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Jihoon Suh

E-mail: **suh95@purdue.edu**
Nationality: **U.S. Citizen**
Military Experience: **U.S. Army Reserve Veteran**
Disability Status: **No Disability**

Personal Website
LinkedIn
Google Scholar
GitHub Repository
YouTube

Research Interests

Encrypted Control, Reinforcement Learning, Security, Cryptographic Computing

Employment

Graduate Research/Teaching Assistant, Networked Control Systems Laboratory, 08/2019 – Present
Chief Research Officer, Nika Capital, 06/2023 – 12/2024
Machine Learning Intern, Draper Laboratory, 05/2021 – 08/2021

Technical Skills

Programming: Python, C++, MATLAB
Tools: Simulink, PyTorch, Mircrooft SEAL, TensorFlow, YALMIP, ROS, Google Cloud, Quarc, Git

Education

Ph.D. in Autonomy and Control (Aeronautics and Astronautics), Purdue University (Expected, 05/2026)
Advisor: Takashi Tanaka
Thesis: Efficient Encrypted Control Synthesis for Secure Cloud-based Control
B.S. & M.S. in Aerospace Engineering, The University of Texas at Austin (12/2018 & 12/2020)

Teaching Experience

Teaching Assistant – The University of Texas at Austin
Duties: Grading, presenting lectures, course materials, student interactions, and office hours.
- Feedback Control Systems (Dr. Tanaka, Dr. Topcu): Sp2021, Sp2023, Fa2023, Sp2024
- Linear Systems Analysis (Dr. Bakolas): Fa2023, Fa2024

Mentoring / Advising

Mentor for REACT-REU, The Center for Autonomy at the Oden Institute, 05/2023 – 08/2023,
- Mentoring undergraduate students while leading a research project on Crazyflies quadcopter formation flying with Python and basic motion planning (Mentees: Ian Cornwell, Alayasia Thomas).

Publications

Journal Articles

[J1] Suh, J., & Tanaka, T. (2025). Efficient implementation of reinforcement learning over homomorphic encryption. *Journal of The Society of Instrument and Control Engineers*, *64*(4), 223–229

[J2] Suh, J., Jang, Y., Teranishi, K., & Tanaka, T. (2025). Relative entropy regularized reinforcement learning for efficient encrypted policy synthesis. *(Under Review) IEEE Control Systems Letters*

Peer-Reviewed Conference Publications

[C1] Suh, J., & Tanaka, T. (2021b). SARSA (0) reinforcement learning over fully homomorphic encryption. *2021 SICE International Symposium on Control Systems (SICE ISCS)*, 1–7

[C2] Suh, J., & Tanaka, T. (2021a). Encrypted value iteration and temporal difference learning over leveled homomorphic encryption. *2021 American control conference (ACC)*, 2555–2561

[C3] Suh, J., & Tanaka, T. (2023). Encrypted price-based market mechanism for optimal load frequency control. *IFAC-PapersOnLine*, *56*(2), 11203–11208

[C4] Suh, J., Hibbard, M., Teranishi, K., Tanaka, T., Jah, M., & Akella, M. (2024). Encrypted computation of collision probability for secure satellite conjunction analysis. *75th International Astronautical Congress (IAC 2024)*

Poster Presentations

Encrypted Control Experimental Demonstration, Industry Visit at the Auto GNC Lab, 2020.

Community Engagement

Encrypted Inverted Pendulum Demonstration at Explore UT, 2019, 2020.

Selected Honors and Awards

Bob E. Schutz, Ph.D. Endowed Presidential Fellowship in Aerospace Engineering, 2022 – 2023

Professional Service

Reviewer: TAC, CDC, ACC, ECC, IFAC, L-CSS, Automatica