# Ting-Han (Timmy) Lin

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## RESEARCH OVERVIEW

My research focuses on designing **user-adaptive social robots**. As social robots become more prevalent, they will need to adapt to multiple users' preferences and avoid relying on scripted verbal responses and actions. I develop robots capable of managing group dynamics, supporting user-initiated interaction, and ensuring long-term user engagement. My work contributes to the future of companion robots with greater adaptivity and accessibility.

## EDUCATION

**University of Chicago**  Chicago, IL
*PhD in Computer Science*  Sep 2023 – Jun 2028 (expected)
Advisor: Prof. Sarah Sebo
GPA: 4.00/4.00

**University of Chicago**  Chicago, IL
*MS in Computer Science & BA in Economics (4-year Joint BA/MS in Computer Science)*  Sep 2018 – Jun 2022
Advisor: Prof. Sarah Sebo, Prof. Ken Nakagaki
GPA: 3.77/4.00

**Taipei Wego Senior High School**  Taipei, Taiwan
*High School Diploma*  Sep 2015 – Jun 2018
GPA: 4.18/4.30

## FULL PAPER PUBLICATIONS

**(C5)** **Connection-Coordination Rapport (CCR) Scale: A Dual-Factor Scale to Measure Human-Robot Rapport.** *Ting-Han Lin*, Hannah Dinner, Tsz Long Leung, Bilge Mutlu, J. Gregory Trafton, Sarah Sebo
In Proc. ACM/IEEE **HRI 2025**. Melbourne, Australia. Acceptance rate: 25%

**(C4)** **Role-Playing with Robot Characters: Increasing User Engagement through Narrative and Gameplay Agency.** Spencer Ng, *Ting-Han Lin*, You Li, Sarah Sebo
In Proc. ACM/IEEE **HRI 2024**. Boulder, USA. Acceptance rate: 24.9%

**(C3)** **ThrowIO: Actuated TUIs that Facilitate "Throwing and Catching" Spatial Interaction with Overhanging Mobile Wheeled Robots.** *Ting-Han Lin*, Willa Yunqi Yang, Ken Nakagaki
In Proc. ACM **CHI 2023**. Hamburg, Germany. Acceptance rate: 27.6%

**(C2)** **Ice-Breaking Technology: Robots and Computers Can Foster Meaningful Connections between Strangers through In-Person Conversations.** Alex Wuqi Zhang, *Ting-Han Lin*, Xuan Zhao, Sarah Sebo
In Proc. ACM **CHI 2023**. Hamburg, Germany. Acceptance rate: 27.6%

**(C1)** **Benefits of an Interactive Robot Character in Immersive Puzzle Games**
*Ting-Han Lin**, Spencer Ng*, Sarah Sebo (*equal contribution)
In Proc. IEEE **RO-MAN 2022**. Naples, Italy. Acceptance rate: 62%

## DEMO

**Joint Demonstration of ThrowIO and AeroRigUI**
**ThrowIO:** *Ting-Han Lin*, Willa Yang, Ken Nakagaki
**AeroRigUI:** Lilith Yu*, Chenfeng Gao*, David Wu, Ken Nakagaki (*equal contribution)
In Proc. ACM **CHI 2023 Interactivity Demo**. Hamburg, Germany.

## HONORS AND AWARDS

**Daniels Fellowship**, University of Chicago, 2023-2024
$5,000 award for selected incoming doctoral students

**Dean's List**, University of Chicago, 2018-2019 & 2021-2022
Top 20% GPA for the academic year

**Bridge Builder Award**, University of Chicago, 2021
Recognized students who have worked to establish or support connections between student groups or individuals

**Metcalf Fellowship Grant**, University of Chicago, 2019 & 2020 & 2021
$5,000 award for students to reach their career goals during their internship experience

