Tianyi ZHANG

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Education

Southwest University — Chongqing, China
BEng in Electronic Information Engineering — 09/2018-06/2022
- GPA: 3.34
- Fields of Study: Embedded; Control; Robotics

Duke Kunshan University — Suzhou, China
MS in Medical Physics — 08/2022-06/2024
- GPA: 3.47
- Fields of Study: Medical Imaging; Radiation Physics; Deep Learning

Awards and Recognition

Chongqing Collegiate Programming Contest (ACM), Provincial Second Prize	2019.12
“TI Cup” Chongqing Undergraduate Electronics Design Contest, Provincial Second Prize	2020.10
Mathematical Contest In Modeling/Interdisciplinary Contest In Modeling, Meritorious Winner (<7%)	2021.03
ROBOMASTER University Technical Challenge(RMUT), National Third Prize	2021.05
"Holtek Cup" Chongqing Collegiate Microcontroller Application Design Competition	2021.05
Chongqing College Students' Innovation and Entrepreneurship Training Program Completion	2022.05
ROBOMASTER University Technical Challenge(RMUT), Regional First Prize, National Second Prize	2022.06

Team Experience

Southwest University ACM Team, *Team Member*	2018.11-2019.12
Southwest University GKD Robotics Team, *Embedded Leader*	2020.09-2022.06
Shenzhen DJI Innovative Technology Co. Flight System Department, *Embedded Intern*	2021.08-2022.02
Duke Kunshan University BlueBear Robotics Team, *Software Leader*	2022.12-Present
Duke Kunshan University Edge Intelligence Lab, *Research Assistant*	2023.08-Present

Project Experience

Dart Launcher/Engineering Robot/ Infantry Robot (RMUT Entries) — Chongqing/Hangzhou/Xiamen, China
Embedded Development &Group Leader — 2020.09-2022.06
- Developed and maintained **FreeRTOS-based** dart Launcher and engineering robots; emergency maintenance and debugging of pre-competition programs; led the team to participate in the ROBOMASTER 2021 Central Region and ROBOMASTER 2022 Central Region University Technical Challenge.
- Won the National **Third prize** in ROBOMASTER 2021 University Technical Challenge, **First prize** in ROBOMASTER 2022 University Technical Challenge Regional Competition, and **Second prize** in the National Competition.
- Increase understanding of **FreeRTOS**; preliminary understanding of **flight control**-related algorithms and **robotic arm dynamics** solving methods; darts with its launcher code, engineering mining code has been open-sourced on Gitee.

Explore the method of visualizing ROSbag (Internship) — Shenzhen, China
Team Member — 2021.09-2022.02
- Explore the method of converting the department's customized communication protocol into **ROSbag** and how to visualize it conveniently; Participate in the research of the department's next-generation ROS **visualization** tool; Communicate with the visualization tool teams, such as Foxglove, DJI Shanghai, and so on; Maintain the department's internal ROS format conversion tool.
- The related services cover more than **200** people both internally and externally.
- Exposure to and understanding of **ROS** system and related visualization tools; deployment of related services using **Docker** and **Apache**; understanding of compression methods such as **Flatbuffer**.

Flight sortie log decryption component reconstruction (Internship) Shenzhen, China
Independent Developer 2021.12-2022.02

- Reconstruct the module for **AES** decryption of logs using **RUST**.
- Related services cover **dozens** of people in the department's internal Mavic 3 project team and **dozens** of after-sales business colleagues.
- Increase understanding of **QT** and **OPENCV**; understand AES encryption and RUST network programming; understand compression methods such as **Zlib** and **Quicklz**.

Identifying benign and malignant thyroid tumors from CT images (Graduate Research) Suzhou, China
Algorithm Developer 2023.07-Present

- Compare **CNN**, **VGG**, **ResNet**, **Inception** and other neural networks and deep learning methods to discriminate benign and malignant thyroid **CT** images from the perspective of **2D** and **3D** images; use rigid and non-rigid algorithms to expand the image dataset; assist in designing the network structure through cross-validation methods
- Achieve **80%** accuracy on 2D images and **85%** accuracy on 3D images.
- Understand the difference between 2D and 3D networks; learn the iterative process of different network structures; try to engineer the use of Python.

Brain MRI tissue segmentation (Graduate Thesis) Suzhou, China
Project Leader 2023.09-Present

- Segment the organizational structure of brain images from the perspective of **2D** images and **3D** images through neural networks and deep learning methods such as **UNet**.
- Understand the advantages of multidimensional modelling in image processing; deepen the understanding of the relationship between image dimensions.

Organization Experience

Southwest University GKD Robotics Team, Chongqing, China
Embedded Leader 2020.09-2022.6

- Participated in the application and maintenance of **funds**, **equipment** and **venues** for the team's start-up; responsible for the **selection** and **training** of new team members; explored the team's **flat** and **agile** workflow; led the team to participate in competitions; overall development of embedded software and selection of **technology routes**.
- The team has won many provincial and national awards in **ROBOMASTER, Undergraduate Electronic Design Competition, Internet+/Challenge Cup/Student Innovation and Entrepreneurship Training Program, Software Cup** and other competitions.

Duke Kunshan University BlueBear Robotics Team Suzhou, China
Software Leader 2022.12-Present

- Responsible for the selection and training of new members; participate in the **evaluation** of university-level innovation and entrepreneurship projects; provide technical training for Kunshan Middle School and other schools; overall development of embedded software and technical route selection, and write related technical documents; assist the university's project teams in the selection of new members.
- The team has established stable **technical exchanges** and cooperation channels with many clubs and project teams on campus; participated in many innovation and practice projects; and won many awards in VEX-related competitions and innovation and entrepreneurship projects.

Duke Kunshan University Edge Intelligence Lab Suzhou, China
Research Assistant 2023.08-Present

- Responsible for the selection and training of competitors for the Amazon Web Service Deepracer Self Driving Competition on campus, as well as the **organization** of regular tournaments; involved in the research of technologies related to **reinforcement learning**; involved in the procurement and management of **servers** and other research facilities.
- Successfully organized the first Deepracer technology sharing and project demonstration at Duke Kunshan University, with more than **20** participants and more than **100** visitors; established regular technical exchanges with Amazon Web Service.

Skills & Interests

Natural Languages: Chinese (Native), English (CET-6: 531, IELTS: 7.0)
Programming Languages: C/C++, PYTHON, RUST, MATLAB, JAVA, SQL
Commonly used tools and components: **Docker**, **Git**, Jira/Confluence, TAPD, Apache, **ROS/ROS2**, Webviz/Foxglove, QT, **OpenCV**, **PyTorch**, Tensorflow, Quicklz, Flatbuffer, **FreeRTOS**, **STM32**, ESP8266/ESP32, OPENMV, MSP432