Xiang Chang

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EDUCATION

Cornell Tech (Cornell University)–New York, NY   Aug. 2024–May. 2026
Jacobs Technion-Cornell Dual Master of Science Degrees – Connective Media Concentration   4.0/4.3

Sichuan University (SCU)–Chengdu, China   Sept. 2019–July. 2023
Bachelor of Management in Information Resource Management   3.75/4.0

PUBLICATIONS

[1] **Xiang Chang**, Zhijie Yi, Yichang Liu, Hongling Sheng, Dengbo He. 2025. The Formation of Trust in Autonomous Vehicles after Interacting with Robotaxis on Public Roads. (ASPIRE 2025). https://doi.org/10.1177/10711813251358236

[2] Chishang Yang, **Xiang Chang**, Debargha Dey, Zhuoqi Xu, Avi Parush, and Wendy Ju. 2025. Socially Adaptive Autonomous Vehicles: Effects of Contingent Driving Behavior on Drivers' Experiences (AutomotiveUI 2025). https://doi.org/10.1145/3744333.3747814

[3] Zhenyu Wang, Haolong Hu, Weiyin Xie, **Xiang Chang**, Peixuan Xiong, and Dengbo He. 2025. Exploring User Needs in Fully Driverless Robotaxis: A Think-Aloud Study of First-Time On-Road Rides (AutomotiveUI 2025 Works in Progress).https://doi.org/10.1145/3744335.3758506

[4] **Xiang Chang**, Zihe Chen, Xiaoyan Dong, Yuxin Cai, Tingmin Yan, Haolin Cai, Zherui Zhou, Guyue Zhou, and Jiangtao Gong. 2024. "It Must Be Gesturing Towards Me": Gesture-Based Interaction between Autonomous Vehicles and Pedestrians. (CHI 2024). https://doi.org/10.1145/3613904.3642029

[5] Xinru Tang, **Xiang Chang**, Nuoran Chen, Yingjie Ni, RAY LC, and Xin Tong. 2023. Community-Driven Information Accessibility: Online Sign Language Content Creation within d/Deaf Communities. (CHI 2023). https://doi.org/10.1145/3544548.3581286

[6] Jin, Rongxin; Liu, Yifan; Yang, Lichen; and **Chang, Xiang**, "Influencing factors of resident satisfaction in smart community services: An empirical study in Chengdu". (ICEB 2022). https://aisel.aisnet.org/iceb2022/25

[7] Li, Chenyu; Sun, Chengxi; **Chang, Xiang**; Liang, Luoming; Ma, Yao; and Ke, Fan, "Study on the Influencing Factors of Health Information Sharing Behavior of the Elderly under the Background of Normalization of Pandemic Situation". (ICEB 2021 Best Paper). https://aisel.aisnet.org/iceb2021/48

WORKING MANUSCRIPTS

[1] Jiangtao Gong, Yueteng Yu, Yancheng Cao, Ruoxuan Yang, **Xiang Chang**, Haoming Tang, Xiaoji Zheng, Yiyao Liu, Shanhe You, Chen Zheng, and Guyue Zhou. 2025. An EEG Dataset for Understanding Driving Expertise from Naturalistic Urban Road Experiments. (Scientific Data Under Review). https://github.com/AIR-DISCOVER/ExpertDrivingDataset.git

[2] Zhijie Yi*, **Xiang Chang***, Yueteng Yu, Xinyu Yang, Junrong Lu, Yiyao Liu, Ye Jin, Mengdi Chu, Jingli Qin, Jialin Song, and Jiangtao Gong. 2025. From Driver to Passenger: Understanding Evaluation Gaps in 'Fantastic' Driving Behaviour Delivery. (CSCW 2026 Under Review).

[3] Yuanchen Bai, Zijian Ding, Shaoyue Wen, **Xiang Chang**, and Angelique Taylor. 2025. From MAS to MARS: Coordination Failures and Reasoning Trade-offs in Hierarchical Multi-Agent Robotic Systems within a Healthcare Scenario. (AAAI 2026 Under Review). https://arxiv.org/abs/2508.04691

[4] Zhenyu Wang, Weiyin Xie, Haolong Hu, **Xiang Chang**, Meng Sun, and Dengbo He. 2025. Users' Trust Evolvement in Fully Driverless Robotaxis During First Ride: An On-road Study. (Human Factors Under Review).