**Valedictorian**, Taipei Wego Senior High School, 2018
Highest grades in the graduating class

## RESEARCH EXPERIENCE

**UChicago Department of Computer Science**                                         Chicago, IL
*Research Assistant at Actuated Experience Lab (AxLab) Advised by Prof. Ken Nakagaki*         Jan 2022 – Aug 2023
- Used Processing IDE to program Sony toio robots, perform color and IR object detection, run physics simulation, and implement projection mapping for research purposes
- Led Unity 3D activities for creative coding on topics such as designing underwater VR/AR user interfaces
- Honed electronic techniques in building Arduino and soldering wires, and practiced fabrication skills in designing 3D-printed objects with Fusion 360 and cutting different materials with waterjet and laser cutters

**UChicago Department of Computer Science**                                         Chicago, IL
*Research Assistant at Human-Robot Interaction (HRI) Lab Advised by Prof. Sarah Sebo*         Sep 2020 – Aug 2023
- Programmed Nao robot, TurtleBot, Anki Vector robot, and Misty robot for research purposes
- Designed Qualtrics surveys and conducted user studies on campus, at UChicago Mindworks, and on Prolific
- Performed data analysis in R using linear mixed-effects models to analyze participant's data and using ANOVA tests to analyze group data

## WORK EXPERIENCE

**Upfront Healthcare Services**                                         Chicago, IL
*Data Science Fellow*                                         Jun 2021 – Feb 2022
- Iteratively prototyped, developed, and automated data insights pipelines for anomaly detection through Microsoft Azure Synapse Analytics and Apache Spark Databricks
- Organized and structured large amounts of data into compelling reports and dashboards using SQL and Tableau
- Prototyped algorithms to promote interactive use cases including intelligent outreach and dynamic personalization

**Actelligent Capital**                                                                 Hong Kong
*Data Scientist Intern*                                                        Jun 2020 – Sep 2020
- Extracted 20+ years of raw financial data from 100K+ companies to calculate the financial metrics in each factor of the Fama and French model using SQL and Python
- Identified and prioritized the most relevant metrics across 1000+ industries and sectors using XGBoost and Machine Learning models to ultimately predict stock price performance and risks
- Presented optimization recommendations to minimize the calculation time for financial metrics via Cython

**Shanghai Commercial & Savings Bank (SCSB)**                                  Taipei, Taiwan
*Financial Services Intern*                                                    Jun 2019 – Aug 2019
- Analyzed and improved the marketing strategy of SCSB's credit card to increase its reach, engagement, and sales through Google Analytics and AdWords
- Researched on the performance of startups on OurCrowd (a SCSB-sponsored startup investing platform) to assist the investment team with adjusting the investment plans
- Extracted data from the database to analyze target audience's engagement with the online bank by Python


TEACHING & MENTORING
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**Teaching Assistant**
- **Human-Robot Interaction: Research and Practice** (CMSC 20630/CMSC 30630), UChicago   Spring 2025
  Instructor: Prof. Sarah Sebo; Enrollment: 20
  Designed course materials, led lab sessions, led office hours, and graded projects
- **Introduction to Robotics** (CMSC 20600/CMSC 30600), UChicago                         Spring 2024
  Instructor: Prof. Sarah Sebo; Enrollment: 27
  Designed course materials, led lab sessions, led office hours, and graded projects
- **Mathematical Methods for Data Science I** (DATA 21100), UChicago                      Winter 2024
  Instructor: Prof. David Biron; Enrollment: 28
  Led discussion sessions, led office hours, organized course materials, and graded exams
- **User Interface and User Experience Design** (MPCS 51230), UChicago                   Autumn 2023
  Instructor: Prof. André Marques; Enrollment: 30
  Organized course materials and graded assignments and projects
- **Mathematical Methods for Data Science II** (DATA 21200), UChicago                     Spring 2023
  Instructor: Prof. David Biron; Enrollment: 49
  Led discussion sessions, led office hours, organized course materials, and graded exams
- **Mathematical Methods for Data Science I** (DATA 21100), UChicago                      Winter 2023
  Instructor: Prof. David Biron, Prof. Amy Nussbaum; Enrollment: 54
  Led discussion sessions, led office hours, organized course materials, and graded exams
- **User Interface and User Experience Design** (MPCS 51230), UChicago                    Winter 2023
  Instructor: Prof. André Marques; Enrollment: 37
  Organized course materials and graded assignments and projects
- **Introduction to Human-Computer Interaction** (CMSC 20300/MAAD 25300), UChicago      Autumn 2022
  Instructor: Prof. Pedro Lopes, Prof. Ken Nakagaki; Enrollment: 93
  Led office hours, designed course materials, and graded assignments and projects
- **Mathematical Methods for Data Science II** (DATA 21200), UChicago                     Spring 2022
  Instructor: Prof. David Biron; Enrollment: 27
  Led discussion sessions, led office hours, organized course materials, and graded exams

