Zhuohao Yin

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Education

Hong Kong University of Science and Technology **Sep. 2019 – Jun. 2023**
Bachelor of Science, double major in Data Science and Technology, and Computer Science *Hong Kong*
CGA: 3.73/4.3 (First Class Honors)

Hong Kong University of Science and Technology **Sep. 2023 – Dec. 2024**
Master of Science, Big Data Technology *Hong Kong*
CGA: 3.813/4.3

Skills

Programming languages: Python (Numpy, Pandas, Scikit-learn, Matplotlib, etc.), Java, C++, R, SQL, MIPS, JavaScript
Deep learning frameworks: PyTorch, Tensorflow
Web development frameworks: Django
Languages: Mandarin, English, Cantonese

Research Experience

Visual Word Sense Disambiguation **Oct. 2023 – Dec. 2023**

- Tackled the SemEval-2023 Task 1, the visual word sense disambiguation problem.
- Proposed and implemented a novel CLIP-based VWSD system utilizing multimodal information from external knowledge bases, where Transformer encoders are adopted to fuse multimodal information.
- Extracted key insights on the design of VWSD system architecture.

Preprint:
Zhuohao Yin, Xin Huang, "HKUST at SemEval-2023 Task 1: Visual Word Sense Disambiguation with Context Augmentation and Visual Assistance" (arXiv)

SMCycleGAN: Translating Artistic Portraits to Realistic Visualizations **Oct. 2022 – Dec. 2022**

- Conducted a comprehensive literature review on existing works that aimed to tackle the image-to-image translation problem, including the Conditional GAN (pix2pix), CycleGAN, Art2Real, and relevant variant GAN-based models.
- Proposed and implemented a novel model named Semantically-aware Mask CycleGAN (SMCycleGAN), which adopted the concept of masked adversarial loss, where a pretrained U-Net is applied on each training example to produce a mask that segments the subject from the background, and the subject region induces high adversarial loss while the background region induces low adversarial loss.
- Achieved 16.5% lower Fréchet Inception Distance, and more compelling qualitative results than the CycleGAN.

Preprint:
Zhuohao Yin, "Semantically-aware Mask CycleGAN for Translating Artistic Portraits to Photo-realistic Visualizations" (arXiv)

Analysis and Understanding of User Behaviors in Online Communities **Feb. 2021 – Jan. 2023**
Supervisor: Prof. Xiaojuan Ma, HKUST *Undergraduate Research Assistant*

- Cleansed user activity data on Reddit and computed key statistics using the **Pandas** library.
- Fine-tuned the event-finding algorithm to identify high volume of user activities (posts, comments, and replies) within communities, which are strong indicators of relevant events of interest.
- Conducted a comprehensive and detailed literature survey and drafted the *Related Work* section of the paper, leading to a publication in **CSCW 2023**.

Publication:
Qingyu Guo, Chuhan Shi, **Zhuohao Yin**, Chengzhong Liu, Xiaojuan Ma, "Exploring the Effects of Event-induced Sudden Influx of Newcomers to Online Pop Music Fandom Communities: Content, Interaction, and Engagement", in *Proceedings of the ACM Conference on Computer-Supported Cooperative Work and Social Computing* (CSCW 2023)

Project Experience

Real-time Parking Vacancy Detection System Using Fisheye Cameras **Jun. 2022 – Jun. 2023**

Supervisor: Prof. Gary Shueng Han Chan, HKUST *Final Year Project (Group)*

- Proposed the idea of building a real-time vacancy detection system by exploiting visual information after a thorough survey of existing technologies in smart parking lots.
- Researched and implemented image calibration algorithms on distorted fisheye images.
- Incorporated the YOLOv5 object detection algorithm into our detection pipeline by using Intersection over Union (IoU) to map vihecles to parking spaces.
- Jointly developed a web application with my teammates, which displays the real-time status of each parking space and enables drivers to easily access fine-grained information to locate the vacant parking spaces.
- Won the **best FYP award** in the year of 2022-2023. Details can be found here.

Professional Experience

Department of Computer Science & Engineering, HKUST **Jun. 2023 – Sep. 2023**

Artificial Intelligence Developer *Hong Kong, China*

- Developed and maintained a real-time human pose detection and tracking algorithm based on YOLO and ST-GCN, and deployed it on edge devices such as Nvidia Jetson Orin and Orange Pi 5B.
- Implemented a demo web application to display detected skeleton and predicted action log in real time using the Django framework.
- Extended the project to a multi-camera setup, and produced detailed documentations on prerequisites and running configurations of the project.

LU International (Hong Kong) Limited, Ping An Group **Jun. 2021 – Sep. 2021**

Data Analyst Intern *Shenzhen, China*

- Cleansed and analyzed clients' investment data, making inferences on investment trends and predictions of future performance.
- Conducted client profiling for better portfolio recommendations.
- Produced data visualizations and summary reports for the team's weekly meetings using Excel VBA.

Honors & Awards

- Entrance Scholarship for MSc BDT Program 2023/24, HKUST **Jun. 2023**
- HKUST Best FYP Award in Year 2022-2023, Department of Computer Science & Engineering, HKUST **Jun. 2023**
- Dean's List, School of Science, HKUST **Jun. 2023 & Jan. 2023 & Jan. 2021 & Jul. 2020**
- University's Scholarship Scheme for Continuing Undergraduate Students, HKUST **Dec. 2021 & Dec. 2020**