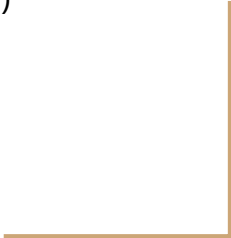


## Presentation of expertise, field of study and research plan

YU-LUN CHOU (Aaron)  
Examinee number: 5010  
Mechanical Engineering, National Taiwan University  
(Graduated in Jan. '23)



# Content

1. Introduction
2. Research Expertise
3. Research Interest (field of study)
4. Research plan (Robotics & AI)

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# About me

- Currently a research student in Autonomous & Soft Robotics Laboratory
- BS studied in Mechanical Engineering (ME), GPA: 4.03/4.3 (last-60-credits)
- Presidential Award in '21 Fall (top 5% of the class in the semester)
- Exchange Student at 青山学院大学(duration: Sept. 2022-Jan. 2023)
- Team mentor of C.K. Robotics at Chien Kuo High School (for FRC competition)



# My expertise

Major: Mechanical Design (CAD)

Design Software: SolidWorks, Autodesk Inventor

Minor: Control Engineering, Programming, Manufacturing (CAM)

Development Environment/Language: ROS, Linux, Python, C++

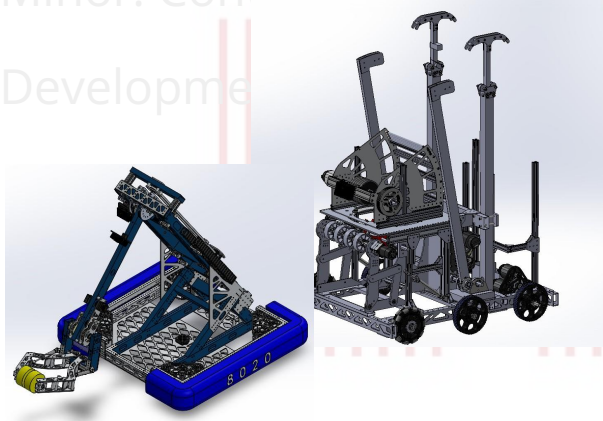
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# My expertise - **Robots** Design

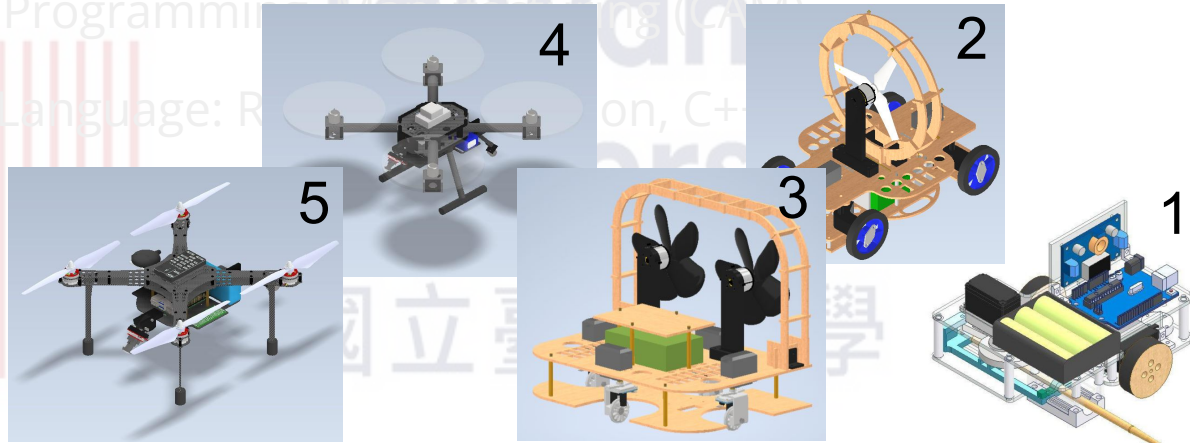
Major: Mechanical Design (CAD)

Design Software: SolidWorks, Autodesk Inventor

Minor: Control Engineering, Programming  
Development Language: R, Python, C++



robot made by students in C.K. Robotics



past 3 project made in NTU

demo: [https://drive.google.com/file/d/10999qJYTXF-mEvNgamh05f6zq21spQmj/view?usp=drive\\_link](https://drive.google.com/file/d/10999qJYTXF-mEvNgamh05f6zq21spQmj/view?usp=drive_link)

