

Adrian Krieger

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Education

Carnegie Mellon University Pittsburgh, PA
Master of Science in Mechanical Engineering – Research | GPA: 4.0/4.0 May 2026

Coursework: Optimal Control and Reinforcement Learning, Embodied AI Safety, Human Robot Interaction, Computer Vision

Munich University of Applied Sciences Munich, Germany
Bachelor of Science in Aerospace Engineering | GPA: 2.1/4.0 (1.0 best – 4.0 worst) August 2024

Coursework: Computational Engineering, Flight Control Systems, Electrical Machines and Control Technology

Experience

Carnegie Mellon University Aug. 2025 – Dec. 2025
Graduate TA - Course Assistant for “Modern Control Theory” (24-677, Prof. Ding Zhao) Pittsburgh, PA

- Mentored 80+ students in state-space modeling, linearization, and controller design (PID, LQR, MPC, Kalman Filter).

Freudenberg Medical March 2022 – September 2022
Manufacturing Engineering Intern Carpinteria, CA

- Created and executed manufacturing validation procedures for injection molded silicone elastomer medical components.
- Led validation and formalized protocols for critical bottleneck manufacturing equipment, training engineers and production staff on proper operation and data logging, increasing potential production capacity by 100%.

Research

Master of Science Research Carnegie Mellon University Oct. 2024 – Present
MetaMobility Lab | Advisor: Dr. Inseung Kang (Mechanical Engineering, Robotics Institute)

- Evaluated state-of-the-art motion diffusion models on biomechanical accuracy and personalization robustness across users.
- Implemented a diffusion model generating personalized, biomechanically accurate kinematics across speeds from single inputs.

Bachelor Thesis Munich University of Applied Sciences Oct. 2023 – May 2024
ROBOTe Lab | Advisor: Dr. Sebastian Pflaum | Grade: 1.0 (Highest Distinction)

- Engineered a real-time deep learning surface quality assessment system for robotic grinding, now proprietary startup IP.
- Built a custom 10,000-image dataset with varied lighting and angles to improve model generalization for industrial deployment.
- Trained and optimized VGG16 and ResNet-18 CNNs in python using PyTorch, achieving an overall classification accuracy of 82.5% and a regression MAE of 0.3328 micrometers within critical 1-2 micrometer surface roughness ranges.

Projects

Adaptive Robot Strategy for Human-Robot Teaming Carnegie Mellon University Aug. 2025 – Dec. 2025

- Built an adaptive VAE-based strategy inference pipeline and belief tracker to detect human intent from partial trajectories.
- Outperformed Behavior Cloning and RL benchmarks by 68.6% and by 35.5% respectively in Overcooked AI coordination tasks.

Optimal Control for Real-to-Sim Trajectory Tracking Carnegie Mellon University Feb. 2025 – May 2025

- Developed an iLQG (iterative Linear Quadratic Gaussian) controller to transfer real human motion into physics simulation.

Safety Controller for Assisting Humans During Falls Carnegie Mellon University Feb. 2025 – May 2025

- Combined Hamilton-Jacobi reachability with soft actor-critic reinforcement learning as a control framework in MuJoCo aiming to minimize human head impact during exoskeleton-assisted falls.

Sensor Logging with Computer Vision Munich University of Applied Sciences Oct. 2022 – Feb. 2023

- Created a turnkey computer vision system leveraging a CNN to detect lab sensor displays and record data automatically.
- Improved generalization via segmentation and contouring algorithms, boosting robustness in out-of-distribution scenarios.

Skills

Programming Languages: Python, MATLAB, C, C++, Julia

Software: MuJoCo, Linux/Ubuntu, ROS(Beginner), Vicon, Theia, Git, CAD (CATIA, Solidworks), Docker

Languages: English (native), German (native), Spanish (B1)

Publications

Changeeob Song, Bogdan Ivanyuk-Skulskyi, **Adrian Krieger**, Kaitao Luo, and Inseung Kang. “Personalization of Wearable Sensor-Based Joint Kinematic Estimation Using Computer Vision for Hip Exoskeleton Applications.” *IEEE ICORR*, 2025