Chaoran CHEN

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EDUCATION BACKGROUND

University of Notre Dame, South Bend, U.S.   09/2022 – present
College of Engineering
Ph.D. in Computer Science and Engineering

Carnegie Mellon University, Pittsburgh, U.S.   08/2021 – 08/2022
Human-Computer Interaction Institute, School of Computer Science
M.S. in Educational Technology and Applied Learning Sciences | Overall GPA: **3.94/4**

Tongji University, Shanghai, China   09/2015 – 07/2020
College of Design and Innovation
B.E. in Industrial Design | Overall GPA: **4.42/5**

PUBLICATIONS

- **Chen, Chaoran**, Brad A. Myers, Cem Ergin, Emily Porat, Sijia Li, and Chun Wang. "ScrollTest: Evaluating Scrolling Speed and Accuracy." arXiv preprint arXiv:2210.00735 (2022). DOI: https://doi.org/10.48550/arXiv.2210.00735
- Chatterjee Ishan, Tadeusz Pforte, Aspen Tng, Farshid Salemi Parizi, **Chaoran Chen**, and Shwetak Patel. 2022. *ARDW: An Augmented Reality Workbench for Printed Circuit Board Debugging*. In Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology (**UIST '22**), October 29-November 2, 2022, Bend, OR, USA, 16 pages. DOI: https://doi.org/10.1145/3526113.3545684
- Shengchen Zhang, Zixuan Wang, **Chaoran Chen**, Yi Dai, Lyumanshan Ye, and Xiaohua Sun. 2021. *Patterns for Representing Knowledge Graphs to Communicate Situational Knowledge of Service Robots*. In CHI Conference on Human Factors in Computing Systems (**CHI '21**), May 8–13, 2021, Yokohama, Japan. ACM, New York, NY, USA, 12 pages. DOI: https://doi.org/10.1145/3411764.3445767
- Nan Cao, Xin Yan, Yang Shi, **Chaoran Chen**. 2019. *AI-Sketcher: A Deep Generative Model for Producing High-Quality Sketches.* Proceedings of the AAAI Conference on Artificial Intelligence. (**AAAI 2019**) 33, 01 (Jul. 2019), 2564-2571. DOI: https://doi.org/10.1609/aaai.v33i01.33012564
- Ercument Gorgul, **Chaoran Chen**, Katrina Karyee Wu, and Yifan Guo. 2019. *Measuring Street Enclosure and its Influence to Human Physiology through Wearable Sensors*. In Adjunct Proceedings of the 2019 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2019 ACM International Symposium on Wearable Computers (**UbiComp/ISWC '19 Adjunct**). Association for Computing Machinery, New York, NY, USA, 65–68. DOI: https://doi.org/10.1145/3341162.3343794
- Ercument Gorgul, Liuyi Zhang, Franziska Günther, and **Chaoran Chen**. 2019. *Mapping Human Response to Street Experience: A Study on Comparing Walking with Cycling on Streets through Wearable Sensors*. In Adjunct Proceedings of the 2019 ACM International Joint Conference on Pervasive and Ubiquitous Computing and Proceedings of the 2019 ACM International Symposium on Wearable Computers (**UbiComp/ISWC '19 Adjunct**). Association for Computing Machinery, New York, NY, USA, 69–72. DOI: https://doi.org/10.1145/3341162.3343793
- Gorgul, Ercument, and **Chaoran Chen**. *A Visualization Based Analysis to Assist Rebalancing Issues Related to Last Mile Problem for Bike Sharing Programs in China: A Big-Data Case Study on Mobike*. The International Conference on Computational Design and Robotic Fabrication (**CDRF 2019**). Springer, Singapore, 2019. https://rdcu.be/cAwtL

RESEARCH EXPERIENCES

Design an On-Glasses video Annotation Tool, Shanghai Jian Tong University
Research Assistant | Advisor: Prof. Danni Chang, School of Design   08/2022 – 10/2022
- Lead the research project in the aspect of idea generation, prototype development, and user study
- In charge of the design and development of the tool that facilitates vloggers by double-tapping the glasses arms to add real-time tags to the video footage
- Conducted a user study to compare this tool with existing video editing tools on mobile phones
- Demo "*TapTag*" won the *Best Implementation Award* in **MobileHCI 2022**

Design a General-purpose Evaluation Tool for Scrolling Speed and Accuracy, Carnegie Mellon University
Research Assistant | Advisor: Prof. Brad A. Myers, Human Computer Interaction Institute   05/2022 – 09/2022
- Lead the research project in the aspect of literature review, prototype development, and user study
- In charge of the tool design that measures scrolling speed and accuracy in 11 devices/techniques
- Developed a quantitative model and metrics to evaluate the performance of scrolling

Design an AR-based On-Glasses System to Facilitate the Idea Generation, National University of Singapore
Research Assistant | Advisor: Prof. Shengdong Zhao, Computer Science Department   01/2022 – 09/2022
- Conducted a literature review on techniques of creativity support tools
- In charge of the visual layout design of the keywords and images that support idea generation

- ➢ Implemented an AR system to support user studies and enable users to flexibly alternate between 7 displays of information density that benefits both multitasking and creativity

Design a Projected AR-based PCB Debugging System, Tsinghua University & University of Washington
Research Assistant | Advisor: Prof. Yuntao Wang, Department of Computer Science and Technology

