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, Questionnaire & Survey, Cognitive Walkthrough, Behavioral Experiment Design, Wizard of Oz, Persona Construction, Iterative Prototyping, Data Visualization & Dashboarding
[Analysis] Bayesian Analysis, Statistical Modeling, Data Mining, User Behavioral Modeling, Ranking & Retrieval
[Prototyping & UI] Figma, React.js, D3.js, Prototyping
[Data & Code] Python, TypeScript, JavaScript (Express.js, Angular.js, Nest.js), Java, SQL, HTML, CSS
[Platforms & Infra] AWS, GCP, MongoDB, Neo4j, ChromaDB, CosmosDB, Linux, LaTeX, Agile (Jira), Salesforce, Git, Photoshop, DevOps

SELECTED RESEARCH AND WORK EXPERIENCE

University of Illinois at Urbana-Champaign — Champaign, IL
Graduate Researcher — Aug 2018 - Present
- Designed, engineered, and evaluated Quadratic Survey System using quantitative (Bayesian modeling, statistical analysis) and qualitative methods (user studies, contextual interviews, surveys) to innovate tools for preference elicitation with findings published at CHI, CSCW, and CI.
- Conducted user research on human–AI interaction in smart homes, spreadsheet workflows, and design tool interfaces.
- Built full stack prototypes with mixed-methods evaluations: qualitative coding, thematic analysis, clickstream modeling, & behavioral experiments.

University of Illinois at Urbana-Champaign — Champaign, IL
Graduate Teaching Assistant — Aug 2018 - Present
- Taught and mentored 4,000+ students across databases, data mining, software engineering, and social and information networks.
- Supported and co-designed graduate CS598 HCI Research Methods course, guiding students in experimental design, survey methods, & feedback.

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 for large-scale data analysis.
- 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 and built an agentic AI system to generate theory-driven metrics for software organizations team pairing, using GitHub & DevOps signals.
- Engineered GEMS with GPT-4 API, 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 visualization dashboards for cache monitoring (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 and locality sensitive hashing.
- Built a 15% more time-efficient and scalable Image Retrieval system compared to OpenCV FLANN Library.

PUBLICATIONS

In Submission/Preparation

[W3] Generative Propaganda

Madeleine I. G. Daepp, Alejandro Cuevas, Robert Osazuwa Ness, Vickie Yu-Ping Wang, Bharat Kumar Nayak, Dibyendu Mishra, **Ti-Chung Cheng**, Shaily Desai, Joyojeet Pal

[W2] Understanding Control Preferences in Smart Homes

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

[W1] Documenting and Communicating Design Processes

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

Conference Papers (**Denotes equal contribution*)

[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 developed a fast, secure ed-tech solution that improved instructor UX, now used by 120+ staff and 6,000+ students in 40+ courses.
- Led full-cycle product development with an engineering team, using agile & continuous integration to align features with stakeholders and users.
- Architected a distributed micro-services system architecture with MongoDB, Node.js, React; deployed on AWS and Google Cloud.

SELECTED ACADEMIC & COMMUNITY SERVICE

Peer Reviewer: CHI (2023–2026), Collective Intelligence (2025), ACM Transactions on Interactive Intelligent Systems (2025), Mensch und Computer (2025), Methodology – EJRM (2025)

Conference Volunteer: CHI (2021), CSCW (2021-2022) **Tech Columnist:** Mandarin Daily News (2020–2021)

Mentor: Fulbright Taiwan (2023–2025), Undergraduate Research Mentorship Programs (2019–2024)

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