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Kefeng Huang

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Education

University College London **London, UK**
Master of Engineering in Computer Science ***09/2019 — 06/2023***

- **Score**: 77.9 in Year 3 and 75.9 in Year 2 (First Class Honors)
- **Core Modules**: Machine Learning for Visual Computing, Machine Learning and Neural Computing, Robotic System, Computer Graphics, Computer System, Research Methods 09/2019 - 06/2021
- Reinforcement Learning, Multi-Agent Artificial Intelligence, Virtual Environment, Statistical Natural Language Processing 09/2022 - 06/2023
- **thesis**: Unsupervised Sub-Goal Generation with Bisimulation representations in Minecraft

Nanjing Dongshan Foreign Language School **Nanjing, China**

- A-Level 4 A* (Mathematics, Further Mathematics, Chemistry, Physics) 09/2017 — 06/2019
- Gold Award in UK Chemistry Olympiad 03/2019

Academic Experience

Teaching Assistant of UCL module Data Mining and Analysis **09/2022 — Present**
Supervised by Prof. Eddie Edwards at University College London

- This module provides the mathematical background of different Machine Learning tasks and algorithms, including regression, classification, clustering and dimensionality reduction.
- Hosting tutorials sessions. These classes is either demonstrating a jupyter notebook showing the implementation of the algorithms or explaining the solution of a problem sheet about the mathematical problems behind the algorithm. Questions from students will also be answered.
- 4 hours working time per week

Robotic System for Identifying and Watering House Plants **10/2021 — 04/2022**
Supervised by Prof. Simon Julier at University College London

- Proved the possibility of an autonomous robotic system to water houseplants by creating one in a simulated environment in ROS Noetic, with a group of 6 people working in different aspects including SLAM, Control, Path Planing, Classification & Detection and Exploration.
- Available on Github repository `https://github.com/Aashvin/COMP0031-PlantBot`.
- **Classification & Detection**: Conducted a literature review on detection and segmentation methods as well as the plant identification networks. Integrated Darknet_ROS package into our project. Modified the package to support different YOLO versions including YOLOv4.
- Available on Github repository `https://github.com/t1mkhuan9/yolov4-ros-noetic`.
- **Score:** 81 in individual literature review, 72 in group report and 80 in individual report

Learning 3D Point Cloud Segmentation by Aggregating 2D Image Semantics **08/2021 — 12/2021**
Self-motivated Research Project

- Projected each 3D point to corresponding image pixels in different frames and used image semantics information to generate 3D point segmentation. Explored two possible approaches: (1) directly using the result produced by image segmentation by choosing the mode among them (2) removed the final layer of the image segmentation network and use the features to get 3D point information.
- Conducted experiments based on the KITTI-Odometry dataset using the ground truth value from SemanticKITTI dataset. Used and adapted Nvidia Segmentation (DeepV3WPlus Network) as the image segmentation method. Trained a simple neural network based on the image semantics features to predict the 3D point semantic label.
- Available on Github repository:
  `https://github.com/t1mkhuan9/image-based-pointcloud-segmentation`

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Industry Experience

UCL Computer Science Robotics Internship **06/2022 - 09/2022**

Supervised by Prof. Simon Julier, Prof. Dimitrios Kanoulas, Prof. Francisco Porto Guerra E Vasconcelos and Prof. Eddie Edwards

- Conducted a series of experiments on mycobot robot developed by ElephantRobotics to prepare for new modules (COMP0128, COMP0129, and COMP0130) at UCL Computer Science. Tested the installation and usage of ROS Noetic at different operating systems and architectures to provide a comprehensive installation guidance and created simulated environment in Gazebo. Also implemented ros packages to **(1)** calibrate its joint position **(2)**communicate with the mycobot robot to read its status and send instructions **(3)**read and visualize sensor data (camera, lidar, ...), **(4)**move the arm to specific locations in robot coordinates **(5)**follow the visual tracking markers (aruco)
- Available on Github repository `https://github.com/t1mkhuan9/mycobot_ros`

Recyclone Mobile App Team Leader **10/2020 — 05/2021**

Supervised by Mr. Hardwick James at University College London and Mr. Fergus Kidd at Avanade

- As a team of 3, created an app to encourage people recycle unused materials by showing the drop-off position of the identified item and giving 'points' to them once they have completed one recycle.
- Developed and Deployed a SpringBoot backend providing RESTful APIs. Used Azure Computer Vision API to accomplish item identifying tasks. Used MySQL Server to store account details.
- Created the item identifying page and the scoreboard page in the Flutter app and connected it to the backend. Helped teammates with other pages when necessary.
- Organize team's weekly tasks and prepare a weekly report to clients.
- Video Introduction can be found on youtube.
- Received 1st Class Distinction result

China Mobile AI Department Intern **04/2020 — 06/2020**

Supervised by Senior Reseacher Mr. Xiaoming Ma and Mr. Qiang Gu

- Conduct researches on recognition company seals and provide slides sharing related papers every week.
- Help to implement the algorithm to classify seals from different companies. Filter and clean the dataset to provide correct label and images. Implement ELSDc algorithm using OpenCV a baseline to compare. Successfully train a neural network with assistance from supervisors.

UCollege X Mobile App **01/2020 — 05/2020**

Self-motivated Development Project

- Scraped university ranking data with python and selenium from QS ranking, Times Raking and US News Ranking. Written Flutter App to visualize data stored in the sqlite database. Plotted graphs for each universities ranking details (1) at each year (2) at different ranking websites, (3) of different majors.
- Published on Apple App store and Google Play store until developer account expired.

Skills

Programming Languages	Python, C, C++, Java, Dart, x86-Assembly, ...
Communication	Chinese (Native), English (Professional, IELTS 7.5), Japanese (Intermediate)
Interests	Snowboarding, Badminton, Photography