

Kayden Knapik

Robotics Engineer | RL & Control



About me

MSc Robotics student with hands-on experience in Sim2Real reinforcement learning and bipedal locomotion. Passionate about designing and programming robots that transition seamlessly from simulation to the real world.

Contact

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Skills

Core Frameworks:
Isaac Lab, MuJoCo, PyTorch

Languages:
Python, C++, C

Control & Hardware:
Sim2Real, MIT Control Mode,
CAN Bus, NVIDIA Jetson

Tools:
Linux, Git, CAD (Fusion360)

Honors & Awards

Tech United Student Team:
2024 World Champion,
RoboCup MSL Eindhoven

2023 World Champion,
RoboCup MSL Bordeaux

First Tech Challenge
2x Regional First Place Winner
(2021, 2022)

Languages

English: Native
Dutch: Intermediate (B1)

Interests

Reinforcement Learning
Sim2Real Transfer
Humanoid Locomotion
Imitation Learning

KEY PROJECTS

2025-26	BDX-R: Open Source Bipedal Walker Tech Stack: Isaac Lab, Jetson Orin Nano, PyTorch, Python, CAD	Independent & BEP
	<ul style="list-style-type: none">Engineered a 10-DOF bipedal robot inspired by Disney's BD-X, powered by an NVIDIA Jetson Orin Nano.Developed an end-to-end RL pipeline in Isaac Lab, successfully training a policy for stable walking and deploying it to hardware (Sim2Real).Lowered the "Sim2Real Gap" for low-cost actuators, achieving real-world walking after the initial thesis conclusion (Grade: 9/10).Currently integrating the head for expressive motion.	
2026	Sim2Real Humanoid Locomotion Tech Stack: Isaac Lab, MuJoCo, Sim2Real Transfer	Tech United Student Team
	<ul style="list-style-type: none">Working on the migration of locomotion policies from legacy Isaac Gym to the modern Isaac Lab framework.Developing custom walking gaits tailored to the T1 humanoid hardware, validating simulation physics against real-world dynamics.Currently implementing MuJoCo Lab environments to further refine policy robustness.	
2025	Python Interface for CAN Bus Control Tech Stack: Python, CAN Bus, MIT Control Mode	Open Source
	<ul style="list-style-type: none">Developed a custom Python Driver to control these actuators outside of the studio environment, enabling integration into custom bipedal designs.Implemented full "MIT Control Mode" (Position, Velocity, KP, KD, Torque) over CAN Bus for high-frequency, low-latency communication.Impact: Tutorial and code have garnered 40,000+ views, helping thousands of engineers use these motors.	
2024	Design of a Low Cost Robotic Platform for RoboCup Tech Stack: CAD, VESC, Raspberry Pi, Python	Tech United Student Team
	<ul style="list-style-type: none">Designed and built an open-source, omni-wheeled robot platform to lower entry barriers for the RoboCup Middle Size League.Managed full lifecycle: CAD design, component selection, VESC configuration, and Inverse Kinematics programming.	

EDUCATION

2025-Pres	MSc Mechanical Engineering - Robotics	TU Eindhoven
	Relevant Coursework: Optimal Control & Reinforcement Learning, Multi-body Dynamics, Model-Based Control, Software Engineering for AI.	
2022-25	BSc Mechanical Engineering	TU Eindhoven

EXPERIENCE

2021	Robotics Intern Operational support for HAL (Hybrid Assistive Limb) exoskeletons during patient rehabilitation sessions.	Cyberdyne Robotics / Brooks Rehab, USA
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