**Xiangzhi Zhao**

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**education**

**Columbia University,** *New York, NY* Sep 2023 – Present

MS, Robotic

* Coursework: Artificial Intelligent, ROS 2, Evolution Algorithm, Machine Learning

**Boston University,** *Boston, MA* Sep 2018 - Sep 2023

BS, Mechanical Engineering

* Coursework: Statistic, Python, Java, Circuit, Engineering Mechanics, Product Design, Machine Learning

**projects**

**LAB ASSISTANCE IN COLUMBIA ROAR LAB**

* Collaborated with PhD at Columbia Roar Lab to design a cable-driven robot aimed at improving balance in patients recovering from strokes
* Adding an extra control at patients’ knee in order to help them maintain their balance on a postural training cable driven robot
* Designed a VR game using the **Unity** engine to enable more effective training for patients

**Extend Kalman Filter**

* Implemented an **Extended Kalman Filter** to estimate state of a mobile robot encompassing its 2D position and orientation, using forward translational and rotational velocity commands
* Overcame the challenge of operating in an environment with gaussian white noise

**ROS2 obstacle avoid simulation**

* Successfully simulated a UR5 robotic arm using **ROS2**, demonstrating advanced skills in robotics and real-time system programming
* Programmed the robotic arm to efficiently move its end-effector from an initial to a final position within 45 seconds and able to avoid different obstacles with **RRT algorithm**

**ROBOTIC STREET ARTIST**

* Act as a team leader and collaborated with 4 other engineering students to manufacture a robotic car able to paint shapes on street
* Used **SolidWorks** designed and tested different parts including chalk holder, and base of vehicle
* Authored a program first converts user-uploaded images into line drawings, then transforms these into vector graphics, and ultimately converts into **G-code**
* Removed non-essential coordinates in **G-code** to enhance robot's drawing speed, improving efficiency in robotic control and algorithm optimization
* Formulated and tested an innovative chalk control system enables chalk to be in a retracted state when not in use for drawing, ensuring efficient resource management and cleanliness
* Engineered a circuit using **an A4988 stepper motor driver, voltage regulator, and Arduino** to control four stepper motors, demonstrating proficiency in electronic design and microcontroller programming

**ARDUINO CONTROLLER**

* Constructed a wearable device by **Arduino** circuit, accelerometer and thermoplastic on wrists able to play Bomber man
* Developed **Arduino** code that converts accelerometer-generated data into directional commands such as forward, backward, left, and right, and simulates these outputs as computer keys

**work experience**

**GE VERNOVA(CHINA) CO., LTD,** *Beijing* Dec 2021 - Apr 2022

GE VERNOVA INTERN

* Participate in GE assembly line with use of their manufacturing robotic arm with focus in production efficiency and achieved improvement in safety and efficiency
* Analyzed electricity distribution and power distribution of 5 newly constructed power turbine projects in the Great Bay area
* Wrote and published a white paper with 10 coworkers about development of Gas power industry in Southern China

**CONTINENTAL INSURANCE BROKERS LIMITED,** *Beijing* Aug 2021 - Nov 2021

OVERSEAS DEPARTMENT INTERN

* Analyzed and collected 3 engineering projects information such as social and natural risks of Chinese fund companies such as Suki Kinari Hydropower Project construction and power plant projects in Southeast Asia
* Utilized **Python** to collect and construe engineering related insurance data and implemented non-life insurance solution for Chinese fund companies, saved 10% of cost

**ICBC RIYADH BRANCH,** *Riyadh* Dec 2019 - Jan 2020

OPERATION DEPARTMENT INTERN

* Managed communication of financial needs between two local Chinese fund companies, local operation engineers and bank
* Visited clients’ mechanical and civil construction sites and studied operation of construction companies

**skills**

Python, MATLAB, SolidWorks, ROS 2, Arduino programming, Good Communication and Group Work skill