# Yulu Zhang

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## Education

**the University of Manchester** Sept. 2024-Sept. 2025(expected)
*MSc in Robotics*

**Shangdong University of Science and Technology**, Qingdao, China Sept. 2020 – Jun. 2024
*Bachelor of Engineering in Intelligent Manufacturing Engineering* *Score Average: 86.60/100*

**Honours & Scholarships**

- University Second-class Scholarship for Academic Year 2020-2021 10/2021
- Merit Student Honor Certificate for Academic Year 2020-2021 10/2021

**Awards**

- First Prize of Food Quiz of Youth Voluntary Activity for UN Food System Summit 09/25/2021
- Excellence Award of the 12th University Engineering Drawing Technology Competition 05/08/2021
- Excellent Award of the 2021 National College Students' English Proficiency Competition 04/2021
- First Prize of the 2020 Singer Competition in the College of Mechanical and Electronic Engineering 03/25/2021
- Excellent Composition Award in 2020 Big Writing Event Under One Topic 12/2020
- Excellent Award of the 16th University Singer Competition 11/16/2020

**Volunteer Certificates**

- Outstanding Volunteer of National College Students Emergency Rescue Knowledge and Skills Drill 10/23/2021
- Outstanding Volunteer of Pay Tribute to "China Doctor" National College Youth Propaganda Volunteer Activity 10/12/2021
- Outstanding Volunteer of Youth Voluntary Activity for UN Food System Summit 9/25/2021
- Volunteer Certificate for "Unite the Force for Good" Fundraising Activity organized by China Foundation for Poverty Alleviation (CFPA) 12/25/2020

## Technical Proficiencies

- **Software**: UGNX10.0, SolidWorks, Keil uVision4, Keil uVision5, STM32CubeMX, RobotStudio, Altium Designer, Proteus
- **Programming Language**: Python, C, VB (Visual Basic), MySQL
- **Practical Application**: Additive Manufacturing, Embedded System Design, Circuit Board Welding, Lathe Machining

## Research Project

**Design of Sag Measurement System of High Voltage Line Based on RTK Positioning Technology** May 2024 – Jun. 2024
*Undergraduate Graduation Design*

- A sag measurement system of high voltage line based on RTK is designed with a line inspection robot as the carrier.
- Through the hanging chain line model and parabolic model, the maximum point of arc droop and the maximum value of arc droop are analyzed, and the parabolic deformation under the centralized load is taken into account to realize the error correction of the maximum value of arc droop.
- A set of user interaction interface based on PyQt5 was designed in Python.

**Designing Visual Sorting Robot Based on RobotStudio for Target Recognition and Grasping** Dec. 25, 2023 – Jan. 12, 2024
*Course: Design of Intelligent Manufacturing System / Score: 86/100*

- Design a conveyor line using RobotStudio and implement object grasping and recognition.
- The robot grips objects on the conveyor line, identifies objects of different colors and places them on the corresponding conveyor belt.
- The robot palletizes the objects and places them on different palletizing trays to achieve sorting of the objects.

**Deep Learning-based Image Enhancement for Unmanned Vehicles** Jun. 2023 – Jun. 2024
*Person in charge of Data Collection and Processing*
*Be selected into the College Students' Innovative Entrepreneurial Training Program*

- The project develops unmanned intelligent image enhancement technology which aims to solve the problems of low quality and blurring of image images acquired by unmanned vehicles during travelling;
- Using computer vision and deep learning algorithms, I analysed the causes of image degradation, data acquisition and processing, deep learning model design and optimisation, as well as image enhancement algorithm development and implementation on image data acquired by driverless cars.

**Elevated Landscaping Project** May 2023 - Apr. 2024

*Organised by Ningbo Runyi Steel Structure Co. Ltd and Ningbo Yinzhou Avenue Viaduct*

- Helped design the anti-leakage assembly structure of the flower box;
- Designed the flower box structure with good assembly stability with the viaduct guardrail, including an automatic watering and drainage system. The anti-leakage assembly effectively prevents water from draining out through the assembly holes and prolongs the service life of the fasteners;
- The design is currently applying for utility models and design patents.

