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Zeyu Xiong

Education

Sep. 2022 – Present **MPhil in Computational Media and Arts**, **The Hong Kong University of Science and Technology**
Advisor: Prof. Mingming Fan, Prof. Xiaojuan Ma
Curriculum GPA 4.00/4.30 (A).

Sept. 2018 – Jun. 2022 **BSc with Honours in Computer Science with Artificial Intelligence**, **University of Nottingham**
Curriculum GPA 3.75/4.00 (First Class).

Professional/Research Experiences

Jun. 2022 – Present **Research Student in APEX Group of HKUST**
Advised by Prof. Mingming Fan

Aug. 2021 – Present **Co-Founder/CTO of Serendipity Tech**
A Start-Up Company focusing on Beauty Makeup Services
Affiliated with the Ningbo Intelligent Technology Research Institute (XBotPark)

Jun. 2021 – Aug. 2021 **Front-End Engineer at Beijing Yashi Information Technology Co.,Ltd**
Built User-Friendly, Social Livestream and Life Sharing Platform for the older adults

Sep. 2020 – Jun. 2022 **Undergraduate Research Assistant in User-Centric Computing Group**
Research project (especially focusing on human-vehicle interaction) management on an undergraduate Research Society, University of Nottingham Ningbo China

Mar. 2020 – Jun. 2022 **Full-Stack Engineer at Xiaocheng Information and Technology Limited**
Developed Various Products to Support Students' Academic and Life Service (website)

Representative Projects

Represented Research Projects

Feb. 2023 – Sep. 2023 **"It is hard to remove from my eye": Design Makeup Residue Visualization System for Chinese Traditional Opera (Xiqu) Performers**
Investigated the practices and challenges of Chinese Traditional Opera Performers' skin problems due to the overuse of heavy metal makeup. Designed, implemented, and evaluated an interactive mobile app (Android and iOS) with state-of-the-art computer vision techniques for visualizing makeup residual around the eye area. Supervised by *Prof. Mingming Fan* and *Prof. Xiaojuan Ma* [11].

Feb. 2023 – Jul. 2023 **OperARtistry: An AR-based Interactive Application to Assist the Learning of Chinese Traditional Opera (Xiqu) Makeup**
Designed, developed, and maintained an AR-based makeup tutorial for Chinese Traditional Opera lovers, by integrating Google Face Mesh to detect facial feature points and apply customized opera face masks. Supervised by *Prof. Mingming Fan* [10].

Jun. 2022 – May. 2023 **FetchAid: Making Parcel Lockers More Accessible to Blind and Low Vision People With Deep-learning Enhanced Touchscreen Guidance, Error-Recovery Mechanism, and AR-based Search Support**
Investigated the practices and challenges that blind and low vision (BLV) people faced in the package fetching process. Designed, and implemented an iOS app that helps BLV people to fetch packages in the parcel lockers. Supervised by *Prof. Mingming Fan* [12].

Jun. 2022 – Dec. 2022 **CoPracTter: An Online Support Tool for People who Stutter in China**
Investigated the special social impact and need for People who Stutter (PwS) in China. Designed, and implemented an online practicing tool to cope with PwS in China. Supervised by *Prof. Mingming Fan* [9].

Jun. 2021 – May. 2022 **AI Composer: Image to Music Style Transformation**
Proposed, designed, and implemented a novel model of music style transfer, by inputting content image and style music. Received the **Distinguished Final Year Project Award of UNNC CS** (3 of 120). Supervised by *Prof. Amin Farjudian* [7].

Oct. 2020 – Dec. 2021 **Face2Statistics: In-Vehicle Multi-modal Predictors via Facial Expressions**
Designed, implemented, and optimized Face2Statistics, an in-vehicle multi-modal Data Stream Predictors through facial expressions only, with advanced sequential processing capability and customization supports for individual drivers [5].

Represented Engineering Projects

Apr. 2023 – Oct. 2023 **Discover Ningbo**
Designed, developed, and maintained an interactive WeChat Mini Program (Taro.JS + React + TypeScript + Node.JS) for beginners to learn Chinese & Mandarin, and understand the traditional culture in Ningbo city. This project was supported by the UNNC language center.

