Xuebing Hou

Phone: 86- 15642680829 12212761@mail.sustech.edu.cn

EDUCATION

Southern University of Science and Technology **Shenzhen, China**

School of Systems Design and Intelligent Manufacturing

Bachelor of Science in Automation ***09/2022- 06/2026***

- Overall GPA: 3.66/4.0

RESEARCH INTERESTS

- Machine Learning
- Reinforce Learning

PROJECTS

Southern University of Science and Technology **Shenzhen, China**

Developer, Advisor: Prof. Kemi Ding ***03/2024- 06/2024***

- **Project: A Multi-Modal Method for Domain Adaptation In Point Cloud Semantic Segmentation**

The goal of this project is to apply transfer learning methods to help neural networks perform semantic segmentation of point clouds. So it involves 3 fields: multi-modal learning, point cloud semantic segmentation, and domain adaptation.

  - In order to better utilize all the information of the 2D image, an adversarial training method is used, that is, a discriminator is added behind the 2D segmentation network. The discriminator receives the feature map of the 2D network and determines whether it comes from the source domain or the target domain.
  - The CoSMix model can be broadly categorized into three primary components: Semantic Selection, Compositional Mix, and Training and Update, which aim at facilitate robust and adaptive point cloud segmentation across domains. Each section plays a critical role in enhancing the model's capability to generalize and perform effectively in diverse and challenging scenarios.

Developer, Advisor: Prof. Wei Zhang ***04/2024- 06/2024***

- **Project: State Estimation for A Biped Robot**
  - In state estimation, one of the most widely used techniques is the Kalman filter. The Kalman filter is an algorithm that uses a series of measurements observed over time that contain statistical noise and other

inaccuracies to produce estimates of an unknown variable that are typically more precise than estimates based on a single measurement.

- Implement a state estimator for a bipedal robot. The main role of the state estimator is to provide observation input for the control strategy of the biped robot, specifically, to provide the linear velocity of the floating base.

Developer, Advisor: Prof.Wei Zhang ***04/2024- 06/2024***

- **Project: RL Training of Inverted Singular and Double Pendulums**
  - Through the reinforcement learning algorithm, the balance control of the first-order inverted pendulum under small disturbances and the balance control after the swing are realized respectively.
  - DDPG is a reinforcement learning algorithm based on deep learning and deterministic policy gradient, suitable for solving problems in continuous action spaces. The core idea is to enable the agent to output optimal continuous actions in a given state by optimizing the value network and policy network.

Developer, Advisor: Prof. Xiaojing Wang ***03/2024- 06/2024***

- **Project: Using STC89C52RC Microcontroller to Make A Simple Electronic Keyboard**
  - Use the STC89C52RC microcontroller as the core control component, design an electronic keyboard that can use one button to output a single note which has a total of 8 buttons to form basic notes, and can also play music independently.
  - The microcontroller is used as the main control core, and it forms the core main control module together with buttons, speakers and other modules.

Developer, Advisor: Prof. Xiaojing Wang ***09/2023- 01/2024***

- **Project: Realizing Screen Expansion of Openmv Development Board**
  - Reference and learn from some of the schematics released by openmv on the open source website GitHub and make domestic component adaptation based on them, and some component schematics are corrected according to the official chip manual of STMicroelectronics.
  - The software coding part uses openmv IDE, and the code adopts the online open source part. However, due to the openmv firmware update, the original lcd library was officially optimized and merged into the display module. So we go to the official openmv forum to check relevant information and modify the original open source code to make it consistent with the new openmv firmware version.

SKILLS

- **Programming Languages:** Python, C, LATEX, JAVA
- **Software Tools:** Microsoft Office Suite