Hao **Sun**

Software Engineer · Computer Vision · VR-platform

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"Aut Caesar,aut nihil."

Summary

I am currenlty a software engineer in Fove.inc, working on vr-platform team. I received my master degree from Tokyo Institute of Technology, supervised by Prof. Kenji SUZUKI. I received my B.Eng degree from the School of Computer Science and Technology, Zhejiang University in 2021. At that time, I am also a member of Chu Kochen Honors College. During the university, I also minored in Religious Philosophy, Zhejiang University. Now my main research interest lies in medical image processing, dose reduction for CT.

Work Experience

Fenlai Intelligent Co.,Ltd. *ShenZhen, China*

Computer Vision Algorithm Engineer (Internship) *Mar.2021 - Jun.2021*

- Smart gym based on computer vision technology.I am responsible for the overall architecture design and algorithm implementation of the group exercise project, and realize the multi-person real-time group exercise scoring and action correction system.
- Edge deployment of deep learning models and load balancing system.
- Technical stack: Python/C++, Model Quantization, Nvidia Triton, Edge Deployment, Pytorch

Hikvision Co.,Ltd. *HangZhou, China*

Computer Vision Algorithm Engineer (Internship) *Sep.2021 - Oct.2021*

- Investigate video-based pedestrian re-identification technology, mainly handling in chaotic scene where most persons wearing same uniform.
- Technical stack: Python, Multi-Media, Machine Learning, Pytorch.

Oppo Japan research center Co.,Ltd. *Yokohama, Japan*

Computer Vision Algorithm Engineer (Internship) *Mar.2023 - Jul.2023*

- Investigate unsupervised optical flow solutions and design deployable real-time unsupervised optical flow algorithms.
- Technical stack: Python, Computer Vision, Pytorch.

FOVE Co., Ltd. *Tokyo, Japan*

Software Engineer(C++) *Nov.2023 - Now*

- Provide software support for Fove headset, mainly working on eye-tracking schema
- Technical stack: C++, Gitlab, AWS, Google Cloud, Machine learning

Honors & Awards

International

2022 **IIR Research Fellow**, Institute of Innovative Research (IIR),Tokyo Institute of Technology *Tokyo, Japan*

Domestic

2018 **2rd Scholarship**, Zhejiang University *HangZhou, China*

Publication

- Generating simulated fluorescence images for enhancing proteins from optical microscopy images of cells using massive-training artificial neural networks,SPIE2023

Research Project

3D hair modeling from 2D sketches *Zhejiang University CAD/CG Lab*

Researcher *2020.7*

- Given a 3D bust model as reference, our sketching system takes as input a user-drawn sketch (consisting of hair contour and a few strokes indicating the hair growing direction within a hair region), and automatically generates a 3D hair model by using three generative adversarial networks, matching the input sketch. All the three networks are trained with synthetic data generated from a 3D hairstyle database.

Fluorescence Images for Enhancing Proteins

Kenji Suzuki Laboratory

Researcher *2022.4*

- Fluorescent staining is a commonly used method in biology to observe the state of cells, but unfortunately most of the dyes used in fluorescent staining will affect cells (mostly lethal), which is not conducive to long-term observation of cells. We propose a method that can reconstruct the fluorescent staining map of two proteins in cells from the DIC image of the cell. Since the acquisition of DIC image is harmless to the cell, compared with the direct acquisition of the fluorescent staining map, our method enables long-term observation of some proteins in cells.

Ultra-low-vision project

Fove.Inc

Programmer *2024.2*

- Develop a project which measure patient with ultra-low-vision visual performance on environmental lighting, motion perception, distance, color, depth perception. The test will be taken by patient for several time in the whole treatment stage to tracking the effectiveness of medical treatment interventions.

Fove VR Platform

Fove.Inc

Programmer *2023.11-Now*

- Maintain vr-platform, which is our underlying framework for running VR and Eye Tracking applications. It contains the drivers, utilities, and developer tools to drive FOVE hardware and software applications. Perform regular maintenance, fix bugs, and provide new features that are easy to use. Most importantly, in the latest release 1.3.x, support for DirectX12 has been added.

Fove-Neu Webcam EyeTrakcer

Fove.Inc

Programmer *2024.9-Now*

- This is a collaborative project with NEU. Different from the commonly used eye tracking technology based on special hardware, we try to use the most common camera for eye tracking. By combining multiple modules such as Mediapipe, Geometry, and depth estimation, we have achieved an eye tracking technology with an average error of 6.27 degrees. We also conducted a comprehensive and objective benchmark and analysis of various existing webcam-based eye tracking technologies.

Education

ZheJiang University

HangZhou, China

B.ENG in Computer Science and Engineering *Sep. 2017 - Jul.2021*

- Selected as a member of Chu Kochen Honors College and won the 2rd scholarship of Zhejiang University.

Tokyo Institute of Technology

Tokyo, Japan

M.ENG in Information and Communication Engineering *Sep. 2021 - Jul.2023*

- Research Fellow from Institute of Innovative Research(IIR)