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

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

Freudenberg Medical   March 2022 – September 2022
Manufacturing Engineering Intern   Carpinteria, California
- 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)
- Current focus on synthetic data generation for exoskeleton control through the deployment of motion diffusion models.

Bachelor Thesis   Munich University of Applied Sciences   Oct. 2023 – May 2024
ROBOTe Lab | Advisor: Dr. Sebastian Pflaum | Grade 1.0/4.0 (1.0 best – 4.0 worst)
- Deep learning for real-time surface quality assessment in an automated, robot-arm led grinding process.
- Built a custom labeled dataset of 10.000 images, incorporating diverse camera angles and lighting conditions for robustness.
- Trained VGG16 and ResNet-18 convolutional neural networks in python (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.

Publications

Changseob Song, Bogdan Ivanyuk-Skulskyi, **Adrian Krieger**, Kaitao Luo, Inseung Kang. "Personalization of Wearable Sensor-Based Joint Kinematic Estimation Using Computer Vision for Hip Exoskeleton Applications." International Conference on Rehabilitation Robotics (ICORR), 2025

Projects

Optimal Control for Real-to-Sim Trajectory Tracking   Carnegie Mellon University   February 2025 – May 2025
- Developed a custom iLQG (iterative Linear Quadratic Gaussian) controller to transfer real motion into physics simulation.

Safety Controller for Assisting Humans During Falls Carnegie Mellon University   February 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.

Autonomous Vehicle Control in Webots Simulation   Carnegie Mellon University   Oct. 2024 – Dec. 2024
- Controlled a vehicle along a test track by implementing a linear quadratic regulator and extended kalman filter in python.

Controller Design for Concorde Aircraft   Munich University of Applied Sciences   June 2024 – July 2024
- Crafted a stability augmentation system in MATLAB, applying root locus and pole placement methods for closed loop control.

Space Telescope Aperture Mechanism   Munich University of Applied Sciences   March 2023 – July 2023
- Designed an aperture cover mechanism for a space telescope, featuring a custom launch-lock for instantaneous orbit detachment.

Sensor Logging with Computer Vision   Munich University of Applied Sciences   Oct. 2022 – Feb. 2023
- Created a turnkey setup leveraging a convolutional neural network to identify lab sensor displays and record data automatically.
- Added an image processing algorithm based on contouring and segmentation to improve detection robustness.

Skills

Programming Languages: Python, C, MATLAB, Julia
Software: CAD (CATIA, Solidworks, Siemens NX), LaTeX, Linux/Ubuntu, ROS(Beginner), VisualStudio, Git, Abaqus, Simulink
Languages: English (native), German (native), Spanish (B1)