RESEARCH EXPERIENCE

Visiting Student Researcher, Stanford University   Jun. 2025–Aug. 2025
Mind-Wandering Detection in Automated Urban Driving
Advisor: Dr. Rebecca Currano & Mark Cutkosky
- Designed a follow-on VR automated-driving experiment contrasting urban and lower-complexity road contexts to probe mind-wandering under reduced control demands.
- Built a real-time data pipeline that integrates Unity with eye tracking (gaze and pupil) and PPG, including automatic event tagging and synchronized timestamps using Tobii XR SDK, Polar SDK.
- Implemented IBI and HRV feature extraction (for example, RMSSD and SDNN) with artifact handling in NeuroKit2, producing analysis-ready logs.   (In Progress)

Graduate Researcher, Cornell University   Aug. 2024–Present
Multi-Agent Robotic Systems for ER Onboarding (Healthcare MARS)
Advisor: Professor Angelique Taylor
- Co-developed a hierarchical evaluation framework: robot roles, tools, and dependency-aware tasks for high-risk, low-tolerance medical workflows.
- Curated a 5-part knowledge base and 7 behavioral metrics, running controlled comparisons on CrewAI; improved average success from 45.29% to 72.94% and distilled five key failure modes to guide redesign.
- Implemented agents bidirectional feedback in AutoGen (real-time oversight + agent self-reflection), reaching 88.97% success and stronger fault handling.
- Benchmarked o3 vs. GPT-4o, mapping behaviors across planning granularity, role comprehension, format compliance, and termination validation; concluded that reasoning boosts autonomy but needs structural constraints for stability.   (Submitted to AAAI 2026)

Understanding Human-Driver Interaction and Negotiation with Autonomous Vehicles
Advisor: Professor Wendy Ju & Debargha Dey
- VR study with four intersection scenarios comparing a contingent AV trained on human interaction data to two non-contingent baselines that always yield or never yield. Measures included hesitance, relaxation, stress, and perceived familiarity.
- The contingent policy was rated most familiar and produced lower stress and higher relaxation. Always-yield increased hesitance; non-yield signaled intent more clearly but could elevate stress depending on context.
- Favor context-adaptive, human-like AV policies; tune conservativeness to traffic conditions; pair behavior with clear, transparent negotiation cues to support driver comfort and trust.
                          (Accepted by AutomotiveUI 2025)

Transforming Robotic Cart Interactions: How Voice Commands and Drawer Lights Improve Clinical Teamwork
Advisor: Professor Angelique Taylor
- Developed a Wizard-of-Oz controlled Robotic Crash Cart (RCC) prototype to assist healthcare workers (HCWs) in emergency rooms using multimodal feedback, including voice commands and drawer lights, for supply location and medication reminders during critical medical tasks.
- Conducted in-lab studies with 84 participants to assess the effectiveness of RCC feedback in reducing workload, improving task performance, and enhancing teamwork in high-pressure environments.
                          (In Progress)

Research Assistant, Hong Kong University of Science and Technology   Oct. 2023–Jan 2025
Advisor: Professor Dengbo He (HKUST)
Multimodal Dataset for Pedestrian-Autonomous Vehicle Interaction Based on On-Road Experiment
- Conducted experiments involving pedestrian-autonomous vehicle interaction, using multimodal data collected from on-road (real-world) environment.
- Equipped participants with EEG, ECG, eye-tracking devices, and other physiological sensors to monitor their reactions and using a drone to capture precise walking and driving trajectories.

- Designed and administered pre-experiment and post-experiment questionnaires, assessing pedestrian behavior, receptivity, Personal Innovativeness, pre and post-interaction Trust after repeated crossings with robotaxi. (In Progress/ Accepted by ASPIRE2025)

Passengers' Trust Evolvement in Fully Driverless Robotaxis
- Ran real-world first-ride sessions on fully driverless L4 robotaxis in Guangzhou using a fixed urban route (15 km, 40 min) with N=30 participants and bi-minute trust ratings + concurrent think-aloud.
- Modeled dynamic trust with a cumulative-link mixed model: trust rose then stabilized; individual differences (e.g., prior knowledge, personality) moderated trajectories.
- Thematically analyzed in-situ verbal reports; distilled core user needs: perceived safety, efficiency, comfort; conservative/human-like driving and transparent HMI supported trust, while expectation mismatches reduced it.
- Delivered design implications: context-adaptive driving styles, explanatory/transparent HMI, and tunable conservativeness to balance safety, efficiency and comfort.
(Submitted to Human Factors/ Accepted by AutoUI2025)

Research Assistant, Tsinghua University   Mar. 2023–Sept. 2023
Advisor: Professor Jiangtao Gong (THU AIR)

Virtual Hand: Interaction Between Pedestrians and Autonomous Vehicles
- Through interviews with drivers and pedestrians, understand their commonly used interaction methods. Design a new eHMI. Generate a virtual hand in the front window of the car to convey the intention of autonomous driving through different gestures. Eight common gestures were selected to convey AVs' yielding or non-yielding intentions at uncontrolled crosswalks.
- Design and complete experiments, collect experimental data (Duration of observation, Error Rate, Perception of danger, Physiological indicators, etc.), analyze and compare to confirm the best eHMI.
- Through a VR experiment (N1 = 31) and an online survey (N2 = 394), we discovered significant differences in the usability of gesture-based eHMIs compared to traditional eHMIs. Better gesture-based eHMIs increase the efficiency of pedestrian-AV interaction while ensuring safety. Poor gestures, however, cause misinterpretation and, consequently, accidents. (Accepted by CHI2024)