07/2021 – 04/2022

- ➢ Conducted a literature review on techniques of PCB debugging and computer vision
- ➢ In charge of the algorithm design of a fine-tuned SIFT to track a PCB board and a probe tip
- ➢ Developed an integrated projector-camera system to project debugging information on the PCB board, reducing cross-device switching, accelerating flying probe testing, and supporting remote debugging.
- ➢ Paper "*ARDW: An Augmented Reality Workbench for Printed Circuit Board Debugging*" accepted by **UIST 2022**

Research on A Pattern Library for Presenting Situational Knowledge of Service Robots, Tongji University
Research Assistant | Advisor: Prof. Xiaohua Sun, College of Design and Innovation   07/2020 – 09/2020

- ➢ Conducted a literature review on techniques of knowledge graph representation
- ➢ In charge of paper writing of introduction and related work sections
- ➢ Organized several discussions on paper writing, literature review, and user study design
- ➢ Paper "*Patterns for Representing Knowledge Graphs to Communicate Situational Knowledge of Service Robots*" accepted by **CHI 2021**

Design a Deep Learning-based System for Generating Emotional Expressions in Storyboards, Tongji University
Research Assistant | Advisor: Prof. Yang Shi, College of Design and Innovation   05/2018 – 09/2018

- ➢ Conducted a literature review on prevalent storyboard products and AI techniques for generating expression
- ➢ In charge of the algorithm design of a sequence-to-sequence VAE model and took part in the preparation of the high-quality dataset of expressions
- ➢ Moderated several usability testing sessions and analyzed the user feedback
- ➢ Developed *EmoG* to support generating emotional expressions in storyboards, helping designers who are less skilled at drawing to depict emotional expressions in an aesthetically pleasing and expressive manner
- ➢ Paper "*AI-Sketcher: A Deep Generative Model for Producing High-Quality Sketches*" accepted by **AAAI 2019**

Visually Analyze Spatiotemporal Patterns of Mobike in Shanghai, Tongji University
Research Assistant | Advisor: Prof. Ercu Gogul, College of Architecture and Urban Planning   03/2017 – 06/2017

- ➢ Captured and analyzed 3-month Mobike data in Shanghai to find the spatiotemporal patterns of user behaviors
- ➢ Utilized Geohash algorithm to process data and visualized them to show the patterns
- ➢ Paper "*A Visualization Based Analysis to Assist Rebalancing Issues Related to Last Mile Problem for Bike Sharing Programs in China: A Big-Data Case Study on Mobike*" accepted by **CDRF 2019**

WORKING/INTERNSHIP EXPERIENCES

Development Lead (Capstone Project), Management Concepts, 8230 Leesburg Pike, Tysons Corner, VA 22182

01/2022 – 08/2022

- ➢ Responsible for Implementing a prototype in Canvas to measure the effectiveness of the instruction and visualize the progress of learners' performance
- ➢ Completed user research, summarized customers' and clients' needs, and produced research reports
- ➢ Used Figma to produce user persona, storyboards, and affinity diagram

Technology Research Intern, Huawei, Bantian Base, Longgang District, Shenzhen   08/2020 – 06/2021

- ➢ Designed the interaction of a digital pen for a foldable PC
- ➢ Conducted 2 phases of human factor experiments to study the range of deviation when humans use a phone to point to several IoT devices
- ➢ Used motion capture devices (Qualysis) to get 3D position data of the mobile phone during distal pointing moments and analyzed the data in Python to find the key influencing factors of pointing deviation
- ➢ Used IMU sensors in a smartwatch and motion capture devices to identify users' body movements during exercise training
- ➢ Designed and conducted several human factor experiments to study the influence factors of visual fatigue when using a projector

UX Design Intern, Xavor Corporation, 588 Yanan East Road, Huangpu District, Shanghai   02/2020 – 06/2020

- ➢ Responsible for the UX design of a smart hardware product and an online meeting app
- ➢ Completed user research, summarized user needs, and produced research reports
- ➢ Used Adobe suites and sketch to produce user persona, storyboards, and working prototypes

UX Design Intern, designaffairs. GmbH, 31/F ZhaoFeng Plaza, Changning District, Shanghai   07/2019 – 12/2019

- ➢ Responsible for Cartier in-store experience design and interactive prototyping
- ➢ Participated in desktop research and ideation

- ➢ Completed software programming and development in Arduino, Processing, RaspberryPi, etc.
- ➢ Built hardware prototypes by using 3D printers and other rapid prototyping techniques

Visual Design Intern, TapTap, 700 Wanrong Road, Jingan District, Shanghai   07/2018 – 08/2018
- ➢ Designed banners and posters for the propaganda of game events

Design Intern, Disney Research China, 624 Jianguo W Rd, Xuhui District, Shanghai   07/2017 – 08/2017
- ➢ In charge of the visual design and derivative in the Disney City project
- ➢ Cooperated with engineers for data collection
- ➢ Wrote part of the research report in English

SKILLS

Programming Skills: Experienced in Python, HTML, CSS, JavaScript, and Arduino; Familiar with Java (Android), Unity (C#), C++, and MATLAB
Software Skills: Tableau, D3, Figma, Sketch, Adobe Suite
UX Research: User Interview, User Study Design, Usability Test, Statistical Test
UX Design: Sketching, Personas, Storyboarding, Wireframing, Prototyping

AWARDS AND HONORS

Best Implementation Award, MobileHCI 2022	2022
Merit Scholarship ($7,000), Carnegie Mellon University	2021
Third Prize of the 11th International User Experience Design Award (UXPA)	2019
Honorable Mention of Interdisciplinary Contest in Modelling (MCM/ICM)	2018
Finalist of Siemens Global University Challenge – Automation Meet Edge	2018
Excellent Student of Tongji University	2017