Ti-Chung Cheng

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Expected to graduate in Summer 2025. Looking for 2024 Research Scientist Intern, Research Intern, or UX (Research) Intern Positions.

EDUCATION

Ph.D. Candidate in Computer Science, The University of Illinois at Urbana-Champaign   Aug 2020 - Expected May 2025
Research Topics: Human-Computer Interaction, Decision-Making Toolkit, Survey Mechanism Design   GPA: 4.00/4.00
Co-advised by Prof. Karrie Karahalios & Prof. Hari Sundaram

M.Sc. Computer Science, The University of Illinois at Urbana-Champaign   Aug 2018 - Jul 2020
Advised by Prof. Karrie Karahalios, Prof. Hari Sundaram, and Prof. Aditya Parameswaran   GPA: 4.00/4.00
Thesis: "Comparing Quadratic Voting and Likert Surveys"

B.Sc. Computer Science with Business Economics Minor, The Chinese University of Hong Kong   Aug 2013 - Dec 2017
Final Year Project advised by: Prof. James Cheng and Dr. JinFeng Li, Academic Advisor: Prof. John C.S. Lui   GPA: 3.29/4.00
Final Year Project: "Efficient nearest-neighbor search in Distributed Manner"

SKILLS

[Research Methods] Contextual Inquiry, Interview, Cognitive Walkthrough, Questionnaire and Survey, Behavioral Experiment Design, Prototyping, Bayesian Analysis, Coding, Persona Construction, Wizard of Oz

[Code & Frameworks] Python, TypeScript, JavaScript (Express.js, Angular.js, React.js, Nest.js, D3.js), Java, SQL, MongoDB, Neo4j, HTML, CSS

[ML Tools] Prompt Engineering, Natural Language Processing, Large-Language Model, LangChain, Guidance, Locality-Sensitive Hashing, OpenCV

[Libraries, Tools, and Others] ChromaDB, Photoshop, Figma, Linux, Latex, Agile (Jira), Salesforce

RESEARCH INTERESTS

[R1] Utilize computational power and interaction design, i.e., using mechanism design and game theory, to obtain truthful individual preferences.
[R2] Understand, design, and build systems to support end-user data analytics, data querying, data visualization, and machine learning.
[R3] Design and build AI systems allowing individuals and teams to make better decisions, e.g., supporting developer productivity.
[R4] Understand end-user perception and design support for smart homes and IoT devices.

RESEARCH AND WORK EXPERIENCE

Microsoft Research, Software Analysis & Intelligence (SAINTES) Group   Redmond, WA
Research Intern   May 2023 - Aug 2023
Mentors: Denae Ford Robinson, Nicole Forsgren, Carmen Badea, Christian Bird, Tom Zimmermann, Rob DeLine.
· Designed and built a prototype aimed to enhance software development operations (DevOps) and experiences using GitHub data.
· Constructed a complex LLM (Large-language Model)-powered team matching tool orchestrated using OpenAI API, Guidance, FLAML and MySQL.
· Spearheaded metrics and proxies to understand and research team-matching decision processes.
· Outline a two-stage within-subject qualitative study to explore expert users' perceptions of LLM-based team matching process.

University of Illinois at Urbana-Champaign   Champaign, IL
Graduate Researcher   Aug 2018 - Present
· Led 3 human-computer interaction research projects in human-data interaction, individual preference elicitation, and smart home privacy.
· Designed, prototyped, and built an interactive attitude elicitation system using Quadratic Voting mechanisms with Nest.js, MongoDB, and Angular.
· Evaluated multiple interactive systems using interviews, surveys, questionnaires, and in-lab behavioral experiments.
· Analyzed experiment data using qualitative and quantitative methods, including open coding, thematic analysis, and Bayesian analysis.
· Supported 2 human-computer interaction research projects in smart home user power dynamics and spreadsheet data analysis workflows.

University of Illinois at Urbana-Champaign   Champaign, IL
Graduate Teaching Assistant   Aug 2018 - Present
· Led, managed, and assisted CS 411 Introduction to Database Systems, a 400-student and 10+ staff class, across 5 semesters.
· Assisted and prepared course material for CS470 Social and Information Networks.
· Led and designed assignments for CS242 Programming studio, a course teaching best coding practices with 200+ students for 3 semesters.
· Collaborated with three faculty for CS598 HCI Research Methods, offering feedback, facilitating class activities, and assessing student assignments.

Salesforce, Lightning Component Services Team   Remote
Software Engineer Intern   May 2020 - Aug 2020
· Developed VSCode Plugin for Salesforce developers to reduce XML development time by 2x using TypeScript.
· Contributed to Redhat XML Open Source Plugin with 794K installs on VSCode Store.

Salesforce, Lightning Component Services Team

San Francisco

Software Engineer Intern

May 2019 - Aug 2019

· Built pipelines and designed 3 dashboards for front-end cache monitoring using Java, Grafana, and Splunk to visualize daily logs on a billion scale.
· Optimized dashboard queries by 10x loc for better readability and maintainability.

Machine Learning Research Intern, KKBOX, Machine Learning Team

May 2018 - Aug 2018

· Researched and implemented a natural language processing pipeline for mandarin name-entity recognition with 90%+ accuracy.
· Designed and built a pattern-based relation extraction pipeline for cross-language music content using 3B+ music data.

Undergraduate Research Assistant, The Chinese University of Hong Kong

Dec 2015 - Dec 2017

· Conducted research on distributed hash-based nearest-neighbor search algorithms with a publication at SIGMOD.
· Built a 15% more time-efficient and scalable Image Retrieval system compared to OpenCV FLANN Library.

