

# Hengguang Zhou

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## EDUCATION

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*Candidate of M.S. in Computer Science*

**University of California, Los Angeles**

present

- Currently undertaking a comprehensive curriculum in Computer Science with a focus on Natural Language Processing

*Honours Bachelor of Science with high Distinction, majored in Computer Science*

2016 – 2021

**University of Toronto, Toronto, ON, Canada**

- **Selected Coursework:** Computer Graphics, Machine Learning, Computer Vision, Linear Algebra, Optimization, Probability, Algorithms, Software Engineering, Graph Theory
- **GPA: 3.79/4.0**
- **Honors:** Dean's List Scholar for Summer 2017, Winter 2018 and Winter 2019

## RESEARCH EXPERIENCE

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*Research Assistant* **DeepSE, Hong Kong University of Science and Technology**

2022

**NLP Team**

- Working on ontology-free visually rich documents understanding under the supervision of Professor Sung Kim and Lucy Park
- Visualized and analyzed strengths and weaknesses of “LiLT: A Simple yet Effective Language-Independent Layout Transformer for Structured Document Understanding” (LiLT) on ontology-free key information extraction task, located the false-positive issue of the model
- Designed regularizers to alleviate the false-positive issue in the LiLT model on the FUNSD dataset
- Secured the third place in VQAonBD (Visual Question Answering on Business Document Images) competition and the fifth place in SVRD (Structured Text Extraction from Visually-Rich Document Images) competition in ICDAR2023

*Undergraduate Research Assistant* **Dynamic Graphics Project, University of Toronto**

2021

**Mesh Convolution Neural Network**

- Working on using attention mechanism and mesh convolutional neural network to improve neural subdivision on mesh under the supervision of Professor Alec Jacobson
- Developed a pooling layer on polygon mesh based on the self-attention mechanism, achieved state-of-the-art performance on classification task on SHREC dataset
- Visualized the resulting mesh of the pooling layer to provide supporting evidence for the effectiveness
- Implemented different variations of the method. Compared, and analyzed the effect with experiment results

*Artificial Intelligence Lab Intern* **School of Software, Tsinghua University**

2018

**Camera Constraint-Free Multi-View Convolutional Neural Network**

- Conducted research in computer vision with a group of graduate students in a top lab in this field under the supervision of Professor Yue Gao
- Built a new feature augmentation method that mitigates the over-fitting issue under the camera constraint-free setting, achieving superior results on 3D shape classification and retrieval tasks on ModelNet40 under the camera constraint-free setting
- Visualized results and analyzed failed experiments for the proposed method to locate dirty data in the database

- Co-authored the paper “DeepCCFV: Camera Constraint-Free Multi-View Convolutional Neural Network for 3D Object Retrieval” AAAI 2019

## **RELATED WORK EXPERIENCE**

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*Intern Research Engineer* **HMI Lab, Huawei Technologies Canada**

2019-2020

### **Mobile Device Projection, Augment Reality Project for User Study**

- Provided a unique mobile devices simulation system for user interaction study of mobile prototype
- Implemented a projector-camera calibration algorithm in Unity to project a virtual phone screen on a simple hand-made paper phone prototype
- Utilized the OptiTrack motion capture system to provide real-time responses for interactions on the foldable phone prototype
- Conducted a foldable device user study

### **VR Video Editing of Regular Field-of-View Videos from 360 Videos**

- Developed a virtual reality application in Unity for creating and editing 2D videos from 360-degree videos in Head-Mounted devices
- Implemented the core function of the system
- Proposed a data structure to record the head movement of users and utilize it to analyze and mitigate motion sickness
- Invented a 3D timeline visualization of spatial and temporal information
- Designed and analyzed potential user interactions in VR editing
- Conducted user study to evaluate the application

## **PUBLICATIONS**

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Zhengyue Huang, Zhehui Zhao, Hengguang Zhou, X.Zhao, Yue Gao. “DeepCCFV: Camera Constraint-Free Multi-View Convolutional Neural Network for 3D Object Retrieval” AAAI 2019.

Gazelle Saniee-Monfared, Kevin Fan, Qianq Xu, Sachi Mizobuchi, Lewis Zhou, Pourang Polad Irani, Wei Li “Tent Mode Interactions: Exploring Collocated Multi-User Interaction on a Foldable Device” MobileHCI 2020

## **SKILLS**

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- Programming Languages: Python, C#, C++, MATLAB, Java, C, Javascript, SQL
- Frameworks and library: Pytorch, Tensorflow, Numpy, Transformers, UnityEngine