An Electroencephalography (EEG) Dataset for Expert-like Autonomous Driving through Actual Driving Tests in Real Urban Road Context
- Using the EEG, eye tracking, physiological behavior information of expert drivers, as well as the subjective evaluation of passengers, as indicator basis, provide research datasets in the neuroscience and interaction fields of expert driving.
- Design experiments and have completed 20 sets: one expert driver drives the vehicle through urban road routes, and two passengers ride in the vehicle to assist in evaluating the driver's driving behavior.
- Collect driver's EEG, eye tracking, heart rate, skin electroencephalography, driving behavior, video recording of passenger posture inside the car, CAN-bus data, panoramic video recording of the outside environment, etc. Analyze and compare the differences between expert drivers and regular drivers.
- Analyze the subjective questionnaires of drivers and passengers, and conduct in-depth interviews with them after the experiment. From the interview content, the evaluation criteria for driver driving behavior are obtained through coding. (Submitted to Scientific Data & CSCW2026)

Summer Research Intern, HCI·X   May. 2022–Jun. 2023
Advisor: Professor Ray LC (CityU) & Professor Xin Tong (Duke Kunshan University)

Community-driven information accessibility: Online sign language content creation within d/Deaf communities
- Compared sign languages used in China and the United States and analyzed unique challenges faced by d/Deaf communities in China.
- Consulted teachers in schools for the deaf and social workers about dos and don'ts when interviewing d/Deaf people, developed an interview guide, and designed interview questions.

- Connected with 60+ d/Deaf people in China and recruited 12 interview participants, conducted semi-structured interviews with all participants for a total of 30+ hours, coded 300+ videos, wrote a 18,000-word interview transcript, and analyzed the participants' responses to understand d/Deaf people's access to online sign language content and how they were involved in content creation.
- Found that d/Deaf communities can support the growth of information in sign language; identified the ways how d/Deaf people collaborate and negotiate information accessibility together online, as well as the challenges in community-driven accessibility for d/Deaf people.   (Accepted by CHI2023)

Undergraduate Researcher, Sichuan University   Feb. 2021–Oct. 2021
Advisor: Professor Ying Zhao, SCU
Study on Health Information Sharing Behavior of the Elderly During COVID-19
- Conducted a questionnaire survey in neighboring communities to collect information behavior data of elderly citizens (500 questionnaires distributed and 472 valid ones collected)
- Built a health information sharing model for the elderly based on the MOA model and autonomy theory and analyzed it with Amos structural equation model.
- Found that media richness, health information literacy, perceived benefits and negative emotions of the epidemic situation positively impact health information sharing behavior, while perceived risks have a significant negative impact on health information sharing behavior.   (Accepted by ICEB2022)

Study on the influence of smart community construction on citizens' level of satisfaction with public services—A case study in Chengdu
Project Leader | Provincial Project, China College Students Innovation and Entrepreneurship Competition
- Conducted literature review, applied expectation disconfirmation theory and self-regulation theory with the American Customer Satisfaction Index (ACSI) to construct a model to describe how smart community construction influences citizens' level of satisfaction with public services.
- Conducted questionnaire surveys in three communities with different levels of smart infrastructure construction (372 questionnaires distributed and 342 valid ones collected). Analyzed the questionnaire data and ran hypothesis testing using structural equation model
- Conducted semi-structured interviews with officials in charge of the smart transformation projects, utilized the third level of coding in grounded theory to perform text analysis in order to explore the system issues with smart community construction.   (Accepted by ICEB 2021)

INTERNSHIP

Research Assistant, Hong Kong University of Science and Technology	Oct. 2023–July. 2024
Intern Researcher, Institute for AI Industry Research, Tsinghua University	Mar. 2023–Sep. 2023
Research Assistant, OPPO research institute	Dec. 2022–Mar. 2023
Product Intern, Chengdu Business Big Data Co., Ltd.	Apr. 2021–July. 2021

SKILLS

Programming Languages: Python, C++, SQL, PHP, C#, HTML/CSS/JavaScript
XR Development: Unity, Unreal Engine, Tobii XR SDK
Sensors & Signal Processing: Tobii Pro Lab, D-Lab, EEG/PPG/EDA pipeline, NeuroKit2, Polar sensor SDK, CAN-bus
Experimental Tools: Lab Streaming Layer, MQTT, ATLAS.ti, E-Prime, HRT
Statistics: SPSS, Stata, SAS, R
Hardware / Robotics / Simulators: ROS, Raspberry Pi, CircuitPython, Baidu Apollo, CARLA
Multi-Agent Frameworks: AutoGen, CrewAI

ACADEMIC SERVICES

Peer Review Experience: CHI 2023/2024/2025/2026, Transportation Research Part F, AutoUI2025
Session Chair: ASPIRE 2025 (ST4: Pedestrian Behavior & Interactions)