Ti-Chung Cheng

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EDUCATION

Doctor of Philosophy in Computer Science, University of Illinois Urbana-Champaign — Expected May 2026
Co-advised by Prof. Karrie Karahalios & Prof. Hari Sundaram Committee: Dr. Glen Weyl & Prof. Ranjita Kumar GPA: 4.00/4.00
Thesis Proposal: "Quadratic Surveys: Empirical Research on Using Quadratic Voting Mechanism as a Preference Elicitation Tool"

Master of Science in Computer Science, University of Illinois at Urbana-Champaign — July 2020
Advised by Prof. Karrie Karahalios, Prof. Hari Sundaram, and Prof. Aditya Parameswaran GPA: 4.00/4.00

Bachelor of Science in Computer Science (Minor in Business Economics), The Chinese University of Hong Kong — December 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"

TECHNICAL SKILLS

[Research] 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 and Others] ChromaDB, CosmosDB, Photoshop, Figma, Linux, Latex, Agile (Jira), Salesforce

SELECTED RESEARCH AND WORK EXPERIENCE

University of Illinois at Urbana-Champaign — Champaign, IL
Graduate Researcher — Aug 2018 - Present
- Designed, built, and evaluated Quadratic Survey System grounded in Quadratic Voting for preference elicitation using mixed-methods.
- Contributed to HCI research on human-AI interaction in smart homes, spreadsheet data practices, and design process tooling.
- Prototyped systems using React, Nest.js, and MongoDB; evaluated through interviews, surveys, clickstream data, and behavioral experiments.

University of Illinois at Urbana-Champaign — Champaign, IL
Graduate Teaching Assistant — Aug 2018 - Present
- Taught and mentored students across databases, data mining, software engineering, and social and information networks.
- Collaborated with faculty on CS598 HCI Research Methods, guiding graduate students through feedback, activity design, and assessment.

Microsoft Research, Special Projects — Redmond, WA
Research Intern (Mentors: Madeleine Daepp, Robert Ness) — Feb 2024 - May 2024
- Investigated Large Language Model influence on high-stakes decision-making via misinformation and generative propaganda.
- Analyzed 150K+ crowd-sourced articles using time series, linguistic, and qualitative methods.
- Contributed cultural and regional expertise, guiding internal discussions and ensuring accurate framing in external publications.

Microsoft Research, Software Analysis & Intelligence (SAINTES) Group — Redmond, WA
Research Intern (Mentors: Denae Ford Robinson, Nicole Forsgren, Carmen Badea, Christian Bird, Tom Zimmermann, Rob DeLine.) — May 2023 - Aug 2023
- Designed a multi-agent LLM system to generate theory-driven metrics for software organizations team pairing, using GitHub and DevOps signals.
- Built the system (GEMS) with GPT-4, AutoGen, Guidance, and MySQL; introduced iterative prompt priming for expert-informed metric generation.
- Evaluated GEMS via qualitative comparisons on DevOps performance proxies, showing gains in specificity, diversity, and theoretical grounding.

Salesforce, Lightning Component Services Team — San Francisco, CA & Remote
Software Engineer Intern — Summer 2019 & 2020
- Built a VS Code plugin in TypeScript reducing XML dev time by **50%** for Salesforce engineers; contributed to Red Hat's XML Open Source Plugin.
- Built pipelines and designed 3 dashboards for front-end cache monitoring using Java, Grafana, and Splunk to visualize daily logs on a billion scale.

KKBOX, Machine Learning Team — Taipei, Taiwan
Machine Learning Research Intern — 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.

The Chinese University of Hong Kong — Hong Kong
Undergraduate Research Assistant — 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

Conference Papers (**Denotes equal contribution*)

[C8] Understanding Control Preferences in Smart Homes

Ali Zaidi, Anna Karanika, **Ti-Chung Cheng**, Yi-Shyuan Chiang, Camille Cobb, Indranil Gupta, Karrie Karahalios, *In Submission*

[C7] Documenting and Communicating Design Processes

Andrew Chen, David Zhou, **Ti-Chung Cheng**, Sarah Sterman, *In Submission*

[C6] Budget, Cost, or Both? An Empirical Exploration of Mechanisms in Quadratic Surveys

Ti-Chung Cheng*, Tiffany Wenting Li*, Karrie Karahalios, Hari Sundaram, *Proceedings of the ACM Collective Intelligence Conference, CI '25*

[C5] Organize, Then Vote: Exploring Cognitive Load in Quadratic Survey Interfaces

Ti-Chung Cheng, Yutong Zhang*, Yi-Hung Chou*, Vinay Koshy, Tiffany Wenting Li, Karrie Karahalios, Hari Sundaram, *Proceedings of the 2025 CHI Conference on Human Factors in Computing Systems, CHI 2025*

[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.*

Technical Report

[TR1] GEMS: Generative Expert Metric System through Iterative Prompt Priming

Ti-Chung Cheng, Carmen Badea, Christian Bird, Thomas Zimmermann, Robert DeLine, Nicole Forsgren, Denae Ford, *Microsoft Research*

Selected Research Poster

[P1] Understanding Quadratic Survey Results: Interactive Visualization for Collective Insights

Pranay Midha*, **Ti-Chung Cheng***, Hari Sundaram, Karrie Karahalios, *Proceedings of the ACM Collective Intelligence Conference, CI '25*

SELECTED SOFTWARE DELIVERABLE

[Web] Here@Illinois (Link)

Co-Founder and Tech Lead

- Founded and led a dynamic team of 11 developers, delivering a fast, secure attendance solution used by 1,000+ students and 120+ staff.
- Managed full-cycle product development using an agile process and continuous integration to align features with stakeholder needs.
- Designed distributed system architecture with MongoDB, Node.js, React; deployed on AWS and Google Cloud.

SELECTED ACADEMIC & COMMUNITY SERVICE

Peer Reviewer: CHI (2023–2025), Collective Intelligence (2025), ACM Transactions on Interactive Intelligent Systems (2025), Mensch und Computer (2025), Methodology – EJRM (2025)
Conference Volunteer: CHI (2021), CSCW (2021-2022)
Mentor: Fulbright Taiwan (2023–2025), Undergraduate Research Mentorship Programs (2019–2024)
Tech Columnist: Mandarin Daily News (2020–2021) – wrote monthly columns on HCI for 100K+ readership

SELECTED AWARDS

UIUC Computer Science Department Outstanding Teaching Assistant — 2020, 2024
ACM CHI Special Recognitions for Outstanding Reviews — 2022, 2023
ACM CHI 2021 Best Paper Honorable Mention Award (top 5%) — 2021

SELECTED INVITED TALKS & PANELS

[T2] Rethinking Surveys: Using Quadratic Surveys to Capture What People Really Care About — April 24th, 2025

Ti-Chung Cheng. National Yang Ming Chiao Tung University (NYCU)

[T1] 2023 Fall Student Panel – AI: The Student Perspective — Nov 10th, 2023

Panelist: **Ti-Chung Cheng**, Jiheng Jing, Aryan Gosaliya. Academy for Excellence in Engineering Education, University of Illinois at Urbana-Champaign