PUBLICATIONS

» Full Papers «

[C4] "I can show what I really like.": Eliciting Preferences via Quadratic Voting

Ti-Chung Cheng*, Tiffany Wenting Li*, Yi-Hung Chou, Karrie Karahalios, Hari Sundaram, *Proceedings of the 2021 ACM Conference on Computer Supported Cooperative Work and Social Computing, CSCW 2021*

[C3] "We Just Use What They Give Us": Understanding Passenger User Perspectives in Smart Homes

Vinay Koshy, Joon Sung Park, **Ti-Chung Cheng**, Karrie Karahalios, *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems, CHI 2021.* Best Paper Honorable Mention (Top 5%).

[C2] Understanding Data Analysis Workflows on Spreadsheets: Roadblocks and Opportunities.

Pingjing Yang, **Ti-Chung Cheng***, Sajjadur Rahman*, Mangesh Bendre, Karrie Karahalios, Aditya Parameswaran. *Workshop on Human-In-the-Loop Data Analytics (HILDA) at SIGMOD, June 2020., HILDA 2020*

[C1] A General and Efficient Querying Method for Learning to Hash.

Jinfeng Li, Xiao Yan, Jian Zhang, An Xu, James Cheng, Jie Liu, Kelvin K. W. Ng, **Ti-Chung Cheng**. *SIGMOD '18: ACM SIGMOD Int'l Conf. on Mgnt. of Data, Houston, USA, 2018.*

» Posters «

[P1] Quadratic Voting better elicits user preferences compared to Likert Surveys [In Mandarin]

Ti-Chung Cheng, Tiffany Wenting Li, Yi-Hung Chou, Karrie Karahalios, Hari Sundaram, *Proceedings of the 2021 Taiwan CHI Conference, TAICHI 2021*

» Work-In-Progress «

[In preparation, WIP2] Reducing Cognitive Load for Quadratic Survey through Interface Design

Ti-Chung Cheng, Yi-Hung Chou, Vinay Koshy, Tiffany Wenting Li, Yutong Zhang, Karrie Karahalios, Hari Sundaram.

[In preparation, WIP1] Understanding How People Modify Spreadsheets

Ti-Chung Cheng, Tana Wattanawaroon, Aditya Parameswaran, Karrie Karahalios.

SELECTED SOFTWARE DELIVERABLE

[Data Visualization] Visualizing the Impact of SARS-CoV-2 Intervention Strategies (Link)

Responsible for coding intervention data from various sources.

[Web] The Official Website for CUHK Taiwanese Student Association

Established and led this project with a team of 10 students. Responsible for product management, database design and back-end development.
Built with MongoDB, Express.js, React.js. Severed over 4K visitors.

[Chatbot] Rachel: friends and family health-centered chatbot

A Hackathon Project. Featuring a chatbot that integrates calendars with the health conditions of families and friends.
Designed the system architecture and built 30+ back-end APIs for the chatbot. Built with MongoDB, Express.js, Luis.ai (Now Dialogflow.)

RECENT SERVICES

PURE (Promoting Undergraduate Research in Engineering) Mentor, UIUC	Sept 2023 - Present
Tech and Information Director, The Chinese University of Hong Kong Taiwan Alumni Association	Jan 2023 - Present
Student Volunteer, Computer-Supported Cooperative Work And Social Computing, CSCW 2021	Nov 2022
Reviewer, Human Factors in Computing Systems, CHI 2023	Oct 2022
Student Volunteer, Computer-Supported Cooperative Work And Social Computing, CSCW 2021	Oct 2021
Student Volunteer, Human Factors in Computing Systems, CHI 2021	May 2021
MUSE (Mentoring Undergraduates in Science & Engineering) Mentor, UIUC	Aug 2019 - May 2023

*Equal Contribution

Book Reviewer, Python x Excel Data Processing Tips (Mandarin, ISBN: 9786263490291)	Oct 2022
Tech Columnist, Mandarin Daily News, Taiwan	Jan 2020 - Dec 2021
Initiator and coordinator, The Circle Group CUHK, Taiwanese Student Association	Oct 2016 - Dec 2017
Information Officer, CUHK, Taiwanese Student Association	Oct 2015 - Oct 2016

SELECTED AWARDS

ACM CHI 2023 Special Recognitions for Outstanding Reviews	2022
ACM CHI 2021 Student Volunteer Award	2021
ACM CHI 2021 Best Paper Honorable Mention Award (top 5%)	2021
UIUC Computer Science Department Outstanding Teaching Assistant SP20 (five awardee per semester)	2020
The Chinese University of Hong Kong Morningside College Academic Scholarship 2016-17	2017

TEACHING EXPERIENCE

CS 598 HCI Research Methods, Teaching Assistant, UIUC	FA 2023
CS 411 Database System, Lead Teaching Assistant, UIUC	SP 2021, FA 2021, SP 2022, SP 2023
CS 470 Social and Information Networks, Teaching Assistant, UIUC	FA 2022
CS 411 Database System, Teaching Assistant, UIUC	FA 2020
CS 242 Programming Studio, Head Teaching Assistant, UIUC	FA 2019, SP 2020
CS 242 Programming Studio, Teaching Assistant, UIUC	FA 2018
CSCI 2040 Introduction to Python, Course Assistant, CUHK	FA 2017

STUDENTS MENTORED

Yutong Zhang (UIUC BS CS '23; Now Graduate Student at Stanford)	2021-2023
Tue Do (UIUC BS CS + Math '24)	2022-2023
Ashay Parikh (UIUC BS CS '24)	2022
Yi-Hung Chou (CUHK BS CS '21; Now Graduate Student at UCI)	2019-2021

INVITED TALKS

[T1] Guest Lecture: Nudges in Computer Science	Match 30th, 2022

Ti-Chung Cheng, ECON 490 Behavioral Economics, University of Illinois at Urbana-Champaign