JUNLING TU

Southern Usiversity of Science and Technology, Shenzhen, Guangdong, China, 518055.
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EDUCATION

Southern University of Science and Technology (SUSTech) September 2022 - June 2026
Degree: Bachelor of Engineering in Computer Science and Technology
GPA: 3.75/4.00 (first 5 semesters) **Rank 8/21**
(Supposing 3.97 in the 6-th semester)
Major Courses: Computer Vision (98), Deep Learning (95), Natural Language Processing (97), Operating Systems (94), Computer Networks (91), Algorithms Design and Analysis (90), Machine Learning (91), Signal and System (94), Software Engineering (95), Probability and Statistics (91), Discrete Mathematics (93), etc.

ACADEMIC EXPERIENCES

Controllable Diffusion Model Methods for OCTA Image Generation Feb 2025 - Jun 2025
Southern University of Science and Technology, iMED Group *Shenzhen, Guangdong, China, 518055*
- Introduced **ControlNet** and **CLIP** to the diffusion model to generate OCTA images with controllable features.
- Optimized the details of vessels in the generated images by introducing a new loss function based on **the Kullback-Leibler divergence and Connectivity** of the vessels.
- Visualize the distribution of the latent space to show the relation of the real and the fake images by PCA and t-SNE.
- Improved the quality of the generated images comparing to the baseline model by 16.62% in terms of KID score and 48.25% in terms of FID score.

Disease Progression Prediction Algorithms for PD Mouse Models Sept 2024 - Jan 2025
Southern University of Science and Technology, iMED Group *Shenzhen, Guangdong, China, 518055*
- Explained the uncertianty by VAE and the attention mechanism in the disease progression prediction.
- Developed and maintained the client and server system of disease progression prediction.

National University of Singapore School of Computing Summer Workshop 2024 Jun 2024 - Jul 2024
National University of Singapore *21 Lower Kent Ridge Rd, Singapore, 119077*
- Finish **all the automated programming tasks** of the automated medicine distribution trolley, e.g. gesture / face / medicine recognition, path planning, and obstacle avoidance with limited hardware resources.
- Developed a user-friendly website to control the trolley, allowing users to easily manage the trolley's operations
- Achieved an **A** grade at the joint courses of Machine Learning and Robotics.

PROJECTS

Robotics Vision Project - Robomaster Robotics Competition Apr 2023 - Feb 2024
Vision Team Leader
- (Development) Based on the team's CAF vision framework, integrated a neural network module using a structure-optimized YOLOv7 to infer ROIs, along with a lightweight and efficient digit recognition network. This significantly improved the robustness and accuracy of traditional vision systems under an additional computational cost of less than 8ms per frame. Optimized the EKF filtering algorithm by incorporating acceleration as a state variable in the motion model, enhancing the stability of target tracking. Built a ROS-based framework to eliminate frequent frontend crashes and data desynchronization issues with the backend that occasionally occurred under the CAF framework during debugging.
- (Management)Led the vision project and managed its progress; trained new members in code reading, environment configuration, and program debugging. Coordinated cross-team debugging with electrical and mechanical groups to ensure the reliability of the robot's vision functionality.

Efficient Face Style Changing Program - Deep Learning Dec 2024 - Jan 2025
- Modify the StyleGAN2 output to generate face images with controllable styles.
- Optimize performance for running on a Jetson Nano by adjusting the model and fully utilizing CPU and GPU.

· Introduce the method to extract latent vector of the real-time image by minimizing the distance of the VGG16 Image features (Implmented in a high-performance PC).

Video Conferencing Software - Computer Networks Nov 2024 – Jan 2025

· Implemented TCP and UDP connections using Python's socket library: TCP for real-time text and control communication, and UDP for real-time audio and video transmission.

· Monitored video stream frame rate and latency to dynamically adjust resolution and bitrate, ensuring stream stability.

· Managed port numbers dynamically to isolate different conference sessions; Supported both P2P and Client-Server modes to adapt to various usage scenarios.

SUSTech VSCode Extension - Software Engineering Feb 2025 – May 2025

· Developed the backend in TypeScript to crawl and manage all course file URLs from the university's Blackboard system after SSO authentication.

· Implemented LAN-based collaborative editing using VSCode's Editor API and Yjs, supporting real-time chat and automatic discovery of available servers.

· Standardized and managed the bug-fixing team's Git workflow.

INTERNSHIP

Shenzhen Dajiang Innovation Technology Co., Ltd Apr 2025 - Jun 2025

OBAR Technology Implementation Intern.

· Fix the mis-detection of the pills' track with **CUDA C++**, and optimize the execution process with .ps1 script.

· Responsible for the development, maintenance, and execution of the AR system in the Robomaster competition.

SELECTED HONORS AND AWARDS

National First-class Price of The 22nd Robomaster National Championship	Aug 2023
National First-class Price of 2023 National Robotics Science and Technology Innovation Competition	Dec 2023
Third-class scholarship for excellent students at SUSTech (top 30%)	Nov 2023
Second-class scholarship for excellent students at SUSTech (top 15%)	Nov 2024
2024 Undergraduate Overseas Study Summer and Fall Program Scholarship of SUSTech	Jul 2024

EXTRA-CIRRUCULAR

Leader of the Vision Technology Group in SUSTech Robomaster Team	Jul 2023 - Feb 2024
2024 Songshan Lake Science City Water Sports Carnival Rowing Event - 2nd Place	Apr 2024
Leader of the breaking dance in the SUSTech NOVA Dance Club	Sep 2024 - Sep 2025
Volunteer Services in Shenzhen with 60+ hours of service	Sep 2022 - Present

SKILLS AND INTERESTS

Languages:	Mandarin (Native), English (Fluent) IELT: 7.0 (L7.0 R7.5 W6.5 S6.0)
Programming:	Python, C++, C, Java, MATLAB, CUDA C++
Tools & Frameworks:	git, docker, Wireshark, CMake & PyTorch, Qt, ROS, CAF