- **Introduction to Data Science I** (CMSC/STAT/DATA 11800), UChicago                    Winter 2022
  Instructor: Prof. Will Trimble; Enrollment: 81
  Led lab sessions, led office hours, organized course materials, and graded projects and exams
- **Introduction to Data Science I** (CMSC/STAT/DATA 11800), UChicago                    Autumn 2021
  Instructor: Prof. Michael Franklin and Prof. Dan Nicolae; Enrollment: 90
  Graded assignments, projects, and exams
- **Introduction to Data Science II** (CMSC/STAT 11900), UChicago                    Winter 2021
  Instructor: Prof. Michael Franklin and Prof. Dan Nicolae; Enrollment: 67
  Graded assignments, projects, and exams
- **Introduction to Data Science I** (CMSC/STAT 11800), UChicago                    Autumn 2020
  Instructor: Prof. Michael Franklin and Prof. Dan Nicolae; Enrollment: 94
  Graded assignments, projects, and exams

**Mentoring**

- Sabrina Fajardo, UChicago Undergrad Student                    Summer 2025 – Current
- Uma Malani, UChicago Undergrad Student                    Summer 2025 – Current
- Rachel Liu, UChicago Undergrad Student                    Spring 2024 – Current
- Tsz Long Leung (C5), UChicago Undergrad Student                    Spring 2024 – Current
- Guan Chen, UChicago Undergrad Student                    Winter 2024 – Current
- Ike Peng, UChicago Undergrad Student                    Winter 2024 – Current
- Madeline Busse, UChicago Undergrad Student                    Summer 2023 – Spring 2025
- Hannah Dinner (C5), High School Summer Intern at UChicago                    Summer 2024 – Autumn 2024
- Frida Xuewei Li, UChicago Masters Student                    Spring 2024 – Autumn 2024
- Aarman Pannu, UChicago Undergrad Student                    Winter 2024 – Spring 2024
- Joy Chen, UChicago Masters Student                    Autumn 2023 – Winter 2024
- Clark Kovacs, UChicago Undergrad Student                    Autumn 2023 – Winter 2024
- Liberto de Pablo, UChicago Undergrad Student                    Autumn 2023 – Winter 2024
- Lucas Pardo, UChicago Undergrad Student                    Autumn 2023 – Winter 2024
- You Li (C4), UChicago Undergrad Student                    Summer 2023 – Winter 2024
- Esha Mujumdar, High School Summer Intern at UChicago                    Summer 2023

**UChicago Physical Sciences Division Peer Mentor**                    Autumn 2024 – Current
- Guided mentees in achieving personal, academic, and professional growth through one-on-one mentorship
- Fostered an inclusive community by promoting interdisciplinary connections and a sense of belonging within the division

**UChicago Peer Mentor & Peer Mentor Advisory Board**                    Spring 2019 – Autumn 2021
- Led trainings for 100+ UChicago Peer Mentors and informed them of their responsibilities
- Provided direct support and direction to the incoming first years and transfer students by responding to their questions, as they complete various tasks related to their transition to the College and the University of Chicago

