XINYUAN (Jack) ZHAO
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POSITION OBJECTIVE

- Software Engineer Intern, Summer 2022

EDUCATION

University of Pennsylvania, Philadelphia, PA — Expected: 09/2020 - 05/2023

- M.S. in *Computer and Information Science*
- M.S. in *Mechanical Engineering*, with Concentration in *Robotic Systems*
- Cumulative GPA: 3.95 / 4.0

Boston University, Boston, MA — 09/2016 – 05/2020

- B.S. in *Mechanical Engineering*, Minor in *Computer Science*, Cumulative GPA: 3.78 / 4.0

EXPERIENCE

Amazon | ***Software Development Engineer Intern,*** Seattle, WA — 06/2021 - 08/2021

- ❖ Developed a **full-stack** Change Events Auditing system for monitoring services in prod and under development.
- ❖ Designed architecture and data schema, used AWS Lambda with **Java** to build backend for events ingestion.
- ❖ Used **Spring MVC**, **React.js**, **ElasticSearch**, and **Redux** to build UI and the query controller. Integrated with the CI/CD pipeline service to make it a highly scalable system for collecting thousands of different change events each week.

Boston University | Material Robotics Lab, ***Research Assistant,*** Boston, MA — 03/2019 - 05/2020

- ❖ Led a team of 4 to design an origami inspired soft robotic arm that can perform surgical tasks during endoscopy.
- ❖ In charge of designing an Electromechanical Control System with a Graphical User Interface. (**Arduino**, **tkinter**)
- ❖ Delivered a fully functional system prototype including the robotic arm, actuators, control system and UI.

SELECTED PROJECTS

PennCloud - Distributed Cloud Platform with Fault-Tolerance — 12/2021

- ❖ Designed and Built a full-stack distributed system with storage and webmail services using **C/C++** and **gRPC**.
- ❖ Implemented TCP-based HTTP servers with user login, load balance, cloud storage and SMTP mail services.
- ❖ Implemented distributed key-value store with master management, primary-based replication, and fault-tolerance.
- ❖ Built an Admin console to monitor multi-server status. Guarantees crash fault tolerant and sequential consistency.

Face Swapping in Video — 12/2021

- ❖ Automated process of face swapping for any pair of videos with faces employing tools from OpenCV and Dlib.
- ❖ Applied **Triangulation, Image Warping** and **Poisson Blending** algorithms to smooth the edges. Optimized facial landmark detection and frame transition using Lucas-Kanade **Optical Flow.**

Custom Wall Following Robot with WiFi Control — 04/2021

- ❖ Built a ESP32 based differential drive robot with WiFi control, autonomous wall following, and grabbing capabilities.
- ❖ Constructed by laser-cut CAD models, self-designed circuits and ultrasonic sensors. Programmed using **Event-driven architecture** with **C++** and developed a web page controller using **Javascript** and **AJAX**.

Lynxmotion Manipulator Motion Planning — 11/2020

- ❖ Developed path planning methods for a 5 DOF Manipulator (Lynx) to pick and place dynamic and static objects. Modeled Lynx Robot using **Forward and Inverse Kinematics**. Implemented **RRT** and **Potential Field** planners.
- ❖ Optimized by Path smoothing and tested in ROS simulation. Achieved a 3rd place in the head-to-head competition.

SKILLS

Programming Languages: C/C++, Python, Java, MATLAB, Javascript
Software Development: Spring, AWS, gRPC/protobuf, Git, Node.js, OpenCV, Pytorch, ROS, Linux
Relevant Courses: Advanced Robotics, Distributed Systems, Algorithm Analysis, Machine Learning, Computer Vision

LANGUAGE

English (Proficient), **Chinese** (Native)

HORNOR

- ❖ **Design Excellence Award** in the Senior Design Project, Boston University