PEIYAN LI

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EDUCATION

Chinese Academy of Sciences	**Beijing, China**

- PhD student in Computer Science with Specialty in Embodied AI   09/2023-present

Xi'an Jiaotong University   **Xi'an, China**

- Bachelor in Engineering in Artificial Intelligence   09/2019-06/2023
  (Special class founded by Professor Nanning Zheng, XJTU former president）
- Major Courses&Grades: (GPA: 3.97/4.3; Average Score:91.7; Rank: 1st of 54 students of the class)
  Python Programming:100 /100; Long-distancerun:100/100;Machine Learning: 97/100; Probability
  Theory and Stochastic Process:96/100; Linear Algebra and Geometry: 95/100;NLP:95/100.

Imperial College London Data Science Winter School with Full Scholarship   01/2022-02/2022

- Studied data science; mastered Python for data assimilation, improved prediction accuracy, etc.

INTERNSHIP

Tencent Shenzhen Headquarters   **Shenzhen, China**

Only undergraduate intern at Robotics X Lab of TEG(a pillar for Tencent's AI Technology)   02/2023-09/2023

- Calibrating the tactile skin developed by Tencent using the Franka robot, and the final calibration error was controlled within 10%; Established a dataset of constrained motion planning which consisted of 1.8 million trajectories covering various tasks such as opening doors, pulling drawers, carrying a cup of water while keeping it upwards, and so on.
- Designed a neural network model to perform constrained motion planning tasks. Adopted mathematical expressions to describe the constraints that the robot must follow during its motion. These constraints are decoupled from the scene, allowing effective generalization to real-world scenarios. This work will soon be submitted to IEEE Robotics and Automation Letters. Some of the videos that have been shot are available at https://drive.google.com/drive/folders/1-wIbTbsaKJrFnPhkcFBb4ERrRqCDS97y?usp=sharing

Samsung Xi'an Electronics Research Institute   **Xi'an, China**

Research Intern   09/ 2022-12/2022

- Take responsibility for the research, reproduction, and deployment of 3D targets detection algorithms; The main results of the findings included investigating 6 cutting-edge 3D target detection algorithms represented by BEVFormer and reproducing the detection accuracy of the paper; Deployed BEVFormer on Samsung's self-developed vehicle hardware platform.

AWARDS & HONORS

- People's Daily Reported Outstanding National Award Student Representative   05/2023
  (100 out of 60000+ / TOP 0.1%)
- Xi'an Jiaotong University Outstanding Undergraduate Model Nomination Award   10/2022
  (24 out of 16025 +/ TOP 0.15%)
- Megvii Technology Comprehensive Development Scholarship   10/2021
  (Highest Honor for Undergraduates in Artificial Intelligence Program for Comprehensive Excellence)
- Second Prize in National College Student Mechanical Innovation Design Competition   05/2022
- Honorable Prize in the American College Student Mathematical Modeling Competition   05/2022
- Special Prize in Engineering Student Capacity Building Competition   12/2021
- Winner of Tax Friend Scholarship National Undergraduate Award for Three years   2020/2021/2022

RESEARCH PROJECTS

Hexapod Biomimetic Robot Research   **2022**

Researcher/Project Link **https://www.bilibili.com/video/BV16P411T7bs/?spm_id_from=333.999.0.0**

- Took charge of the designing of the perception algorithm for the robot. We used a Silan A1 super planar radar to obtain obstacle information in the environment; and collaborated with the team to construct a scene map to achieve basic autonomous navigation of the robot; Meanwhile, we also implemented functions such as target tracking and pedestrian detection for the robot.

Recyclable Garbage Sorting Box Design Project (Ranking the 3rd in the Provincial Competition) **2021**
Researcher / Project Link **https://www.bilibili.com/video/BV1X5411c7NU/?spm_id_from=333.999.0.0**
- Organized the team to design a recyclable garbage sorting box based on YOLOv3, which can classify four types of garbage, including recyclable kitchen garbage, harmful garbage, and other garbage types.
- We deployed this algorithm on Raspberry Pi4. In the final round, our projects successfully classified all 20 types of garbage within one minute.

Tumor Image Segmentation at Imperial College London Data Science Online Winter School   2022
Independent Researcher
- The goal is to locate the tumor part in the MRI image. I experimented with diverse novel methods (3D U-Net, Dense U-Net, MultiRes U-Net, Attention U-Net), different loss functions (Dice loss, cross-entropy loss), different optimizers, and activation functions; Eventually, the model that I designed received the highest rating of A for a Dice score of 0.85, in the final evaluation results of the Imperial College London Data Science Winter School.

Bootstrapped MAE   **2022**
Independent Researcher
- After a thorough research, I found that pixels are low-level, high-noise semantic information, while the self-supervised method MAE proposed by He Kaiming only uses pixels as reconstruction targets; Therefore, my project proposes to use the features extracted by the encoder as the reconstruction target, iteratively train the model, and ultimately improved the classification accuracy on CIFAR-10 by 6% compared to the original method.

Automatic News Title Generation   **2021**
Team Leader
- This project implements a tool based on GPT-2 that can automatically generate Chinese news headlines, and build a webpage as an interactive interface.
- Firstly, we obtained 1.2GB of pure text data through a web crawler and performed corresponding data cleaning. Simultaneously, we tried to modify the loss function of GPT-2, so that the training process ignored the generation of text and only focused on title generation. Eventually, the project achieved the highest score in the *Natural Language Processing* course.

Isolated Number Speech Recognition Project   **2021**
Team Leader
- Designed a system for recognizing isolated numbers through speech signals; Designed the system based on the MFCC features of speech signal recognition; employed the DTW algorithm to achieve unified processing of unequal-length speech signals; With the goal of improving efficiency, we adopted an isolated number's "average template" for template matching, ultimately achieving an accuracy of 86%.

MEDIA COVERAGE
- People's Daily Report (https://wap.peopleapp.com/article/7077486/6929967)
- China University Student Network (https://mp.weixin.qq.com/s/Nps0txvox7iV5V6aXnkTmw)
- Xi'an Jiaotong University (https://mp.weixin.qq.com/s/6vEb4PPtb1_mZJXwwm1H0Q)
- Qian Xuesen College of XJTU (https://mp.weixin.qq.com/s/bGlc4YVm6d8VsGKHWXOkTg=)

EXTRACURRICULARS
- Debating: 2021 Champion Chinese Language Debate World Cup Xi'an Division; Selected as the Vice President of Xi'an Jiaotong University Debate Clubs;
- Athletics: 3rd place in the Shaanxi Provincial College Marathon League; First place in the Xi'an. Jiaotong University Winter Cross Country Running. Participated in the Tianjin Marathon, Xi'an City Wall International Marathon, and Shenzhen Bao'an Marathon.
- Volunteer: Outstanding Volunteer at the 14th National Sports Meeting with accumulated 238 service hours.