

PEINUAN QIN

+(65) 91561531 ◊ e1322754@u.nus.edu

EDUCATION

Ph.D. of Computer Science, Human Computer Interaction (HCI),

National University of Singapore, Singapore

2024 - Expected 2028

Master of Engineering, Software,

University of Melbourne, Melbourne, Australia

2021 - 2023

GPA: H2A (3.67 / 4.0)

PUBLICATIONS

Zou, R., Yin, S., Song, T., **Qin, P.**, & Lee, Y. C. (2024). Mitigating Ageism through Virtual Reality: Intergenerational Collaborative Escape Room Design. arXiv preprint arXiv:2403.03742.

Jing, Y.*, **Qin*, P.**, Fan, X., Qiang, W., Wencheng, Z., Sun, W., ... & Wang, D. (2023). Deep Learning-Assisted Gait Parameter Assessment for Neurodegenerative Diseases: Model Development and Validation. *Journal of Medical Internet Research*, 25, e46427.

Wang Q*, **Qin P***, Zhang Y, et al. MLAN: Multi-Level Attention Network[J]. *IEEE Access*, 2022, 10:105437-105446.

Wang Q*, **Qin P***, Wei X, et al. ASTS: Attention-based spectrum truncation synthesis for step frequency signals[C]//2022 IEEE 6th Information Technology and Mechatronics Engineering Conference(ITOEC). IEEE, 2022, 6: 1848-1855.

Wei Q, Yuan J, **Qin P**, et al. Numerical investigation of efficient mid-infrared supercontinuum generation and cavity soliton generation based on flattened near-zero dispersion fiber[J]. *Laser Physics*, 2020, 30(8): 085105.

EXPERIENCES

Computer Science Ph.D. — Creativity and Responsibility Attribution in Human-AI Collaboration Feb 2024- Present

Advisor: Prof. Yi-Cheh Lee, NUS, Singapore | Prof. Chi-Lan Yang, UTokyo, Japan

Singapore

- * **GOAL:** Exploring how the AI intervention timing affects human creativity and responsibility attribution.
- * **EFFORT:** Conducted a mixed-method experiment with 120 participants and different AI intervention timing (from the start vs. after initial creation by user) on an idea generation tasks. By distinguishing whether the generated content is socially acceptable or unacceptable, we further explored the issue of participants' attribution of responsibility for the results in human-AI collaboration.
- * **OUTCOME:** The results show that the intervention of AI reduces users' creative self-efficacy, and when AI intervenes from the beginning of a task, it further leads to an decrease in the number of ideas and increase users' dependence on AI-generated content. In responsibility attribution, people are more willing to attribute positive content to AI when generated but will blame themselves for negative content. Our paper *Comparative Effects of AI Intervention Timings on Creativity and Responsibility Attribution in Idea Generation: A Mixed Methods Approach* will be submitted to CHI.

Research Assistant — Enhancing Non-native Speakers' Speaking in Multilingual Communication Mar 2023-Feb 2024

Advisor: Prof. Yi-Cheh Lee, NUS, Singapore | Prof. Naomi Yamashita, Kyoto University, Japan

Singapore

- * **GOAL:** Enhancing the discourse power of non-native speakers (NNSs) in multicultural teams by integrating LLM.
- * **EFFORT:** Built a system named AISA and conducted a mixed-method experiment with 93 participants to assist non-native speakers in real-time communications, integrating with ASR and LLM-powered speaking support.
- * **OUTCOME:** We provided empirical insights for HCI community about how NNS behaves and experience with this kind of AI assistant in real-time scenarios. Our paper *Designing an AI-based Speech Assistant for Enhancing Non-native Speakers' Speaking in Multilingual Communication: A Mixed-methods Study* will be submitted to CSCW in July.

Research Assistant — NLP & Deep Learning

Sep 2022-Feb 2023

Advisor: Prof. Haitao Zheng, Tsinghua Shenzhen International Graduate School, China

Shenzhen, China

- * **GOAL:** Generation of movie commentary & Punctuation addition task for complex texts.

- * **EFFORT:** Initiated and executed the collection and processing of 359,405 commentaries, culminating in the creation of a sizable 173M dataset. Leveraged the GPT-2 model, enhancing its performance by integrating movie titles and summaries for the generation of movie commentary. Proposed and developed a comprehensive, end-to-end trained Chinese punctuation addition model, whose training material was accomplished by over 2GB of Chinese text data, spanning across more than 15 major categories.
- * **OUTCOME:** The generated narration fits the main content of the film and flows logically. Built a preliminary punctuation addition model for multi-category texts.

Research Assistant — Machine Learning & Medicine

Nov 2021-Jun 2022

Advisor: Dr. Xiangmin Fan, Institute of Software, Chinese Academy of Sciences, China

Beijing, China

- * **GOAL:** Deep learning based motion assessment system development.
- * **EFFORT:** Collected and processed patient motion data with Kinect, including smoothing and filtering. Proposed and implemented a novel gait annotation method and led the development of annotation, data cleaning, and visualization tools. Devised a sequential-based gait quantitative assessment algorithm that leveraged rich spatial-temporal features and gait semantic segmentation, and reduced the average error of gait parameter assessment to 3.17%, 17.74% lower than that of previous heuristic algorithms. Introduced 'Key Semantic Positioning Accuracy' for a more comprehensive evaluation of model abilities besides precision, recall, and f1-score.
- * **OUTCOME:** Attained precise gait parameters and decreased the error rate of parameter calculation to 3.17%. Produced Deep Learning Assisted Gait Parameter Assessment of Neurodegenerative Diseases: Model Development and Validation and submitted to JMIR. The product based on our method have received Chinese national medical device registration and is used for commercial purposes.

PROJECTS & COURSE PROGRAMS

Disease Data Website. Built and deployed a disease data website as an agile team scrum master and a developer. Designed the website structure, and built a Nodejs server for normal requests and a Django server for chart generation.

Chatgpt-based NDIS Plan Generation. Designed the website, with a 5-people, that combines the chatGPT to assess for disabilities, according to which the government can subsequently provide appropriate supports to them.

Motivational Model Workflow. Designed and implemented this tool, with a 10-students group, that can help students to build their motivational model when developing software, in which I played the role of backend leader.

Evidence Retrieval and Verification. Constructed a two-stage pipeline, with the first stage using TFIDF and cosine similarity to select a small number of candidates from 1.2 million evidences, then finetuning a Roberta-based model for retrieval from these candidates. In the second stage, a BERT model was finetuned to classify the relationship between the claim and the retrieved evidence.

ACTIVITIES & IMPACT

Technical Sharing. Actively write blog posts in CSDN (the largest developer technology community in China) viewed by over 1,426 k+ developers (over 28.7k+ followers) to help them solve technical problems.

Competition & Campaign. Led a team of 3 to win the First Prize of National Engineering Robot Competition (2019). Won the First Prize in the National Exhibition of the Fifth National College Students Art Festival (2018). Won the First Prize in the Fifth National College Students Art Festival (2018). Won the Top 10 Influencers of the School of Mechanical & Electronic Information 2019.

SKILLS

Engineering Skills Python, Java, C, Javascript, MySQL.
 Data Crawling, Processing, Analysis, Feature Engineering, Visualization.
 Deep Learning with Pytorch, Keras & Machine Learning with scikit-learn.
 Vue, Element-UI (front-end), Nodejs & Django (back-end).