship for Excellence**
2016	**Knights of Vartan Avak Tahlij Scholarship Award**