# Yidan LU

Homepage: https://lu-yidan.netlify.app/

## Education experience

The University of Hong Kong 2023.9 - Now

Northwestern Polytechnical University 2019.9 - 2023.7

Software engineering GPA:84.51/100

## Research interests

Legged Robotics, Control theory, Audio Speech Recognization

## Recently

**1.Learning Locomotion over Challenging Terrain, ArcLAB@HKU** 2023.9 - Now

- Learning for legged robot locomotion.
- Training a control policy and an adaptive module simultaneously, considering the robot's temporal states.
- This adaptive module allows the control policy to identify different robots' properties and estimate body velocity online. Deployed on real robot, navigate various harsh indoor and outdoor terrains effectively.

**2.Interning at ASLP@NPU** 2022.9 - 2023.7

- A model is trained with a batch of wake-up words and deployed on an embedded platform.
- Currently, the python version is being deployed on the Horizon new generation AIoT chip (Rising Sun x3), followed by the c version. Once the above is done, deploy an identified model.

## Project Experience

**The group leader of Whelled Group of Soccer Robot Base** 2020.9 – 2022.6

**1. National innovation: Strategy optimization and simulation of wheeled soccer robot competition**

- Robot behavior control model based on Deep Deterministic Policy Gradient algorithm of Actor-Critic algorithm framework
- Motion planning algorithm based on subobjective point method and cubic spline curve method
- Gazebo simulation system construction and simulation

**2. Multi-functional modular intelligent wheeled soccer robot**

- The hardware circuit of uniformly distributed omnidirectional wheel motion control is designed, and the stable motion of robot chassis is realized through CAN bus control, PID algorithm and six-axis IMU.
- The self-adaptive ball holding device can calculate the speed of the ball holding motor in combination with the wheel speed of the site and the Angle of the ball holding motor when holding the ball, so as to realize "where the car goes, the ball rolls".
- Electromagnetic ejection system, single board digital circuit, realize the control of the robot hitting system.
- The communication protocol of the upper and lower computers

**3. A biomimetic fish with three unwave fins**

- A separate steering gear is used to control the movement of each fin bar, so that the robot's fin can generate different waveforms to achieve different motion posture.
- Ensure that the data collected by the camera can be effectively transmitted to the client.

## Skills

- Python & Pytorch, Reinforement learning, Audio speech recognization
- C & C++ programming, mastered the basic operation of Linux system
- ROS, Qt programming frameworks
- STM32 development based on HAL library and CubeMX
- Mastered CAN, SPI, UART, I2C and other common communication protocols

## Awards

2021 International Underwater Robot Competition — International Second Prize

2021 Technical Innovation Award of RoboCup China — Best Mission Planning Award

2021 5VS5 of the National Robot Championship Semi-autonomous Robot Football Match — National First Prize

2021 National Robot Autonomous Navigation Path Planning Competition — National First Prize

2021 China Robot and Artificial Intelligence Competition — National First Prize

2021 National Ocean Vehicle Design and Production Competition — National Second Prize

2021 National College Students Embedded Chip and System Design Competition — National Third Prize

## Hobbies

Fitness, painting