SKILLS
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**Languages:** Proficient in Mandarin and Taiwanese, Entry Level in Spanish
**Programming:** Python, MATLAB, R, Java, SQL, Golang, C, JavaScript, HTML/CSS, STATA, C#, OpenCV, Docker, Git

**Certifications:** Oracle Certified Associate Java Programmer, Microsoft Office Specialist 2010 Master, Adobe Certified Associate, Google Analytics and AdWords Certification, Certificate of Advanced Negotiation

## SERVICE

**ACM/IEEE Human-Robot Interaction (HRI)** Remote
*Paper Reviewer*

- Reviewed 6 papers in HRI 2024 and HRI 2025

**ACM Conference on Human Factors in Computing Systems (CHI)** Remote
*Paper Reviewer*

- Reviewed 3 papers in CHI 2024 and CHI 2025

**Augmented Humans (AHs)** Remote
*Paper Reviewer*

- Reviewed 1 paper in AHs 2024

## OUTREACH

**Summer Robotics Course for South Side Chicago High School Students** Chicago, IL
*Pre-Collegiate Non-Degree Program Assistant & Teaching Assistant* Jun 2024 – Aug 2024

- Teaches local South-Side Chicago high school students how to design and program robots using Blockly, a block-based programming tool

**Robot Demos at Chicago's Museum of Science and Industry** Chicago, IL
*Demonstrator* Apr 2022 – Apr 2025

- Demoed research and robots at MSI's National Robotics Week Block Party exhibit

## VOLUNTEERING

**UChicago Physical Sciences Division Social Committee** Chicago, IL
*President* Feb 2025 – Current
*Secretary* Feb 2024 – Feb 2025

- Organizes social, athletic, and cultural events for graduate students in the Physical Sciences Division, makes funding allocation decisions, and maintains communication with the graduate student body

**FIRST LEGO League Robotics Tournament** Chicago, IL
*Robot Design Judge & Table Referee* Oct 2021 – Dec 2022

- Judged students' robot performance and design in terms of how well their innovative designs and code solutions match their mission strategies and how well they repeatedly test their robot and explain their robot design process

**Be The Match (National Marrow Donor Program)** Chicago, IL
*Volunteer* Sep 2019 – Jun 2022

- Organized annual in-person donor registration events at UChicago student center and invited friends, family, and colleagues to join the registry to become life-saving blood stem cell donors

**UChicago Admissions Office** Taipei, Taiwan
*Information Session Speaker* Sep 2021

- Invited back to Taipei Wego High School to give a talk about UChicago College on behalf of UChicago Admissions Office

## EXTRACURRICULARS

**UChicago Juggling Club**                                                          Chicago, IL
*President*                                                                 May 2019 – Jun 2022
- Directed multiple juggling performances on campus, which one of them was selected to be the finalists in 2019 UChicago Got Talent Show
- Led weekly juggling training sessions to help students learn how to juggle pins and balls

**UChicago Taiwanese American Student Association (TASA)**                            Chicago, IL
*Vice President*                                                             Oct 2018 – Jun 2022
- Hosted Taiwanese cultural festivals and organized speaker's events to promote Taiwanese culture on campus
- Cooperated with Intercollegiate Taiwanese American Students Association to offer students with opportunities for networking, leadership training, and identity-building

**UChicago Intercollegiate Financial Journal Chicago (IFJ)**                          Chicago, IL
*Senior Journal Writer*                                                     Oct 2018 – Jun 2020
- Published articles about new discovery of Artificial Intelligence to educate the undergraduate community
- Presented pitch ideas and shared writing guidance to help junior writers compose journals in weekly seminar

## SELECTED PRESS

**UChicago CS News.** "New Prototypes AeroRigUI and ThrowIO Take Spatial Interaction to New Heights – Literally" April 18th, 2023

**UChicago CS News.** "UChicago Research Tests Whether Robots or Humans Are Better Game Partners" October 18th, 2022