Chenda Duan

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Education

University of California, Los Angeles (UCLA), School of Engineering, Los Angeles, CA

Bachelor of Science in Computer Science, GPA: 4.0/4.0 2019.09 – Expected 2022.06

Dean's Honors List 2019 – 2021

Research Experience

UCLA Structure-Computer Interaction Lab

Undergraduate Researcher 2020.06 –

Low-Cost Autonomous Weed-Control Agri-Robot Project

- Developed a robotic navigation algorithm for road identification system and improved the navigation accuracy for the robot while maintained at low cost.
- Built a simulation environment using Gazebo to test the robotic navigation algorithm.
- Modifying VI-SLAM, a Visual-Inertial Simultaneous Localization and Mapping Algorithms to further improve the navigation and localization performance of the robot.
- Trained a model for crop identification using yolov5, an object detection architecture to improve the identification capability at the sparse crop environment (where 2D-Lidar performance is poor).
- Used the combination of attention mechanism and key-point matching to perform robust row counting on the crop land.

Soft Robots Project

- Used inverse learning approach to train a model to generate the physical parameters for the soft robot.

UCLA Center for Neurobehavioral Genetics

Undergraduate Researcher 2020.06 –

eQTL Mapping Project

- Process RNA sequence data eliminating useless data to feed CiberSort, TWAS-Fusion and other state of art algorithm.
- Perform Principal Component Analysis (PCA), data visualization and other data analysis using R.

Publication

- Du, Y., **Duan, C.**, Jawed, M. K., "Inverse design of soft flagellated robots". To be submitted to RAL in January 2022
- Du, Y., **Duan, C.**, Jawed, M. K., "Mobile monocular robot localization via cascaded attention mechanism and keypoint matching". To be submitted to Robotics: Science and Systems 2022
- Du, Y., Mo, W., **Duan, C**. Jawed, M. K., "2D LiDAR based inter-row navigation algorithm". To be submitted to IROS 2022
- Tommer Schwarz, Toni Boltz, Kangcheng Hou, Merel Bot, **Chenda Duan**, Loes Olde Loohuis, Marco P. Boks, René S. Kahn, Roel A. Ophoff, Bogdan Pasaniuc, "Powerful eQTL mapping through low coverage RNA sequencing". To be submitted to Human Genetics and Genomics Advances.
  Powerful eQTL mapping through low coverage RNA sequencing | bioRxiv

- Coauthor of "Cell type decomposition of whole blood bulk RNA-Seq reveals cell type genetic regulation of expression" (working title), draft in progress and planned to be submitted to peer review journal.

Course Project

Basketball-shooting 2021.10 - 2021.12

An online basketball-shooting game based on Javascript.
Advanced graphic features, including shadow, texture, and reflections. Using only a lite version of WebGL called Tinygraphics, which contains basic geometry definition vector calculation functions.
Play the game at: https://basketball-shooting.herokuapp.com
Source code at: https://github.com/Dadaism6/CS174A_PROJ

Egglendar Online Calendar 2020.10 - 2020.12

Designed an online student calendar specially for international students.
Using Bootstrap and Material-UI for designing the front-end interface, and Mysql as the database.
Project is open-source and can be found at:
github.com/Clumsyndicate/Smart-Calendar-Frontend
github.com/Clumsyndicate/Smart-Calendar-backend

GooberEats-Delivery Path Planner 2020.2-2020.3

Designed a path planner program that can generate the shortest path for delivering several packages in west Los Angeles area.
Using a modified version of A* algorithm, together with optimizations using simulated annealing.

Kontagion-Game 2020.1-2020.2

A 2D game similar to "aircraft battle".
Developed the game using C++ and freeglut utility library.

Patent

Patent: Ferris Shelf (Utility Model Patent # ZL 2017 2 0414471.6, Issued in June 2018 in China)

Leadership/Extracurricular Activities

UCLA Bruin Space Club

Co-leader of the software sub-team and Project Overseer 2019.10 –

- Developed a platform for scientific payload using a high-altitude balloon
- Monitoring and controlling the status of the balloon on Raspberry Pi and Xbee
- Planning updated high-altitude balloon launches
- Provided Python tutorial sessions for the new club members

Skills and Interests

- Computer Skills: C, C++, Python, Shell, R, Robot Operating System
- Language: English (fluent), mandarin (native speaker)
- Hobbies: Dual keyboard electone, basketball

Personal Website

https://chendaduan.com