Jiahao Zhang

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Education

University of Illinois Urbana-Champaign — Aug 2022 – Expected Dec 2023

Master in Electrical & Computer Engineering | GPA: 3.8/4.0 — *Champaign, IL*

Zhejiang University — Aug 2019 – July 2022

Bachelor in Automation | GPA: 3.9/4.0 — *Hangzhou, Zhejiang*

Experience

Software Engineer Intern, Tencent | [Link] — Oct 2022 – Jan 2023

More Fun Studio — *Remote*

- Developed a customized collision system in Unreal 5 using C++.
- Created two custom object movements and an object management system.
- Conducted performance analysis and optimization of the system resulting in a 10% improvement.

Research Assistant, Zhejiang University | [Paper] — Mar 2021 - May 2022

Supervisor: Prof. Yan He — *Hangzhou, China*

- Led a team in the development and publication of a semantic topological map that represented the types of objects in a scene and their relative relationships to one another.
- Implemented an image processing pipeline to extract objects and relations between them, and iteratively updated relations to improve map accuracy.
- Developed of a custom Mask-RCNN Net in TensorFlow, and deployed the entire process on Ubuntu using the Robot Operating System (ROS).

Projects

Reliable Packet Transfer Protocol based on UDP | [Link] — Oct 2022

University of Illinois Urbana-Champaign — *Champaign, IL*

- Transferred packets using UDP sockets in C/C++ following a similar state machine as TCP.
- Tolerated packet drops and allow other concurrent connections.

Image Rasterization | [Link] — Feb 2023

University of Illinois Urbana-Champaign — *Champaign, IL*

- Rasterized triangles, using Digital differential analyzer (DDA) algorithm. Supported depth buffer, sRGB - RGB conversion, and frustum clipping.
- Rasterized lines, using Bresenham's line algorithm. Drew an 8-connect line between the two given vertices.
- Rasterized points, filling all pixels in a given square. Supported depth buffer.

Robots, Drones, and Robotic Arms Control | [Link] — May 2022

Zhejiang University — *Hangzhou, China*

- Applied RRT_STAR and DWA algorithms for trajectory planning in Gazebo.
- Built a drone from scratch and used the proportional–integral–derivative (PID) algorithm to maintain its hover and resist external interference.
- Modeled the robot through the use of positive and inverse kinematics allowing for positioning and posing the robot arm along a given route.

Wireless Tracking Charger based on Computer Vision | [Link] — Nov 2021

Zhejiang University — *Hangzhou, China*

- Developed a wireless tracking charger that can detect the location of a phone on a table and move the charger to the phone for charging.
- Archived visual recognition and coordinate extraction using OpenCV.
- Used Arduino to receive data, send out signals, and control motors.

Skills

- **Programming Languages**: C/C++, Python, JavaScript, SQL, Matlab, Bash Script
- **Relevant Coursework**: Computer Network, Distributed System, Database System, Data Structures, Computer Vision, Computer Graphics, Game Development, Artificial Intelligence/Machine Learning, Robotics, Embedded System