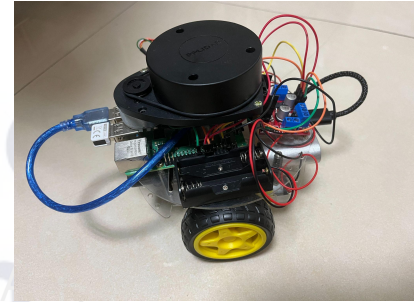
# My expertise - Controlling **Robots**

Major: Mechanical Design (CAD)

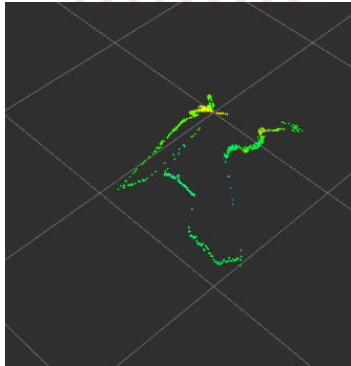
Design Software: SolidWorks, Autodesk Inventor

Minor: Control Engineering, Programming, Manufacturing (CNC)

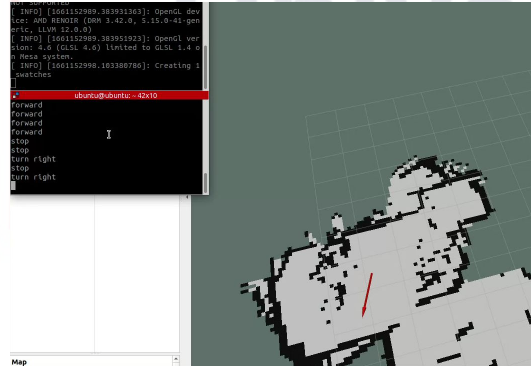
Development Environment/Programming Language: ROS, Linux, Python, C++



Robot for indoor mapping



environment profile by LiDAR



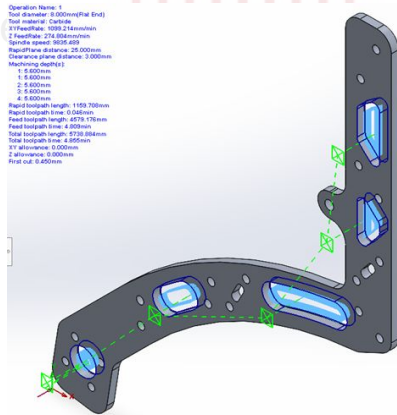
demo: [https://drive.google.com/file/d/1hKtAE6LRW2CSUeNtEI2q9REkKdpO65h3/view?usp=drive\\_link](https://drive.google.com/file/d/1hKtAE6LRW2CSUeNtEI2q9REkKdpO65h3/view?usp=drive_link)

# My expertise - Making Components of **Robots**

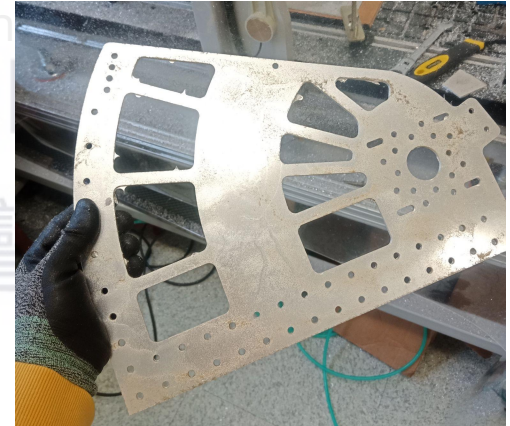
Major: Mechanical Design (CAD)

Design Software: SolidWorks, Autodesk Inventor

Minor: Control Engineering, Programming, Manufacturing (CAM)



Simulation for manufacturing in SW CAM



after machining

# My expertise

**Robots** Design

Controlling **Robots**

Making Components of **Robots**

⇒ **Robot** is the intersection of my expertises

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# Research Interest (field of study)

- Robotics
  - Quadruped Robots
  - Autonomous Driving
  - Humanoid
  - Drone (UAV)
- Others
  - Machine learning
  - Computer Vision (Object detection)

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# Robotics + AI? (Research plan)

- Inspiration by <https://reurl.cc/WGn8mx> (MIT's Mini Cheetah)
- Instead of handcrafted the controllers, using learning based method
- Adaptive to different outdoor environment
- Scalable to application in Robotics field

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Thanks for your attention!

