NIU Xuezhi

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Uppsala, Sweden

EDUCATION

- **Uppsala University** — 2024–2028(Est.)
  Ph.D. Student in Embedded Systems — Uppsala, Sweden
- **KTH Royal Institute of Technology** — 2021–2023
  M.Sc. Mechatronics — Stockholm, Sweden
- **City University of Hong Kong** — 2017–2021
  B.Eng. Mechanical Engineering — Hong Kong SAR, China
- **National University of Singapore** — 2020
  Academic Exchange — Singapore

RESEARCH INTERESTS

- Cyber-Physical Systems
- Reinforcement Learning
- Control & Dynamics
- Heterogeneous Robots Collaboration

JOURNAL PUBLICATIONS

- K. Tan, **X. Niu**, Q. Ji, L. Feng, and M. Törngren. "Optimal gait design for a soft quadruped robot via multi-fidelity Bayesian optimization," *Applied Soft Computing*, vol. 169, p. 112568, 2025.

CONFERENCE PUBLICATIONS

- **X. Niu** and D. G. Broo. Investigating Symbiosis in Robotic Ecosystems: A Case Study for Multi-Robot Reinforcement Learning Reward Shaping. In *2025 9th International Conference on Robotics and Automation Sciences (ICRAS)*. IEEE, 2025.
- **X. Niu**, N. Calvo, and D. G. Broo. Enabling Symbiosis in Multi-Robot Systems through Multi-Agent Reinforcement Learning. In *2025 IEEE 8th International Conference on Industrial Cyber-Physical Systems (ICPS)*. IEEE, 2025.
- **X. Niu***, K. Tan*, D. G. Broo and L. Feng. Optimal Gait Control for a Tendon-driven Soft Quadruped Robot by Model-based Reinforcement Learning. In *2025 International Conference on Robotics and Automation (ICRA)*. IEEE, 2025.

WORKING PAPERS

- J. Xu, **X. Niu**, D. G. Broo and K. Hjort. Electronic-free Pneumatic Interface for Sensorimotor Human-Robot Interaction. Submitted to *International Conference on Robotics and Automation (ICRA2026)*.
- A. Rouchitsas, **X. Niu**, G. Castellano, and D. G. Broo. "What am I supposed to do now?": Exploring Unscripted Human Responses During Robot Malfunction in a Collaborative Quality Control and Repair Task. Submitted to *The ACM Conference on Human Factors in Computing Systems (CHI2026)*.

OTHER PUBLICATIONS

- Maser Thesis: Xuezhi, N. (2023). Optimal Gait Control of Soft Quadruped Robot by Model-based Reinforcement Learning. Thesis, 2023. Available: DiVA, id: diva2:1810127.
- HK project: C. Egenäs*, F. Ekman*, C. Ma*, T. Naser*, **X. Niu***, A. Sernelin*, S. Stenow*, and B. Ström*, "Electronically Vacuum Regulated Shut-off Valve for Milking System," Report (Refereed), 2023. [Online]. Available: DiVA, id: diva2:1738909.

PROFESSIONAL SERVICE

- Reviewer for IEEE International Conference on Robotics and Automation (ICRA), IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM), IEEE-RAS International Conference on Humanoid Robots (Humanoids), IEEE International Conference on Industrial Cyber-Physical Systems (ICPS), IEEE International Conference on Robot and Human Interactive Communication (ROMAN).
- Teaching assistant for master level courses at KTH (MF2007) and Uppsala (1DT106, 1DT108, 1DT054, 1RT495, 1DT104, 1DT059)
- Master thesis supervision (Ibrahim Bala)

Awards & Achievements

- IEEE Robotics and Automation Society Travel Grant Awardee for ICRA, Atlanta, United States *2025.5*
- Talent Development Scholarship, Hong Kong SAR, China *2020.6*
- Second Prize in National Finals of the Challenge Cup Competition, Beijing, China *2019.11*
- Silver Prize in National Finals of Internet + Competition, Hangzhou, China *2019.10*
- Second Prize in HK University Student Innovation and Entrepreneurship Competition, Hong Kong SAR, China *2019.4*

Skills

MATLAB/Simulink, Python, C/C++, R, ROS/ROS2, MoveIt, PyTorch, OpenCV, Gazebo, Isaac Sim, Gym/Gymnasium, URDF/SDF/Xacro, RRT*, PRM, A*, Dijkstra, PID, MPC, adaptive, H^∞, HJB, EKF, UKF, RL (PPO, SAC, DQN, DDPG), RGB-D/LiDAR perception, SLAM, Optical/Stereo cameras, IMU, Encoder, Strain Gauge, Force/Torque Sensor, Fluid/Air Pressure Sensor, motor (BLDC, PMSM, stepper, servo, H-bridge, FOC), STM32, ESP32, Jetson, Raspberry Pi, NXP LPC, Zephyr, FreeRTOS, Keil, UART, SPI, I^2C, TCP/IP, Modbus, DDS, MQTT, SolidWorks, Solid Edge, AutoCAD, Autodesk EAGLE, KLayout, COMSOL, LS-DYNA, 3D prototyping, CNC machining, lithography, CVD, PVD, etching (RIE/DRIE), doping, SEM/TEM, Inkscape, LaTeX.