FU ZHENGYU

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EDUCATION

The Hong Kong University of Science and Technology — Sep. 2018 – present

BSc in Integrative Systems and Design & Computer Engineering

- Current CGA: 3.86
- Awards & Scholarships: Dean's List, University's Scholarship of Continuing Undergraduate Students, HKSAR Government Scholarship Fund - Talent Development Scholarship
- Relevant Courses: Introduction to Aerial Robots, Modern Robotics, Control System Design, Optimal Control, Fundamentals of Computer Vision, System Thinking and Design

ETH, Zurich — Sep. 2021 – May. 2022

Invited visiting student in Mechanical Engineering

PROJECTS & INTERNSHIP EXPERIENCES

Optimal Control Solvers for Legged Robots, Robotic Systems Lab(RSL), ETH Zurich

Bachelor Thesis Student — Sep. 2021 – Present

- Refactor OCS2 - A C++ toolbox tailored for Optimal Control for Switched Systems
- Parallelize DDP backward pass without explicit user-defined partitions

Quadrotor Control, Department of ECE, HKUST — Mar. 2021 – Jun. 2021

Software Engineer (Course work)

- Implement feature-based Visual Odometry(VO) with Intel RealSense in ROS
- Implement Extended-Kalman Filter(EKF) to fuse the results from VO and IMU
- Implement minimum snap trajectory generation
- The demonstration can be viewed on http://fu-zhengyu.xyz/quadrotor/

Robotic Manipulation, Hong Kong Centre For Logistics Robotics — Jan. 2021 – Feb. 2021

Software Engineer (Internship)

- Implement ros2_control-compatible hardware interface for NACHI MZ25 manipulator in ROS2 Foxy
- The demonstration can be viewed on https://youtu.be/Z5zkLPai2QI

Multi-agent System Control, Department of ECE, HKUST — Jun. 2020 – Aug. 2021

Undergraduate Research Assistant

- Implement MPC-iLQR controller for differential wheeled robot
- The demonstration can be viewed on https://youtu.be/XL8FVjdYE0M
- Implement graph-based formation controllers in ROS Melodic
- Set up the simulation environment in Gazebo
- The demonstration can be viewed on http://fu-zhengyu.xyz/relative_formation/

IMU-based Motion Capture System, HKUST — Mar. 2020 – Jun. 2020

Software Engineer

- Deploy the complementary filter to fuse data from accelerometers and gyroscopes
- Map the captured motion to a humanoid skeleton in Unity in real-time
- The demonstration can be viewed on https://youtu.be/I017_Ufs-Fg

Online Course System, Division of ISD, HKUST — Jan. 2019 – Oct. 2019

Full-stack Developer

- Design and deploy an online course system delivering tutorial videos and customized assignments to students.
- Develope a grading system for instructors to comment and grade each submission of students
- The project is currently hosted on http://mooc.isd.ust.hk/

RoboMaster Competition, ENTERPEIZE, HKUST Robotics team Oct. 2018 – Sep. 2019

Software Engineer

- In charge of designing and implementing a quaternion-based orientation controller for a 2-axis stabilizer
- Implement a forward kinematics solver and motor controllers of the Mecanum mobile platform
- Develop and maintain the software of Infantry robots
- Team Website - https://www.robomasterhkust.com/

ACTIVITIES & LEADERSHIP

Engineering Student Ambassador (ESA), HKUST May. 2020 – present

Student Ambassador

- Work as a student representative of the Faculty of Engineering
- Introduce engineering through interacting with prospective students, parents, scholars and the general public
- The profile can be viewed on https://seng.hkust.edu.hk/about/student-ambassadors/6316

Design Thinking for Urban Challenges, Asian Universities Alliance Jan. 2020 – Jan. 2020

Participant

- An AUA Overseas Study Program hosted by Seoul National University(SNU)
- The program was aimed to help participants to gain an understanding of the characteristics of the 4th industrial revolution through introducing newly emerging technology, like VR, AR, AI, big data and digital marketing
- The learning was consolidated by numerous site visits such as Samsung D'light and SKT

TEACHING EXPERIENCE

Mechatronic Systems Design with Embedded Computing, HKUST Feb. 2021 – May 2021

Teaching Assistant

- Design lab manuals and programming exercise to familiarise students with Arm® based microcontrollers
- In charge of leading laboratory sessions

AWARDS & CERTIFICATIONS

- Modern Robotics: Mechanics, Planning, and Control, Northwestern University — Robot Kinematics certificate
- 2019 RoboMaster International qualification tournament, RoboMaster — 1st Prize
- "Cyber Defenders Challenge – Team Up for the Good Fight", China Everbright Bank & HKUST — 1st Prize
- 2016 RoboCup Junior Rescue Line International Competition in Leipzig, Germany — 1st Prize

SKILLS

Programming	**(Well-experienced in)**C++, Python, MATLAB, ROS**;(Capable of)**Julia, JavaScript
Mechanical	CAD software(Rhino, Solidworks, Fusion 360), Physical prototyping(CNC, Laser cutter, water jet)