YUNI FUCHIOKA

yunifuchioka@gmail.com ∘ yunifuchioka.github.io

EDUCATION

ETH Zürich, Robotic Systems Lab   January 2024 –
PhD, Mechanical and Process Engineering   *Zürich, Switzerland*

- Supervisor: Professor Marco Hutter.
- Research interests: contact rich manipulation, teleoperation, reinforcement learning, quadruped locomanipulation.

University of British Columbia   September 2021 – May 2023
Master of Science, Computer Science   *Vancouver, Canada*

- Supervisor: Professor Michiel van de Panne.
- Thesis Title: Imitating Optimized Trajectories for Dynamic Quadruped Behaviors.
- Thesis Link: `http://hdl.handle.net/2429/84355`

University of British Columbia   September 2015 – May 2021
Bachelor of Applied Science, Engineering Physics (with distinction)   *Vancouver, Canada*

- Fully accredited engineering program covering topics in mechanical, electrical, and software engineering, and its connection to foundational physics and mathematics.
- Elizabeth and Leslie Gould Scholarship in Engineering.
- Dean's Honour List Designation (received every academic year).

WORK EXPERIENCE

Research Intern, Robotics Group   June 2023 – December 2023
OMRON SINIC X   *Tokyo, Japan*

- Researched sensing and control methods for industrial contact-rich manipulation, using tactile sensors and passive compliance. Supervisor: Dr. Masashi Hamaya.

Research Intern, Humanoid Robotics Group   June 2018 – April 2019
Honda Research Institute Japan/Honda R&D   *Tokyo, Japan*

- Researched methods for modelling and controlling bipedal locomotion through geometric nonlinear control, feedback linearization, and template models, as applied to planar biped systems. Supervised by Dr. Chunjiang Fu.

Strategic Reporting and Data Migration Intern   January 2017 – April 2017
UBC Information Technology   *Vancouver, Canada*

- Programmed web-based data visualizations and developed a prototype web application for centralized master data management, for a university-wide project to replace the legacy student information system.

Mechanical Part Inspector   July 2016 – August 2016
Kodak Canada   *Burnaby, Canada*

- Inspected CNC-machined laser components with micrometer-scale tolerances for defects and reported findings to production engineers, for a manufacturing plant that produced industrial offset printers.

PUBLICATIONS

An Electromagnetism-Inspired Method for Estimating In-Grasp Torque from Visuotactile Sensors
Yuni Fuchioka and Masashi Hamaya
International Conference on Robotics and Automation (ICRA), 2024
Website: `https://omron-sinicx.github.io/tactile-dipole-monent/`

OPT-Mimic: Imitation of Optimized Trajectories for Dynamic Quadruped Behaviors
Yuni Fuchioka, Zhaoming Xie, and Michiel van de Panne
International Conference on Robotics and Automation (ICRA), 2023
Website: `https://www.cs.ubc.ca/~van/papers/2022-opt-mimic/index.html`

OTHER PROJECTS

ALMA Teleoperation System for the AIRA Challenge   January 2024 – June 2024
PhD Project, Robot Competition Entry

· Led a team to win third place in the 2024 Advanced Industrial Robotic Applications (AIRA) Challenge, which involved developing a remote teloperation system for the ALMA quadruped manipulator robot, used for mock chemical plant inspection tasks.

Block Coordinate Descent for 2D Quadruped Centroidal Dynamics   January 2022 – April 2022
Graduate Course Project, EECE 571Z: Convex Optimization

· Modified and implemented the methods of the paper "Rapid Convex Optimization of Centroidal Dynamics using Block Coordinate Descent" by Shah et al. 2021 for a simplified 2D quadruped model.

Gibbon Pose Estimation from Videos   September 2021 – December 2021
Graduate Course Project, CPSC 533R: Visual AI

· Evaluated two 2D pose estimation methods from research literature on videos of brachiating gibbon monkeys, characterizing the various pre- and post-processing techniques needed to account for the challenge of limited, low quality training data and the necessity to adapt research techniques to real-world problems.

Bicopter Drone   May 2019 – August 2019
Personal Hobby Project

· Designed and built a radio controlled drone that flies using only two propellers, using limited financial and fabrication resources. Programmed an Arduino for stable flight control, rather than using an off-the-shelf flight controller.

Autonomous Robot Competition   June 2017 – August 2017
Undergraduate Course Project

· Designed and built a robot for a 6 week design competition within a 4 member team, placing 4th out of 16 teams. The robot was required to follow a taped track, grasp objects, and place them on a target location autonomously with no remote control.

TEACHING

Teaching Assistant, CPSC 426: Computer Animation   Spring Term 2021–2022

Teaching Assistant, PHYS 170: Mechanics I   Winter Term 2020–2021

Teaching Assistant, PHYS 170: Mechanics I   Spring Term 2019–2020

SERVICE

Reviewer: ICRA 2023, ICRA 2024.

SKILLS

Programming Languages	Python, C++, MATLAB, Java
Numerical Computing Libraries	PyTorch, CasADi, Numpy, Eigen, IPOPT
Commercial Robots	UR5e, xArm6, Solo 8, ANYmal, DynaArm
Simulators	Raisim, MuJoCo (Robosuite), PyBullet
Robotics Software	ROS1, Git, Ubuntu Linux
Mechatronics	Machine shop, Electrical prototyping, CAD (Onshape, Solidworks)
Spoken Languages	English (primary language), Japanese