Hao Zhang

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EDUCATION

Hong Kong University of Science and Technology Hong Kong
Master of Philosophy in Computer Science and Engineering 2023, Sep. – Current

Hong Kong University of Science and Technology Hong Kong
B.S. in COSC and MATH 2019, Sep. – Jun. 2023
MGPA: 3.655/4.3

Honors/Awards:

- First Class Honors.
- Dean's List for the School of Engineering (4): 2020 Spring, 2021 Spring, 2021 Fall, 2022 Spring.
- University's Scholarship Scheme for Continuing Undergraduate Students

The University of California, Berkeley Online
Summer Session 2022 summer

Publications

- **Hao Zhang***, Yanbo Xu*, Tianyuan Dai*, Yu-Wing Tai, Chi-Keung Tang. **"FDNeRF: Semantics-Driven Face reconstruction, Prompt Editing and Relighting with Diffusion Models."** Accepted by Thirty-seventh Conference on Neural Information Processing Systems (NeurIPS 2023)
- **Hao Zhang***, Tianyuan Dai*, Yu-Wing Tai, Chi-Keung Tang. **'FLNeRF: 3D Facial Landmarks Estimation in Neural Radiance Fields'** CHAMPION of Final Year Project Competition 2022-2023**,** IEEE (Hong Kong) Computational Intelligence Chapter

Research Experience

Junior Research Assistant in the Department of Computer Science and Engineering at HKUST
Supervisor: Prof. Chi-Keung Tang 2023 Jun. – 2023 Aug.

- **"FDNeRF: Semantics-Driven Face reconstruction, Prompt Editing and Relighting with Diffusion Models."** . In this paper, we propose Face Diffusion NeRF (FDNeRF), a new generative method to reconstruct high-quality Face NeRFs from single images, complete with semantic editing and relighting capabilities.

Bachelor Final Year Thesis at HKUST
Supervisor: Prof. Chi-Keung Tang 2022 – 2023

- **'FLNeRF: 3D Facial Landmarks Estimation in Neural Radiance Fields'** . This paper presents the first significant work on directly predicting 3D face landmarks on neural radiance fields (NeRFs). Expression augmentation is applied at facial features in fine scale to simulate large emotions range including exaggerated facial expressions (e.g., cheek blowing, wide opening mouth) for training FLNeRF.

Undergraduate Research Opportunity Program at HKUST
Supervisor: Prof. ZHANG, Han 2021 Summer

- Constructed the graphs to represent the social survey data; Applied models (GCN, GAT, GraphSAGE and HinSAGE) on the graphs to recover the missing data and predict the choices respondents may choose; Incorporated the sentence embeddings of questions and answers in the heterogeneous graph, which improves the prediction accuracy of missing data.

ACADEMIC PROJECTS

Texture-based 3D Model style transfer, Course project COMP5214, HKUST 2022 Spring
Instructor: Prof. CHEN, Qifeng

- Transferred the texture style with awareness of the geometry of the 3D model. UV mapping is used to unfold 3D object to a 2D texture image.
- Can be applied to improve the coherence between the texture of a 3D object and the background texture when constructing a 3D animation scene.

Sentiment analysis of Twitter dataset using LSTM and BERT *(COMP4211)* 2021, Sep. – 2021, Nov.

- Classified the sentences from the Twitter dataset as "Negative", "Positive" , "Neutral" and "Irrelevant"
- Compared the performance of LSTM and BERT according to the accuracy.

3D reconstruction and tracking objects in videos *(COMP4901T)* 2021, Sep. – 2021, Nov.

- Utilized epipolar correspondences, triangulation and parallax to reconstruct 3D object sparsely and densely.
- Applied Lucas-Kanade Tracker on an Image Pyramid to track the moving object in the video.

PROFESSIONAL EXPERIENCE

Student Tutor of ENGG1100, HKUST *(Part-Time)* 2020, Sep. – 2021, Jan.

- Assisted students with academic difficulties by providing instructions on the course content.
- Host several Q&A sessions about the technical issues of using Arduino and provided advice in robotics design.

SKILLS

Skills:

- Programing: C/C++, Python (Pytorch, Numpy, Scikit-learn), Java, SQL, MATLAB:
- Mechanical: SolidWorks, 3D Printing

Related Courses:

- Computer Science: Advanced Deep Learning Architectures, Computer Vision, Computer Graphics, Design and Analysis of Algorithms, Computer Organization, Programming with C++, Object-Oriented Programming and Data Structures, Operating Systems
- Mathematics: Mathematical Analysis, Discrete Math, Linear Algebra, Probability Theory, Differential Equation, Calculus, Abstract Algebra, Statistic, Real Analysis, Multivariable Calculus, Stochastic Modeling, Statistical Machine Learning.

Language:

- Languages: English (IELTS: 7.0), Mandarin