

# Haofan Wang

Zhejiang University, China

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## Education

### Zhejiang University

Hangzhou, China

B.Eng. with Honors in Artificial Intelligence (Turing Class)

September 2020 - present

- Outstanding honored undergraduate in Chu Kochen Honors College (10%) GPA: 3.86/4
- Selected to Morningside Scholars Program in 2024 (0.6%)
- Fundamental Science Outstanding Talent Scholarship of Zhejiang University

## Project Experience

### ImTooth: Neural Implicit Tooth for Dental Augmented Reality

CAD&CG lab, Prof. Guofeng Zhang

Zhejiang University

April 2022 - April 2023

- "AR+ medicine". Our work fused the modeling and localization ability of neural implicit fields into wearable AR glasses, which decreases the operational complexity and cost of clinical AR compared to high-precision scanning equipment or auxiliary positioning markers, to assist clinical surgery of oral medicine.
- Reconstructed the 3D tooth model using NeuS, a method developed from NeRF. Fused it with our localization method, which employs iNeRF to optimize the rough pose estimation from IMU.
- Modified NeuS by adding depth information to accelerate the reconstruction and adding edge information to improve the quality.

### PNeRFloc: End-to-end Localization by PointNeRF

CAD&CG lab, Prof. Zhaopeng Cui

Zhejiang University

April 2023 - June 2023

- Our work is a localization method inspired by PointNeRF (CVPR 2022 Oral) and Hloc (winner of the CVPR 2020 challenge), which utilizes the point features in PointNeRF to attain a rough initial pose by PnP and optimizes it using the rendering ability of NeRF.
- Compared our work to related research like Lens and Coordinate, carried experiments to verify the improvement in accuracy compared to those previous end-to-end methods.

### Unseen Object Grasp

Grasp lab, Prof. Huixu Dong

Zhejiang University

July 2023 - Present

- A project by myself at the School of Mechanical Engineering, aiming to achieve a robust robot system for dynamic and clustered unseen object grasping.
- Learned some missing classes in this new area, read and implemented some related articles.
- Currently, I'm building my system and trying to refine it afterward.

### Course labs

College of Computer Science and Technology

Zhejiang University

September 2021 - current

- Machine Learning: Handwriting numerals recognition on mnist. Implemented or utilized traditional machine learning methods like SVM, and deep neural networks like MLE, CNN, etc. Added tricks like data augmentation, feature extraction by VAE, etc.
- Computer Graphics: Designed a 3D horror game from scratch using opengl. Audio, action, collision detection, etc. were added.
- Computer Organization and Design: Designed and implemented a five-stage pipelined CPU with interruption on FPGA using Verilog.
- Operating System: Built a mini Linux kernel from scratch in Ubuntu, guided by Prof. Wenbo Shen.
- Database system: Built a small database system with teammates, guided by Prof. Jianling Sun.

## Publications

ImTooth: Neural Implicit Tooth for Dental Augmented Reality

Hai Li, Hongjia Zhai, Xingrui Yang, Zhirong Wu, Yihao Zheng, Haofan Wang, Jianchao Wu, Hujun Bao, Guofeng Zhang

IEEE Transactions on Visualization and Computer Graphics (2023) pp. 1–10. 2023

## Languages

English IELTS 7.0

## Skills

**Programming** Python (PyTorch, Cuda), C/C++, Java, Html, etc.

**Miscellaneous** Linux,  $\LaTeX$  (Overleaf/R Markdown), Microsoft Office, Git.

References available upon request.