**Multi-functional Conveyor Sorting Device Based on Book Information Processing** May 12, 2023 – Jun. 25, 2023

*Code Writer and Model Trainer*

*Won the Third Prize of Shandong Province Students Electromechanical Product Innovation Design Competition*

- By designing the control principle of the motion part and the control principle of the software part, this project aims to provide a fully automatic and intelligent book-sorting device;
- Created the conveyor running system as a multi-rod side-by-side connection;
- Designed the lifting system as a double platform, with the loading table separated from the sorting table. Controlled by the electric control system, the system is realised by two screw motors rotating to drive the platform up and down;
- Designed the QR code of the books by using the image acquisition system, using the external colour and positioning sensors, and communicating with the main control microcontroller through the serial port.

**Integrated Temperature Measurement and Control System Design** Jul. 3, 2023 – Jul. 9, 2023

*Course: Principle and Application of Embedded System / Score: 83/100*

- Designed an integrated temperature measurement and control system using the Nucleo-F103RB development board, detected the ambient temperature using DHT11, and digitally filtered the detected data;
- Sent the detected temperature values and the set temperature upper and lower limits, respectively, to a 0.96" OLED screen and a computer for real-time display through serial communication;
- Used the keypad for temperature adjustment. If the actual temperature exceeded the limit value, the system would alarm and activate the fan to cool down the temperature.

**Beverage Delivery System Design** Apr. 24, 2023 – Jun. 1, 2023

*Course: Robot and Artificial Intelligence Technology / Score: 95/100*

- Utilised RobotStudio to design beverage triple grippers for crating, palletising and forklift handling. Specifically, the crating robot gripped three bottles at a time and loaded them into crates, the crates were packed and transported via conveyor belts and then gripped for palletising, and finally, the forklift truck forked the pallets away;
- Created and connected smart components for the conveyor belts, suction cups and triple grippers, and forklift, and designed the motion logic, and wrote the programme code to make the robot move.

**Production Line Roller Conveyor Structure Design** Aug. 29, 2022 – Sept. 22, 2022

*Course: Fundamentals of Mechanical Design*

- Calculated the main parameters and main dimensions of the drive parts such as rollers, chain drive, reducer, motor, etc., and made the corresponding selection;
- Applied SolidWorks for structural design and drew the overall assembly and parts drawings of the system scheme;
- Used AutoCAD to draw 5 two-dimensional parts and 1 shaft part, labelled the dimensions, wrote the technical requirements, and finally wrote the design specification.

**Horizontal Gear Oil Pump Parts Mapping** Jul. 5, 2021 – Jul. 11, 2021

*Course: Application of Engineering Drawing-Mapping Parts and Units / Score: Excellent*

- Using analysing the working principle and view representation of a horizontal gear oil pump, I made 5 part sketches, which included the pump body, long and short shafts, gears, pump cover and gland;
- Organised the part sketches into part working drawings, which in turn led to assembly schematics and overall assembly drawings;
- Drew the assembly diagram using AutoCAD.

## Internship Experience

**Konecranes (Shanghai) Company, Ltd., Xiamen Branch**, Xiamen, China Jul. 18, 2022 – Aug. 21, 2022

*Summer Intern*

- Together with the Automation Engineer and the Electrical Engineer, I was involved in the design of the harbour cranes, from the drawing boards to the handover testing of the equipment on site;
- Carried out regular inspections, maintenance, emergency repairs, and overhauls of lifting equipment, and assisted in providing equipment improvement plans and completing service reports.

**POP Smart (Zhejiang) Co Ltd**, Ningbo, China Jan. 17, 2022 – Feb. 13, 2022

*Intern at Technological Research and Development Center*

- Assisted in the design of intelligent equipment and automation equipment;
- Participated in the BIM building information model construction of the project's mechanical and electrical specialty, and cooperated with colleagues in the deepening design of mechanical and electrical, comprehensive optimisation of pipelines, and the application of the results on the ground.

**Ningbo Yonghua Plastic Machinery Manufacturing Co., Ltd**, Ningbo, China Jul. 15, 2021 – Aug. 28, 2021

*Technical Department Intern*

- Mainly responsible for daily product inspection, tracking the problem resolution process in the inspection, marking the status of the products after inspection, and filling in the corresponding inspection record form.
- Participated in designing and maintaining mechanical components of injection moulding machines, as well as developing and improving injection moulding machine machinery.

## Leadership Experience

**College Students Art Troupe | Shangdong University of Science and Technology** Sept. 2020 – Jul. 2022

*Department Director & Event Planner and Implementer*

- Planned and organised several large-scale activities on campus, such as college chorus competition, campus singer competition, New Year's Day gala, welcome chorus, school festival cultural performance;
- As a leader, I assisted in song arrangement and led the participants in daily training; as a member, my singing performances brought many honours to the team and the college.