Zhengtai Gou

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Education

School of Interactive Computing, Georgia Tech Sep. 2024-Feb. 2025(Expected)

- Research Visiting Student Working on Extended Reality and Visualisation

Xinya College, Tsinghua University Sep. 2019-Jun. 2025 (Expected)

- Bachelor of Engineering, Dual Degree in Automation and Product Design(Creative Design and Intelligent Engineering)
- GPA: 3.31/4
- Core Courses: Computer Languages and Programming, Data Structure, Signal and System, Theory of Human Computer Interaction, User Experience Design, Pattern Recognition and Artificial Intelligence

Publications

Zhengtai Gou, Yuntao Wang, Nan Gao, Yuchen Yao, Yukang Yan, Yuanchun Shi. "UnlockFear: Predicting Fine-Grained Fear of Heights with Physiological Signals in Virtual Reality For Exposure Therapy." **VR'25, Under Review**

Shaojun Cai, Ashwin Ram, **Zhengtai Gou**, et al, Shengdong Zhao. "Navigating Real-World Challenges: A Quadruped Robot Guiding System for Visually Impaired People in Diverse Environments." ***CHI'24 Honorable Mentioned*** [paper]

Zeng, Xin, Xiaoyu Wang, **Zhengtai Gou**, Yiqiang Chen, and Tengxiang Zhang. "WebJump: AR-facilitated Distributed Display of Web Pages." In *ExtendedAbstracts ofthe 2023 CHI Conference on Human Factors in Computing Systems* [paper]

Research Experiences

Immersive Visualisation&Interaction Lab, Georgia Tech August 2024-Present

Advisor: Prof. Yalong Yang

Project: Enhancing Collaboration in Immersive Analytics with Summarized Semantic-Aware Replay in Virtual Reality(Ongoing project, first author)

This project aims to automatically generate immersive summarizedplaybacksfor visualization tasks, so as to enhance collaboration and task understanding.

- Proposed the research idea of semantic-aware VR replay for immersive analytics task understanding and collaboration.
- Conducted holistic literature review on provenance tracking and VR playback over 50 relevant literatures.
- Implemented the replay technique in VR for visualisation tasks, capturing user interactions and locomotion.
- Explored an optimization-based segmentation algorithm to generate summarized replay, incoporating user attention, cognitive load and interaction provenance with VLM-based scene understanding.

Pervasive Human Computer Interaction Laboratory, Tsinghua University Jan. 2023-August 2024

Advisor: Prof. Yuntao Wang

Project: UnlockFear: Predicting Fine-Grained Fear of Heights with Physiological Signals in Virtual Reality for Exposure Therapy(VR'25 Under Review, first author)

The project innovated an approachfor emotional measurement by presenting afine-grained modelpredicting real-time fear ofheight level with physiological signals in VR environment.

- Implemented a VR height simulation application with synchronized multi-modal physiological signal recording. Designed and conducted user experiments for 25 participants that generates a 30+ hour physiological dataset.
- Constructed individual and cross-user fear prediction models with high performance, explored impact of sensor combination, individual differences and transfer learning procedure between individual/ cross-user models.
- Conducted adaptive automated exposure therapy evaluation based on predicted fear levels, proved the superiority of this method compared to non-adaptive therapy through controlled user study.

Human Computer Interaction Lab, National University of Singapore June 2023-August 2023

Advisor:Prof. Shendong Zhao

Project: Navigating Real-World Challenges: A Quadruped Robot Guiding System for Visually Impaired People in Diverse Environments (CHI'24 Honorable Mentioned, third author)

The project builds a robot guiding systemfor BVIpeople that's suitablefor diverse environment incorporating multiple feedback methods.

- Designed and prototyped the interactive interface of the guiding system which featured voice interaction and force feedback.
- Integrated the interactive interface to the robot guide dog system via hardware design and ROS communication.
- Conducted user study and participatory design with 13 visually-impaired participants, undertaking in-depth interviews and data collection.
- Worked on physiological data collection and analysis using Empatica 4 to measure user cognitive workload.

Institute of Computing Technology, Chinese Academy of Sciences Dec. 2022-February 2023

Advisor:Prof. Tengxiang Zhang

Project: WebJump: AR Facilitated Distributed Display of Digital Content (CHI Late-Breaking Work 2023 ,third author)

The project proposes a development framework that allows web-page elements redistribute and interact in AR space

- Worked on cross-device development and gesture interaction in AR on Hololens platform.
- Conducted holistic literature research on distributed user interface and utility of AR in cross-device scenarios.
- Prototyped AR space web-page html content visualization in Unity.
- Contributed to physical screen detection and location in AR through QR-code anchors.

Course Projects and Extracurricular Projects

VR-controlled Selfie Robot with Raspberry Pi and Oculus Quest platform:

The project proposed a human-robot interaction system using VR platform as input source

- Built connection between Raspberry Pi Robot and Quest using UDP communication.
- Implemented basic movement control,dancing and photographing control with VR headset and controller

"Reshaping Agricultural Heritage in Metaverse" Training Camp:

The project exploredpossibilities ofpreserving agricultural heritage in meta-verse with hands-on immersive experiences

- Exhibited the Bangladesh floating garden agriculture practices with an educational and experience-oriented game on Roblox platform.The game later won prize from Roblox China
- Participated as team leader and programmer

Oxford Study Abroad Programme Artificial Intelligence and Machine Learning Course:

- Systematically learned fundamental machine learning theories and models,familiarized with sk-learn and Tensorflow

Awards and Activities:

- **Award of Academic Improvement by Tsinghua University 2021-2022**
- Core Member of Xinya International Communication Association 2020-Present
- Member of Tsinghua University Football Team 2020-2021

Skills:

- Programming in C,Python and C#,highly familiar with Unity platform
- Interest and solid experience in signal processing
- Knowledge of hardware and embedded system development, internship experience as embedded system engineer
- Highly experienced 3D modelling with Rhino and Solidworks
- Proficient English and academic English writing.IELTS:0verall 7.5,Reading 8.5,Writing 7.0,Listening 8.0,Speaking 7.0