Shao-Heng Ko | 柯劭珩

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Education

Duke University **2020-2026(est.)**
Ph.D., Computer Science, Certificate in College Teaching program *Advisor: Kristin Stephens-Martinez*
Dissertation (tentative): Computing students' help-seeking approaches and behavior throughout the curriculum: 2021-2025

National Taiwan University **2015-2017**
M.S., Graduate Institute of Electrical Engineering *Advisor: Ho-Lin Chen*
Thesis: Encouraging Peer Grading in Massive Open Online Courses

National Taiwan University **2011-2015**
B.S., Electrical Engineering

Professional Experience

Duke University **2024**
Instructor of Record

Institute of Information Science, Academia Sinica **2017-2020**
Full-time Research Assistant (Research area: approximation algorithms and social network)

Lab of Teaching Innovation, National Taiwan University **2015-2017**
Massive Open Online Courses (MOOC) Explorer, Manufacturer, and Promoter

Honors & Awards

ACM ITiCSE **Outstanding Reviewer** 2025
Duke Graduate School **Dean's Award for Excellence in Teaching** 2025
Duke Graduate School **Bass Instructor of Record Fellowship** 2024
Duke CS **Outstanding Teaching Award** 2023
Duke CS **Outstanding Teaching Award** 2021
NTU GIEE **Best Master Thesis** (Title: Encouraging Peer Grading in Massive Open Online Courses) 2017

Publications

Asterisks (*) indicate equal contribution. Alpha (α) symbols indicate theoretical papers that followed the alphabetical order convention. **Bolded names** indicate the person(s) who gave the conference talk.

Conference Proceedings (Full Research Papers)

[1] **Shao-Heng Ko** and Kristin Stephens-Martinez. Connecting Computing Students' External Help Resource Preferences and Internal Help Resource Usage: 2021-2025. In *ACM SIGCSE TS (forthcoming)*, 2026.

[2] **Shao-Heng Ko**, Matthew Zahn, Kristin Stephens-Martinez, Yesenia Velasco, Lina Batestilli, and Sarah Heckman. Relationships Between Computing Students' Characteristics, Help-Seeking Approaches, and Help-Seeking Behavior in Introductory Courses and Beyond. In *ACM ICER*, pages 313–326, 2025.

[3] **Shao-Heng Ko** and Kristin Stephens-Martinez. Prior What Experience? The Relationship Between Prior Experience and Student Help-Seeking Beyond CS1. In *ACM ITiCSE*, pages 100–106, 2025.

[4] **Shao-Heng Ko**, Kristin Stephens-Martinez, Matthew Zahn, Yesenia Velasco, Lina Batestilli, and Sarah Heckman. Student Perceptions of the Help Resource Landscape. In *ACM SIGCSE TS*, pages 596–602, 2025.

[5] **Shao-Heng Ko** and Kristin Stephens-Martinez. The Trees in the Forest: Characterizing Computing Students' Individual Help-Seeking Approaches. In *ACM ICER*, pages 343–358, 2024.

[6] **Shao-Heng Ko** and Kristin Stephens-Martinez. What Drives Students to Office Hours: Individual Differences and Similarities. In *ACM SIGCSE TS*, pages 959–965, 2023.

[7] Shao-Heng Ko*, **Erin Taylor***, Pankaj K. Agarwal, and Kamesh Munagala. All Politics is Local: Redistricting via Local Fairness. In *NeurIPS*, pages 17443–17455, 2022.

[8] Pankaj K. Agarwal$^{\alpha}$, Shao-Heng Ko$^{\alpha}$, Kamesh Munagala$^{\alpha}$, and **Erin Taylor**$^{\alpha}$. Locally Fair Partitioning. In *AAAI*, pages 4752–4759, 2022.

[9] **Shao-Heng Ko**$^{\alpha}$ and Kamesh Munagala$^{\alpha}$. Optimal Price Discrimination for Randomized Mechanisms. In *ACM EC*, pages 477–496, 2022.

[10] **Shao-Heng Ko**, Ying-Chun Lin, Hsu-Chao Lai, Wang-Chien Lee, and De-Nian Yang. On VR Spatial Query for Dual Entangled Worlds. In *ACM CIKM*, pages 9–18, 2019.

Conference Proceedings (Full Experience Reports)

[1] **Shao-Heng Ko**, **Alex Chao**, and Violet Pang. Satisfactory for all: supporting mastery learning with human-in-the-loop assessments in a discrete math course. In *ACM SIGCSE TS*, pages 589–595, 2025.

Journal Articles

[1] Janet Jiang, Jonathan Liu, Shao-Heng Ko, Kristin Stephens-Martinez, and Diana Franklin. Adapting an ecological belonging intervention to an introductory computer science course. *Under submission at ACM Transactions on Computing Education (TOCE)*.

[2] Janet Jiang, Shao-Heng Ko, and Kristin Stephens-Martinez. Peer instruction in hybrid computing courses: The relationships between student modality, discussion, and learning. *Under submission at ACM Transactions on Computing Education (TOCE)*.

[3] Shao-Heng Ko and Kristin Stephens-Martinez. Rethinking computing students' help resource utilization through sequentiality. *ACM Transactions on Computing Education (TOCE)*, 25(1), 2025.

