

Yuyang Gao

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EDUCATION

Dalian University of Technology (DUT)

Dalian, China

B.Eng. in Automation, GPA: 94.6/100 (ranking: 1/162)

Sept. 2022-Jun. 2026

- Major Course: Signals and Systems, Analog Electronic Circuit, Digital Circuits and Systems, Motors and Electric Drives, Principle of Automatic Control, Detection Technology and Instrument, Power Electronic Technology

Peking University (PKU)

Beijing, China

M.Sc. in Computer Science and Technology (Incoming)

Sept. 2026

RESEARCH INTERESTS

- Robot Learning, Embodied AI
- Self-Driving Lab, AI Agent

ACADEMIC EXPERIENCES

Self-Driving Lab for Science

Shenzhen, China

RA | Prof. Yonghong Tian, School of Computer Science, Peking University

Nov. 2025 - Feb. 2026

- Participated in developing an autonomous robotic platform for chemical experiments, integrating hardware and software to facilitate automated experimental workflows.
- Leveraged multi-modal models (e.g., SAM, Molmo) to implement vision-guided grasping and pouring, enhancing the robotic arm's spatial perception and interaction accuracy.
- Structured a natural language-driven agent that translates high-level scientific instructions into executable motion trajectories for complex chemical experiments.

Mobile Manipulation Robotics System with Imitative learning

Wuxi, China

RA | Prof. Guyue Zhou, Institute for AI Industry Research, Tsinghua University

Jan. - Apr. 2025

- Participated in Developing a master-slave robotic arm system with 19 degrees of freedom, integrating data from two wrist cameras, one head camera, and joint position sensors to enable end-to-end robotic operation.
- Combined real-world and simulated data to train Imitation Learning models, creating a digital twin simulation environment to bridge gaps between real and virtual scenarios (Sim2Real).
- Applied Action Chunking with Transformers (ACT) to teach the robot generalized fine motor skills, including pick-and-place and hinge door opening tasks.
- Enhanced the system's ability to generalize across diverse manipulation tasks by leveraging multi-source data for robust training.

Autonomous Navigation and Intelligent Control for Unmanned Vehicles Based on SLAM

Dalian, China

Member

Sept. - Dec. 2024

- Engineered a ROS-based mobile robot platform and proposed a solution to the localization and mapping challenges in unknown environments, utilizing active perception to enhance autonomous navigation accuracy.
- Implemented a Simultaneous Localization and Mapping (SLAM) integrating LiDAR, attitude sensors, camera, and encoders for efficient mapping and localization during robot movement.
- Validated the effectiveness of the proposed SLAM system through real experiments, showing notable travel time reductions and navigation accuracy improvements.

Study of Global Optimization of Production Decisions Through 0-1 Programming

Dalian, China

Project Leader

Aug. - Oct. 2024

- Formulated a dynamic decision-making model for component procurement and production process management to optimize decisions across production stages, aiming to enhance long-term enterprise profitability, and designed a sampling inspection plan to reject a batch of components with 95% confidence.
- Constructed a mathematical model using 0-1 programming to optimize multi-stage production paths for profit maximization, achieving cost reductions and increasing production yield by 43.74% through targeted process decision-making that prioritizes high-yield paths.
- Improved yield and profit calculations by adjusting for sampling errors, resulting in yield predictions more closely aligned with actual production outcomes.

- Concluded that the model facilitates profit-maximizing procurement decisions for enterprises by analyzing decision outcomes and profitability under various scenarios.

Autonomous Vehicle Design with Inertial Navigation for Indoor GPS-denied Applications **Dalian, China**
Project Leader May. - Aug. 2024

- Devised an inertial navigation solution using multi-fusion IMU for indoor GPS-denied environments, reducing errors by 90%.
- Implemented a position-tracking system using high-accuracy angle sensors and encoders, mapping encoder data onto the X and Y axes based on angular measurements to compute real-time vehicle position and orientation.
- Executed autonomous navigation algorithms that supported both guided and unguided modes, incorporating seamless state switching for increased robustness.

Design and Development of Versatile Embedded Intelligent Voice System **Dalian, China**
Project Leader Apr. - Jul. 2024

- Created three intelligent voice systems on the ASRPRO platform-Intelligent Voice Clock (FPGA), Smart Home System (STM32), and Intelligent Oximeter (MAX30102), providing versatile applications for intelligent voice control.
- Designed software with micro-controller kits and sensors, and built hardware using laser cutting and 3D printing, effectively integrating voice commands and a UI for the OLED display.
- Enhanced Human-Robot Interaction (HRI) with seamless system communication, creating a user-friendly interface that improved accessibility for elderly and visually impaired users.

Property and Building Conservation Assessment Based on Multi-category Approach **Dalian, China**
Project Leader Dec. 2023 - Feb. 2024

- Developed global disaster risk assessment models, property insurance feasibility, and historical building value, enhancing multi-category conservation strategies.
- Created predictive models using ArcGIS to generate visual risk indicator maps for future scenarios, providing site selection references for historical buildings, insurance companies, and real estate firms.
- Leveraged ArcGIS to visualize risk indicators and provide actionable insights for stakeholders in historical building preservation and real estate planning.

AWARDS & HONOR

National Scholarship Award	Oct. 2025 & Nov. 2024
National 2 nd Prize of the 19th National University Smart Car Competition	Jan. 2025
National 2 nd Prize of China Undergraduate Mathematical Contest in Modeling	Oct. 2024
The 18th iCAN Innovation and Entrepreneurship Competition (Advanced to Nationals)	Oct. 2024
Excellent Academic Scholarship (1 st Class) of DUT	Sept. 2023 & Sept. 2024
Triple-A Student of DUT	Sept. 2023 & Sept. 2024
Provincial 2 nd Prize of TI Cup National College Student Electronic Design Contest	Aug. 2024
Finalist in the Interdisciplinary Contest in Modeling (ICM)	May. 2024
Provincial 3 rd Prize of the LanQiao Cup Electronics Competition	Apr. 2024
HIWIN Scholarship (2 out of 1138)	Nov. 2023

LANGUAGES & SKILLS

Languages: Chinese(native), English (fluent).

Lab & Experimental Skills: ROS system development, EDA & PCB design, Speech recognition and Embedded systems development, Multi Sensor Fusion & SLAM, Algorithms for autonomous navigation, MCU & FPGA programming, Mechanical structure design (AutoCAD) & 3D Print, Mathematical modeling of complex systems, Data processing, Global Optimization.

Programming Tools: C/C++, Python and Assembly language; MATLAB, Inventor, Lingo, Origin, EDA and Multisim.

Certification: Industrial and Information Technology Professional Knowledge Assessment Certificate (Inventor Designer & Industrial Internet embedded development engineer).