TIANJIAN HUANG

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Carnegie Mellon University, 5000 Forbes Avenue, Pittsburgh, PA 15213

EDUCATION

Carnegie Mellon University 09/2021 – Present
Master of Science in Information Networking PA., U.S.A
Core Coursework: 15513-Introduction to Computer System

The Chinese University of Hong Kong, Shenzhen (CUHK-SZ) 09/2017 – 07/2021
Bachelor of Engineering | Computer Science and Engineering | GPA: 3.65/4.00, Ranking: Top 10% Shenzhen, China
Core Coursework: Operating System, Distributed & Parallel Computing, Software Engineering, Database System, Robotics System

SKILLS AND PROFICIENCIES

Programming Languages	C/C++, Python, MATLAB, HTML, CSS, Java, JavaScript, MySQL, SQLite
Frameworks and Tools	**System**: Linux, Shell, MPI, OpenMP, Socket, Git, GCC, GDB; **Robotics**: Robot Operating System (ROS), Gazebo; **Full Stack**: Flask, React, Bootstrap; **Data Science**: Process Mining (PM), Disco, ProM

RESEARCH PROJECTS

Educational Process Mining (EPM) (https://riss.ri.cmu.edu/research_showcase/) 06/2020 – 08/2020
Research Scholar | Advisor: Dr. Jack Mostow | Robotics Institute, Carnegie Mellon University (https://riss.ri.cmu.edu/)
- Published on *RISS Journal 2020*: *Using Process Mining to Analyze Children's Interactions with RoboTutor*.
- Analyzed log data of RoboTutor (an Android tablet tutoring APP) with educational process mining (EPM), and summarized children-tutor interaction behavior patterns.
- Extracted data from RoboTutor VERBOSE logs, converted JSON log data to CSV event logs with Python and Excel; created process models for RoboTutor's log data with Disco (a process mining tool), and integrated process models with event log data.

Mini Auto Race Car (https://github.com/MARC-Project) 06/2019 – 01/2020
Project Leader | Advisor: Tin Lun Lam | Robotics and Artificial Intelligence Laboratory, CUHK-SZ (https://rail.cuhk.edu.cn/)
- Built a Linux environment for running Robot Operating System (ROS) on Raspberry Pi 3 Model B, and tailored ROS packages to increase image processing speed from 5 FPS to 10~15 FPS.
- Set up a simulation platform using Gazebo simulator, and constructed a 3D testing car model in Gazebo using URDF.
- Developed visual navigation algorithms on a real hardware platform in order to conduct global path planning using monocular vision and Quick Response (QR) codes.
- Oversaw project progress, and managed the project on GitHub.

Analytical Research and Server Maintenance Practices 10/2018 – 05/2019
Intern | Shenzhen Research Institute of Big Data, China
- Analyzes Wi-Fi traffic patterns in public areas (like libraries), and used Bayesian estimation to calculate probability of students conducting academic or recreational activities.
- Conducted an experiment and a survey to find out "distribution of internet usage" (prior distribution) and "distribution of data when studying/playing" (likelihood); cleaned and processed all acquired data.
- Performed routine maintenance of intranet servers; refactored backend code in Python to enhance website stability.

COURSE PROJECTS

15-513 Introduction to Computer System 05/2021 – 08/2021
Individual Labs
- Wrote a simplified dynamic memory allocator (malloc) library. Implemented with segregated free list, footer elimination, and mini-blocks design. Memory utilization is 27% higher than the implicit free list version.
- Implemented a Linux shell program. The shell program supports process management, job control, and I/O redirection.
- Constructed a Web proxy server that supports concurrent client requests and up to 1MB Web cache.

Campus Food Ordering System (https://github.com/CSC4001/Campus-Food-Ordering-System) 03/2020 – 05/2020
Group Project | Project Leader & Backend Engineer
- Built a website for ordering food and delivery services via Flask, Vue.js, and SQLite.
- Enabled role-based access control by defining designated rules and management systems for customers and business admins, and realized secure storage of trade records.
- Oversaw team progress, and motivated team members to complete assigned tasks.

C++ Game AI Design & Implementation (https://github.com/csc3002/project) 03/2019 – 05/2019
Individual Project
- Developed a flight chess game for up to four human players or computer players.
- Integrated strategic analysis and optimization logics to find optimal moves of the computer player's AI, based on the MiniMax search tree and a dedicated evaluation function.