Aug. 2021 – May. 2023 **Serendipity Pobling App**
Designed, developed and maintained a cross-platform app (React-Native) for real-time residual makeup detection by integrating micro camera and deep neural networks. (Patent-pending)

Oct. 2022 – Feb. 2023 **Metaverse for Working Training**
Designed and implemented a VR solution for electric worker training, earned the Champion of Hackathon 2023 (Hong Kong Digital Assets Society), supervised by *Prof. Man Chan* and *Dr. Jenny Zhou*.

Jun. 2020 – Sep. 2021 **uMap**
Designed, developed and maintained a real-time interactive university map (Taro.JS + React + TypeScript + Node.JS) in Wechat mini program for freshmen. Achieved the peak daily page views of over 15K during the orientation week. The uMap is now the official university map for UNNCers.

May. 2020 – Jun. 2022 **uCourse**
Designed, developed, and maintained a WeChat mini program (Taro.JS + React + TypeScript + Node.JS) for convenient curriculum timetable management and course forum discussions for on-campus students. Led the development team of 7 engineers and developed over 10k lines of code. Achieved peak accesses of over 400k for one month.

Side Projects

Mar. 2023 – Sep. 2023 **Interactive Digital Memento: Towards Real-world Features Preserving Digitization for Mementos in Augmented Reality**
Designed and implemented an AR application (in Unreal Engine) for digital memento's reconstruction and reuse the functionalities by authoring in the virtual world. Utilized Microsoft HoloLens 2 for system deployment and user study .

Mar. 2023 – Jul. 2023 **A Comprehensive Survey for Evaluation Methodologies of AI-Generated Music**
Investigated the existing evaluation methodologies of AI-generated music in terms of subjective evaluation, objective evaluation, heuristic evaluation, and combined evaluation. Stressed the benefits and established potential evaluation standards can have for developers and musicologists in various scenarios [8].

May. 2021 – 0ct. 2021 **HUT: High-UTility batched queries under Differential Privacy for IoV**
Designed and implemented a new algorithm to mitigate the harmful effects of DP-protected batch queries in IoV, by leveraging local batch aggregations and order constraints, and evaluated the algorithm with the state-of-the-art DP protection mechanisms, which obtained on average 95.69% reduction in information loss while maintaining strong mathematically-guaranteed privacy protection [6].

May. 2021 – Aug. 2021 **Characterization Study between Drivers' Facial Expressions and Vehicle Status**
Designed and developed a novel algorithm to utilize face mesh for locating and intercepting drivers' facial expressions. Leveraged local binary fitting to select informative feature points from facial images for analysis [2].

May. 2021 – July. 2021 **Emulating Internet-of-Vehicles (IoV) using a Single Machine**
Designed and developed an emulation platform for examining novel Human-Vehicle Interaction techniques in the context of IoV [3]. Examined the applicability and the tradeoffs of Face2Multi-modal, an in-vehicle DNN-driven predictors for drivers' statistics, as a proof-of-concept.

Aug. 2020 – Jan. 2021 **Demystification of the Interactions between Driving Styles & Behaviors**
Implemented a state-of-the-art self-clustering algorithm, DBSCAN, on an open-sourced multi-modal dataset to characterize drivers' hidden behavior patterns for 4 drivers during their 20-min drives. Presented 8 key findings that could contribute to future adaptive and intelligent Human-Vehicle Interaction systems [1].

Feb. 2020 – July. 2020 **BROOK Dataset for Data-Driven Human-Vehicle Interactive Designs**
Built BROOK, a multi-modal and facial video dataset to exploit data-driven techniques for Human-Vehicle Interactive designs. BROOK dataset consists of 7 types of contextual statistics, 3 types of bio-signals and facial videos from 34 drivers during 20-min drives [4].

Publications

[1] Yu Zhang, Wangkai Jin, **Zeyu Xiong**, Zhihao Li, Yuyang Liu, and Xiangjun Peng. 2021. Demystifying Interactions between Driving Behaviors and Styles through Self-Clustering Algorithms. In *Proceedings of the 23rd International Conference on Human-Computer Interactions* ***(HCII'21)***.

[2] Jiahao Wang, **Zeyu Xiong**, Yicun Duan, Junyu Liu, Zilin Song, and Xiangjun Peng. 2021. The importance distribution of drivers' facial expressions varies over time! In *13th International Conference on Automotive User Interfaces and Interactive Vehicular Applications* ***(AutomotiveUI'21)***.

