Yushan Deng

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Education

Shanghai Jiao Tong University Sep. 2023 - Mar. 2026

Master of Engineering in Computer Science and Technology, 3.3/4.0 GPA
Research Focus: Computer Vision, Diffusion Models, Vision-Language Models, Medical Image Processing

Sun Yat-sen University Sep. 2019 - Jun. 2023

Bachelor of Engineering in Intelligent Science and Technology, 3.5/4.0 GPA
Main courses: Data Structures and Algorithms, Operating Systems, Embedded Systems and Design, Computer Vision, Natural Language Processing, Internet of Things Technology and Applications, Deep Learning, Software Engineering, Computer Networks

Publications

[1] **Deng, Yushan** and Jiang, Yuqiu and Hong, Yi, "DiffLGE: Diffusion-Based Image Generation for Synthesizing Late Gadolinium Enhancement Scans," *2024 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, 2024.

[2] Ye, Huping* and **Deng, Yushan*** and Hong, Yi, "Epicardial Adipose Tissue Segmentation in MRIs Using Text-Prompted Pretraining Model," *2024 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, 2024.

[3] Chaofan Lei, Jun Li, **Yushan Deng** and Xiaojun Tan, "RRT*ASV: Improved RRT* Path Planning Method for Ackerman Steering Vehicles," *Expert Systems With Applications*, 2025, Art. no. 127349.

Projects

Diffusion-Based Image Generation for Synthesizing Late Gadolinium Enhancement Scans [1] 2024

- Proposed DiffLGE, a novel approach that synthesizes high-quality LGE CMR images without gadolinium-based contrast agents by leveraging diffusion models.
- Conditioned the generative network on multimodal inputs (CINE and T1 mapping data) within a stable diffusion framework.

Epicardial Adipose Tissue Segmentation in MRIs Using Text-Prompted Pretraining Model [2] 2024

- Developed a vision-language pretraining model by adapting the Segment Anything Model (SAM) with text prompts, tailored for accurate segmentation of epicardial adipose tissue (EAT) in cardiac MRIs.
- Leveraged multiple public datasets for pretraining and introduced pseudo-labeling for data augmentation, culminating in fine-tuning on a private dataset to address data scarcity issues.

3D Medical Image Report Generation Based on Vision-Language Mixture of Expert Model 2025

- Combined vision-language large models to automatically generate clinical reports for 3D medical images, improving report generation efficiency.
- Optimized the pipeline for 3D medical images and incorporated a mixture of expert models to enhance generation quality.

Path Planning for Vehicles Based on Improved RRT* Algorithm [3] 2023

Undergraduate Thesis

- Integrated Ackermann steering model kinematic constraints to alleviate control layer pressure.
- Employed Dijkstra's algorithm on road network topology models to compute shortest paths, reducing global path planning pressure.
- Optimized RRT* search space and pruned branches to accelerate algorithm convergence.

Intelligent Vehicle Technology Verification Platform 2022

Guangdong Provincial Department of Science and Technology 2020 Major Project

- Built a motion capture and positioning system, deployed the intelligent vehicle embedded system, debugged the intelligent vehicle hardware, and designed the intelligent vehicle line-following algorithm.

One-stop Information Subscription Platform for University Students 2022

WeChat Mini Program

- Developed a platform for publishing class and course announcements as well as managing and notifying students about assignments, effectively addressing the issue of fragmented information among university students.
- Successfully piloted with over 200 users, demonstrating robust performance and an excellent user experience.
- Key contributions: project planning, software architecture design, front-end and back-end development, and white-box testing.

Research on Real-time Detection of Insulator Defects on Transmission Lines Based on a Lightweight Improved YOLOv5s Algorithm 2022

- Developed an automated insulator defect detection approach utilizing an enhanced YOLOv5s object detection model, capable of processing insulator images with varying resolutions captured in complex natural environments via drone aerial photography.

Experience

Guangzhou Zhiwei Technology Co., Ltd., Algorithm Engineer Jul. 2022 - Aug. 2022

- Developed embedded systems for intelligent vehicles with a focus on designing robust path tracking and control algorithms.
- Engineered a dual-lookahead pure pursuit algorithm to enhance vehicle path tracking, resulting in improved turning stability.
- Devised a PID-based front wheel steering control method to mitigate virtual position errors caused by mechanical backlash.

Campus Experience

Shanghai Jiao Tong University, Computer Vision, *Teaching Assistant* Feb. 2025 - Jul. 2025

Sun Yat-sen University, ACM Team, *Competitor* Sep. 2019 - Jul. 2022

- Sun Yat-sen University Programming Contest 2020 Shenzhen Campus Leader
- Sun Yat-sen University Programming Contest Novice Contest 2021 Shenzhen Campus Leader

Sun Yat-sen University, School of Intelligent Engineering, *Organizer* Sep. 2020 - Jul. 2021

Sun Yat-sen University, Baseball Team, *Shenzhen Campus Leader* Sep. 2020 - Jul. 2021

Sun Yat-sen University, will Anime Club, *Shenzhen Campus Core Member* Sep. 2020 - Jul. 2022

Skills

- **Programming**: Python, C++, JavaScript, MATLAB, C#, LaTeX
- **Languages**: Mandarin, English, Cantonese, Japanese
- **Other**: Git, Docker