# Zhiyuan Wu

🏠 Homepage: https://gwu.netlify.app/

Tongji University, No.4800 Cao'an Road, Shanghai 201804, CN

📞 (+86) 189 1734 9073   ✉ gwu@tongji.edu.cn   ⓞ Github Homepage

## EDUCATION

**Tongji University**                                                                                    **Shanghai, CN**
**Bachelor Degree** in Automation                                                        **Sept. 2020 - Jul. 2024**
- **GPA**: 4.44/5.0; 88.8/100
- **Supervisor**: Prof. Rui Fan ; Prof. Peng Qi

## RESEARCH INTERESTS

Computer Vision in Robotics, Medical Robots, Stereo Matching, Scene Parsing

## INTERNSHIP EXPERIENCES

**Airfit (Shanghai) Heating Equipment Co, Ltd**                                        **Shanghai, CN**
Research and Development Assistant                                              **Dec. 2022 - Feb. 2023**
- "Airfit Companion" Remote Controller App Development
  - Optimize the temperature control system with artificial artificial neural network **PID** regulator;
  - Assist in participating in resource allocation and communication and coordination between teams in the whole process;
  - Responsible for R&D material or equipment procurement, management of R&D material warehouse and R&D equipment.

## RESEARCH EXPERIENCES

**Joint Optimization of Stereo Matching and Scene Parsing**            **Supervisor:** Prof. Rui Fan
Research Assistant in MIAS Group, Tongji University                          **Nov. 2021 - Present**
- Transparent Objects: A Corner Case in Stereo Matching (accepted by ICRA 2023)
  - Presented a transparency-aware stereo matching (**TA-Stereo**) strategy that significantly improves the accuracy of disparities on transparent objects.
  - Created a transparent object detection dataset including 260 RGB images and their pixel-level ground truth based on the KITTI Stereo 2012 and 2015 datasets.
  - Conducted extensive experiments with six SoTA deep stereo networks, five semantic segmentation networks, and two salient object detection networks to validate TA-Stereo.

**Portable Robotic Devices for Autonomous Vascular Access**            **Supervisor:** Prof. Peng Qi
Research Assistant in Venibot Group, Tongji University                      **Mar. 2021 - Aug. 2022**
- Design and visual perception for venipuncture robot
  - Affected greatly by the COVID-19 outbreak, venipuncture robots were invented to reduce the working pressures and risks of cross-infection for medical staff.
  - Built 4-DOF and 6-DOF modular robotic arms to puncture, which are guided by the NIR and Ultrasound image segmentation algorithms.
  - Was featured on the front page of the 2021 **MIT Technology Review** and represented my work at the **ASME 2022 46th Mechanisms and Robotic Conference** (there were only four undergraduate teams), as **team leader** and **speaker**.
- Medical equipment for puncturing blood vessels
  - Aided in the creation of medical equipment and system for venipuncture robots, such as the automatic hemostasis system and the painless puncture needle.
  - These were authorized and published by the State Intellectual Property Office of China (CNIPA) as **invention patents**.

## PUBLICATION

[1] **Zhiyuan Wu**, Shuai Su, Qijun Chen, Rui Fan. "Transparent Objects: A Corner Case in Stereo Matching" accepted by **ICRA, 2023**. (**First author**, [paper] [video] [code])

[2] Peng Qi, **Zhiyuan Wu**. "Feedback automatic hemostasis system for medical robot", **Invention Patents**, published. (**First student author**, [paper])

[3] Peng Qi, **Zhiyuan Wu**. "Automatic audit method, system, device and storage medium for multi-lane merge violations", **Invention Patents**, published. (**First student author**, [paper])

[4] Peng Qi, Hongyi Gao, Yiyuan Meng, **Zhiyuan Wu**. "Painless puncture needle and its painless puncture method", **Invention Patents**, published. ([paper])

## CAMPUS EXPERIENCES

**Member, Innovation and Entrepreneurship Club of Tongji University**          **Mar. 2021 - Dec. 2022**
- Plan various group activities of the club, organized and coordinated and publicized the work.
- Responsible for the design and production of advertising banners, propaganda boards, propaganda posters, and invitations of the club.
- Participated in and organized the information exchange meeting of various related industries in the club.

**Member, Student Union of Tongji University**          **Oct. 2020 - Jul. 2021**
- Volunteer in a range of activities including Top 10 Singers Competition and New Year's Day Party.
- Provided service for the public and ensure the smooth running of the event.

## HONORS AND SERVICES

| | |
|---|---|
| **First Prize** in the Intelligent Robot Fighting and Gaming Competition | **Nov. 2022** |
| **First Prize** in the "Challenge Cup" Chinese College Students Entrepreneurship Competition | **Aug. 2022** |
| **First Prize** in the China International College Students "Internet+" Innovation Competition | **Aug. 2022** |
| **Finalist Award** in the 2022 ASME Student Mechanism & Robot Design Competition | **Aug. 2022** |
| **Second Prize** in University Student Competition Five Minute Research Presentation | **Jan. 2022** |
| **Reviewer** of IROS 2023 | **Mar. 2023** |
| **IEEE** membership | |
| **ICRA 2023** membership | |

## SKILLS

| | |
|---|---|
| **Languages** | Chinese (Native), English (TOEFL 105) (28R, 30L, 22S, 25W) |
| **Programming** | Python, C++, C#, Matlab |
| **Libraries** | PyTorch, OpenCV |
| **Hobby** | UAV |