[3] Wangkai Jin*, Xiaoxing Ming*, Zilin Song, **Zeyu Xiong**, and Xiangjun Peng. 2021. Towards Emulating Internet-of-Vehicles on a Single Machine. In *Proceedings of the 13th International Conference on Automotive User Interfaces and Interactive Vehicular Applications* ***(AutomotiveUI'21)***.

[4] Wangkai Jin, Yicun Duan, Junyu Liu, Shuchang Huang, **Zeyu Xiong**, and Xiangjun Peng. 2022. Brook dataset: a playground for exploiting data-driven techniques in human-vehicle interactive designs. In *Arxiv Technical Report-Feb-02 at User-Centric Computing Group, University of Nottingham Ningbo China*.

[5] **Zeyu Xiong**, Jiahao Wang, Wangkai Jin, Junyu Liu, Yicun Duan, Zilin Song, and Xiangjun Peng. 2022. Face2Statistics: User-Friendly Alternatives to In-Vehicle Multi-modal Bio-Sensors. In *Proceeding of the 24th International Conference on Human-Computer Interactions* ***(HCII'22)***.

[6] Junyu Liu, Wangkai Jin, Zhenyong He, Xiaoxing Ming, Yicun Duan, **Zeyu Xiong**, and Xiangjun Peng. 2022. Hut: enabling high-utility, batched queries under differential privacy protection for internet-of-vehicles. In *Arxiv Technical Report-Feb-02 at User-Centric Computing Group, University of Nottingham Ningbo China*.

[7] **Zeyu Xiong**, Pei-Chun Lin, and Amin Farjudian. 2022. Retaining semantics in image to music conversion. In *24th IEEE International Symposium on Multimedia* ***(ISM'22)***.

[8] **Zeyu Xiong**, Weitao Wang, Jing Yu, Yue Lin, and Ziyan Wang. 2023. A comprehensive survey for evaluation methodologies of ai-generated music. In *2023 International Computer Music Conference* ***(ICMC'23)***.

[9] Li Feng, **Zeyu Xiong**, Xinyi Li, and Mingming Fan. 2023. Copractter: toward integrating personalized practice scenarios, timely feedback and social support into an online support tool for coping with stuttering in china. In *ACM CHI Conference on Human Factors in Computing Systems* ***(CHI'23)***.

[10] **Zeyu Xiong***, Shihan Fu*, and Mingming Fan. 2023. Operartistry: an ar-based interactive application to assist the learning of chinese traditional opera (xiqu) makeup. In *The Eleventh International Symposium of Chinese CHI* ***(Chinese CHI'23, Honorable Mention Award)***.

[11] **Zeyu Xiong**, Shihan Fu, Yanying Zhu, Chenqing Zhu, Xiaojuan Ma, and Mingming Fan. 2024. "it is hard to remove from my eye": design makeup residue visualization system for chinese traditional opera (xiqu) performers. In *ACM CHI Conference on Human Factors in Computing Systems* ***(CHI'24, To Be Presented)***.

[12] Klara Zhitong Guan*, **Zeyu Xiong***, and Mingming Fan. 2024. Fetchaid: making parcel lockers more accessible to blind and low vision people with deep-learning enhanced touchscreen guidance, error-recovery mechanism, and ar-based search support. In *ACM CHI Conference on Human Factors in Computing Systems* ***(CHI'24, To Be Presented)***.

Honors & Rewards

Nov. 2023 **Honorable Mention Paper Award in Chinese Chi 2023 – International Chinese Association of Computer-Human Interaction (ICACHI)**

Jan. 2023 **Champion of Hackathon 2023 – Hong Kong Digital Assets Society (HKDAS)**

Jan. 2023 **The Most Innovative Award of Hackathon 2023 – Hong Kong Digital Assets Society (HKDAS)**

Jun. 2022 **Distinguished Final Year Project Award at University of Nottingham Ningbo China**

Dec. 2021 **Head's Scholarship at University of Nottingham Ningbo China**

Jan. 2021 **Coursera Certificate: Machine Learning**

Dec. 2019 **Head's Scholarship at University of Nottingham Ningbo China**