WEICHEN FAN

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EDUCATION

National University of Singapore, Singapore *Aug 2020 - Aug 2022*
Master of Electrical and Computer Engineering CAP:3.75/5.0

University of Electronic Science and Technology of China, China *Sep 2017 - June 2021*
Bachelor of Integrated Circuit Design and Integrated System GPA:3.65/4.0

University of Electronic Science and Technology of China, China *Dec 2017 - June 2020*
Minor in Robotics Engineering GPA:3.82/4.0

WORK EXPERIENCE

Sensetime -**[Full time]** *Aug 2022 - present*
Computer Vision Researcher
- Participating in research of SLAM especially in VO and 3D reconstruction.

Sensetime -**[Internship]** *May 2021 - Aug 2022*
Research Intern
- Participating in research and development of Transfer Learning algorithm especially in Domain adaptation and Domain Genralization.

Lab Ren, National University of Singapore -**[Part time]** *Aug 2020 - Aug 2022*
Research Assistant
- Participating in research and development of Medical Robotics. Supervised by Prof. Ren, Hongliang.

Chinese Academy of Sciences & Taobao, Alibaba -**[Internship]** *Dec 2019 - July 2020*
Researcher
- Participating in research and development of face reconstruction, I mainly worked on the construction of face 3D Morphable Model.
- Participating in research and development of structured light AI chip, I mainly worked on developing 3D vision algorithm.

Machine Sensing and Intelligent Systems Research Center, UESTC -**[Part time]** *Jan 2018 - Nov 2019*
Research Assistant
- Participating in research and development of construction site security monitoring. I mainly worked on the face recognition.
- Participating in research and development of primary screening of body scoliosis. I mainly worked on the human body pose recognition.

PUBLICATIONS

[1]. H. Gao*, **Fan, W.***, L. Qiu, X. Yang, Z. Li, X. Zuo, Y. Li, H. Ren, "SAVAnet: Surgical action-driven visual attention network for autonomous endoscope control", IEEE Transactions on Automation Science & Engineering (T-ASE), 2022.

[2]. **Fan, W.**, Chen, J., Ma, J., Hou, J., & Yi, S. (2022). StyleFlow For Content-Fixed Image to Image Translation. arXiv preprint arXiv:2207.01909.

[3]. **Fan, W.**, Yang, Y., Qiu, K., Wang, S., & Guo, Y. (2022). InvNorm: Domain Generalization for Object Detection in Gastrointestinal Endoscopy. arXiv preprint arXiv:2205.02842.

PROJECTS

- 2021:

[Sensetime] **Data Simulation Platform:**

We proposed a new pipeline for strong data augmentation by generating unseen domain data without supervison. In specific applications, our approach can reduce the cost of data collection by 99%. Our method has been patented as an invention.

[Lab Ren, National University of Singapore] **Task-driven Attention for Autonomous Object-centered Endoscope:**

The project has been published in IEEE T-ASE. We focused on the development of a pipeline for medical robot control. We propose a novel model to control medical robots with visual attention (task-based saliency detection). With our proposed model, the robot can perform complex tasks without human interaction.

- 2020:

[Taobao, Alibaba & Chinese Academy of Science] **3D face Reconstruction:**

This project is supported by Alibaba and Chinese Academy of Sciences, and focuses on building the largest 3D point cloud face database (with 3DMM models) in Asia. We also propose a novel 3D face reconstruction method for several photos, which has been used in an app.

[Ubisoft Hacker Marathon] **Rapid 3D Urban Reconstruction Based on Binocular Vision**

This project, supported by Ubisoft Entertainment, focuses on the rapid reconstruction of cities using low-cost binocular cameras and IMUs. We propose a new pipeline to transfer real scenes to simulated environments (Unity3D) (from real to simulated). Our proposed method first transforms real-world scenes into dense point clouds for further modeling, and then implements the simulation to real conversion via CycleGAN.

- 2019:

[Robocon Robotics Competition] **Tracking High-Speed Soccer Ball in real time**
This project is supported by Machine Sensing and Intelligent Systems Research Center, UESTC. It is a module for soccer robots, developed for commercial use. The module uses a binocular camera with an improved FCN combined with ConvLSTM to recognize the soccer ball and predict its motion trajectory.

[Robocon Robotics Competition] **High-Precision Positioning Module**
This project was developed for the rescue robot project with the support of the Machine Sensing and Intelligent Systems Research Center at UESTC. We propose a multi-robot rescue system. We use LoRa technology for communication and localization between robots. I propose a new approach to optimize the energy consumption of LoRa through reinforcement learning.

AWARD

- **Kaggle** - RANZCR CLIP (Top 34%) — 2021
- **Robomaster Robotics Competition** - First Prize (3/173 worldwide) — 2019
- **Robomaster Robotics Competition** - First Prize (10/173 worldwide) — 2020
- **Robocon Robotics Competition** - First Prize — 2020
- **The Interdisciplinary Contest in Modeling** - Honorable Awards — 2019
- **Outstanding Students Scholarship** — 2018
- **Outstanding Students Scholarship** — 2019