





YU-CHIH HUANG

MSc. Mechanical Engineering - BioRobotics

CONTACT INFORMATION

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 yu-chih-huang

SKILL

- ✓ Programming: Python, MATLAB, Simulink, C++ (Arduino, ROS)
- ✓ 2D/3D design package: SolidWorks, PTC Creo, Rhino (grasshopper), AutoCAD
- ✓ Microsoft Office: Excel, PowerPoint, Word
- ✓ Others: RoboDK, Msc ADAMS, PowerMILL, Latex

AWARDS

2018 Holland Scholarship
2017 Taipei International Machine Tool Show (TIMTOS) essay contest, 2nd place
2017 NTU Presidential awards
2015 NTU Presidential awards (given to top 5% of students with excellent academic performance)

LANGUAGES

- Mandarin Chinese (Native)
- English (C1 / 107 TOEFL)
- Dutch (A1)

SHORT INTRODUCTION

An engineer with interests in control and automation, especially in the aspect of robotics. A good team player who enjoys working in groups and inspiring each other with great ideas. A young professional that takes responsibility and aims for going beyond expectation.

EDUCATION

September 2018 – June 2020 – Master's in Mechanical Engineering

Delft University of Technology, The Netherlands

- Master Thesis: [A Vision-based Semi-autonomous Impedance Control Method in Teleoperation.](#)
- Academic average grade: 8.11/10, Thesis grade: 8.5/10.

September 2014 – June 2018 – Bachelor's in Mechanical Engineering

National Taiwan University, Taiwan

- Bachelor Thesis: [Development of a Running Hexapod Robot with Differentiated Front and Hind Leg Morphology and Functionality.](#)
- School year graduate ranking: 10th/145 (top 7%, average GPA: 4.1/4.3).

WORK EXPERIENCE

August 2021 – Present – Graduate Engineer (UX-DS team)

Toyota Motor Europe (TME), Zaventem, Belgium

- Validate models by comparing real-world test data and simulations to ensure model quality.
- Evaluate system stability with dynamics KPIs and proposed stability criteria that showed high correlation to unstable simulation scenarios.
- Synchronize data among different hardware clocktime and perform sensor fusion that results in better data quality.

October 2020 – July 2021 – Junior Mechanical Engineer

FOCUS-ON, Dordrecht, The Netherlands

- Increase production line efficiency by automating device calibration process, the process reduced from several manual steps to 1 button click.
- Remove manual work in product testing with automated data collection and post-processing built through programming.
- Design new sensor housing to modularize the product. The new screw-in sensor housing provides more flexibility when reworking the product comparing the original welded-in sensor housing.

July 2019 – December 2019 – Mechanical Engineer Intern

Skelex, Rotterdam, The Netherlands

Prototype the automated force adjustment mechanism for exoskeleton suits.

- Select the suitable mechatronic components for the system by calculating the desired torque.
- Build a testing platform controlled with a PID controller using Arduino to evaluate the motor performance under desired torque.

January 2018 – July 2018 – Product Development Intern

McKinsey & Company, Taipei, Taiwan

Teardown and Evaluate the production cost of client's products with cost evaluation model in Excel.

July 2017 – August 2017 – Manufacturing Engineer Intern

Fox Factory, Taichung, Taiwan

- Calculate labour standard for shocks production to identify the production bottle neck, decide the optimizing sequence with PFEMA. The bottlenecks were solved with designing new fixtures and improving the work environment (e.g. lighting).

PROJECTS

December 2020 – March 2021 Tool scripts for 3D-printing robot arm path planning

A side project to automate KUKA robot language (.KRL) script generation for 3D-printing robot arm

- Create GUI for user input printing parameters (e.g. feed rate) and slicing parameters (e.g. hatch angle).
- Automate the path generation process through RoboDK Python API.

December 2019 – August 2020 A Vision-based Semi-autonomous Impedance Control Method in Teleoperation (Master Thesis)

ICAR 2021 Publication: <https://ieeexplore.ieee.org/document/9659427>

Develop a novel vision-based semi-autonomous impedance control method for teleoperation that can adjust the impedance of the remote robot prior to the contact.

- Use object tracking and detection algorithm via Python.
- Simulate impedance dynamics with MATLAB.
- Implement impedance control on the robot with C++.
- Demo video: <https://youtube.com/playlist?list=PLyVZusC3uqby-yTSGuCyibykTLqpMdVae>

March - June 2019 Unicycle bots leader-follower formation control and collision avoidance

Design path planning algorithm for unicycle bots with leader-follower formation

- Implement A* algorithm and Dynamic window approach for the path planning of the leader bot.
- Use artificial potential field for the following bots to maintain formation with collision avoidance.
- Simulation video: <https://youtu.be/4PEOY7klq1k>

March - June 2019 Inverted pendulum controller design (LQR controller)

Design a controller to balance an inverted double pendulum in Simulink.

- Perform system identification experiments (white box, black box).
- Design controllers with pole placement.
- Demo video: <https://youtu.be/mEG0UBeX6RQ>

January 2018 – July 2018 Development of a Running Hexapod Robot with Differentiated Front and Hind Leg Morphology and Functionality (Bachelor Thesis)

IROS 2020 Publication: <http://ras.papercept.net/images/temp/IROS/files/2916.pdf>

This project aims to design a hexapod which has similar force profile of a real cockroach.

- Design and prototype the robot leg mechanism.
- Post-process the motion data with MATLAB.
- Test run video: <https://youtu.be/E2qPZJFOATE>

EXTRACURRICULAR ACTIVITIES

September 2021 – May 2022 – Canter Schaerbeek Basketball Club: Women's second team

Brussels, Belgium

- Committed team member with 85% of attendance rate, provincial level.

September 2014 – June 2018 Department women's basketball team

National Taiwan University, Taipei, Taiwan

- Devoted team member for 2014 – 2018: Develop good sportsmanship and teamwork ability.
- Team Captain for season 2016 – 2017: Demonstrate strong leadership and organizing skills.
- Won several championships in regional matches.

September 2015 – June 2016 Women's rugby club

National Taiwan University, Taipei, Taiwan

- Director: developed event organizing skills.