Kaiwen Lu

Nationality: Chinese
2002
Enschede, Netherland

Titles: Master of Robotics
Languages: *English* IELTS:7.5

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Degrees

2024–2026 | **Master of Robotics**
School · University of Twente

2020–2024 | **Bachelor of Mechanical Engineering**
School · Shanghai Jiaotong University
GPA:3.2/4.0

Project Experience

2025 | **Robot Bed Carrier in Hospital**
Lab · UT
Designed the Cyber-Physical System architecture of the robot and analyzed its real-time performance.
The Kalman filter was applied to deal with the possible situation of wheel slippage that might occur in the robot.
A SLAM algorithm has been designed which can perform relatively accurate path estimation based on the measured landmarks.

2024-2025 | **Weed Removal Robot**
Lab · UT
Designed a semantic map for robot cognition.
Designed the sensor system for robot perception and algorithm for robot navigation.

2024-2025 | **Autonomous Underground Vehicle**
Lab · UT with Rosenxt
A robot has been designed which mimics the way earthworms can move underground through periodic actions.
Different schemes were designed and the 3D model of the most suitable scheme as well as its various variants were established.
Designed a navigation method for the robot to operate underground

Project Experience

2023–2024 | **Robot-arm assisted and powder-delivered metal 3D printer**
Lab · SJTU
Design plane slicing and curved surface slicing methods for 3D models.
Design a path planning software for 3D printing that enables the alteration of the printing path through various parameters.
A control program was designed to control the ABB robot based on the printing path, and the collaborative control between the robot and the powder feeder was accomplished.

2023 | **Topics in Automation and Control Theory: A Comprehensive Research on Adaptive Control Strategies for Robots And Their Performance Analysis And Optimization**
Lab · Online
Researched the demand for similar control methods and determined the research direction
Designed the controller via MATLAB and developed the block diagrams and architectures of the control system
Realized the system on digital platforms and demonstrated the relationship between different aspects
Defined reasonable system parameters and set the required disturbances to the system
Implemented the controller in MATLAB and simulated its behavior, including the stochastic passenger model

Short Resumé

2023 | **Project Designer Intern** — UAES
On site · UAES
Translated engineering documents, specifications, technical documents and reports
Built 3D digital models of components via CAD, drafted the geometry, dimensions and features
Tested the sample stress level with the compression stress tester and dismantled waste parts

Skills

3D Modelling
· UT, SJTU, UAES
Proficient in using SolidWorks and UG NX for modeling and assembling components and parts.

Image Processing and Computer Vision
· UT
Proficient in image processing, stereo vision, and the reconstruction of 2D images to 3D models.

Contorl System Design
· UT, SJTU
Learn to design closed-loop control systems, feedback control, PID control systems, and stable control of system parameters.

SLAM
· UT
Having mastered the basic algorithms of SLAM, generate the working map of the robot by coupling the data of LiDAR and IMU.

Software Development for Robot
· UT
The design of real-time robot system is carried out through Linux, ROS2, C++, and Xenomai.

Kalman Filtering
· UT
Optimal estimation for dynamic system

Robot Studio for ABB robot
· SJTU
Analysis of forward and inverse kinematics of robots, path drawing

Python
· UT, SJTU
Machine Learning, Computer Vision

Matlab
· UT, SJTU

C++
· UT, SJTU

Certificates & Grants

2022 School-level Excellence Scholarship of Shanghai Jiaotong University
2023 IELTS 7.5
2025 Participation Reward for Robot Innovation Tournament

Publications

2023 *Robot-assisted Application in Stroke atient Rehabilitation*, 2023 International Conference on Mechatronic Automation and Electrical Engineering (ICMAEE 2023).

Extracurricular Activities

02/2022-06/2023 **Member, SJTU Dream Maker Club**: Collected and built 3D models via SOLIDWORKS and MAKERBOT

09/2021-09/2023 **Assistant Manager, SJTU College Students Innovation Center**: Took charge of the 3D printer loading and maintenance, assisted in 3D printing coordination

Hobbies

Like to do 3D modeling for the props of movies and video games that interest me.
Keep abreast of the latest developments in technology, and various kinds of robots and mechanical structures.
Express emotions through playing the piano and cooking
Create some small games using the Unity engine.

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