[4] Shao-Heng Ko$^{\alpha}$ and Kamesh Munagala$^{\alpha}$. Optimal Price Discrimination for Randomized Mechanisms. *ACM Transactions on Economics and Computation (TEAC)*, 12(2), 2024.

[5] Chih-Ya Shen*, Shao-Heng Ko*, Guang-Siang Lee, Wang-Chien Lee, and De-Nian Yang. Density Personalized Group Query. *The International Journal on Very Large Data Bases (VLDB)*, 16(4):615–628, 2022.

[6] Shao-Heng Ko, Hsu-Chao Lai, Hong-Han Shuai, Wang-Chien Lee, Philip S. Yu, and De-Nian Yang. Optimizing Item and Subgroup Configurations for Social-Aware VR Shopping. *The International Journal on Very Large Data Bases (VLDB)*, 13(8):1275–1289, 2020.

Other Peer-Reviewed Publications

[1] Matthew Forshaw, Cristina Adriana Alexandru, Caitlin Bentley, Vladimiro González-Zelaya, Joseph Kwame Adjei, Vangel Ajanovski, Mireilla Bikanga Ada, Julian Brooks, Joshua Burridge, Alex Chao, Rutwa Engineer, Olga Glebova, Tasmina Islam, Mitsuka Kiyohara, Shao-Heng Ko, Ellert Smári Kristbergsson, Svetlana Peltsverger, Seán Russell, Maíra Marques Samary, Merel Steenbergen, and Carolin Wortmann. Fairness in student allocation and group formation (working group abstract; report under submission). In *ACM ITiCSE-WG*, pages 699–700, 2025.

[2] Salma El Otmani, Janet Jiang, Shao-Heng Ko, and Kristin Stephens-Martinez. The Relationships Between Modality, Peer Instruction Discussion, and Class Sentiment in Hybrid Courses (Poster). In *ACM SIGCSE TS*, pages 1634–1635, 2024.

[3] Shao-Heng Ko. Characterizing Computing Students' Academic Help-seeking Behavior (Doctoral Consortium Extended Abstract). In *ACM ICER*, pages 73–75, 2023.

Teaching Experiences

See my website for further descriptions of my roles and responsibilities.

Instructor of Record, Duke CS

- CS230 Discrete Mathematics for Computer Science [Spring 2024 (138 students, 3 graduate TAs, 21 UTAs)] [Exp. Report] [Blog Series]

Teaching Assistant, Duke CS

- CS171 Learning How to Learn with AI — Fall 2025 (24)
- CS230 Discrete Mathematics for Computer Science — Summer 2025 (8)
- CS330 Intro to the Design and Analysis of Algorithms — Spring 2025 (336)
- CS230 Discrete Mathematics for Computer Science — Fall 2023 (121)
- CS216 Everything Data — Spring 2023 (234)
- CS216 Everything Data — Fall 2022 (208)
- CS330 Intro to the Design and Analysis of Algorithms — Fall 2021 (142)
- CS230 Discrete Mathematics for Computer Science — Spring 2021 (120)
- CS330 Intro to the Design and Analysis of Algorithms — Fall 2020 (172)

Teaching Assistant, NTU EE/GIEE

- EE5182 Advanced Algorithms — Spring 2017 (97)
- EE5048 The Design and Analysis of Algorithms — Fall 2016 (157)
- EE2008 Discrete Mathematics — Spring 2016 (169)
- EE5048 The Design and Analysis of Algorithms — Fall 2015 (152)

Academic Services

Conference Reviewing

- ACM Technical Symposium on Computer Science Education (SIGCSE TS) — 2026, 2025, 2024, 2023
- ACM Conference on Innovation and Technology in Computer Science Education (ITiCSE) — 2025 (*Outstanding Reviewer), 2024
- ACM Conference on International Computing Education Research (ICER) — 2025
- ACM Designing Interactive Systems Conference (DIS) — 2025
- ACM Virtual Global Computing Education Conference (SIGCSE Virtual) — 2024
- ACM The Web Conference (WWW) — 2024
- IEEE Global Communications Conference (GLOBECOM) — 2018

Journal Reviewing

- ACM Transactions on Computing Education (TOCE) — 2024-now

Research Mentoring

Undergraduate Students (Duke)

- Alex Pool, Optional groupwork in CS theory course assignments — Fall 2025
- Ricardo Urena, Relationships between student learning beliefs and help-seeking in CS — Summer 2025
- Zehavi Rodriguez, Demographic factors and self-assessment trajectories in intro CS — Summer 2025
- Janet Jiang, Effectiveness of Peer Instruction in Hybrid Courses — Summer 2023 - Spring 2025
- Salma El Otmani, Effectiveness of Hybrid Courses — Summer 2023
- Jerry He, Effectiveness of Hybrid Courses — Summer 2023
- Belle (Hao) Xu, Student Behavior on Formative Assessments and Performance on Summative Assessments — Spring 2023
- Rhea Tejwani, Efficacy of Office Hours in CS1 — Spring 2023

M.S. Students (Academia Sinica-NTU)

- Ta-Che Hsiao — 2019-2020
- Chi-Jen Lo — 2019-2020
- Chiao-Wen Lin — 2019-2020

Talks and Media Appearances

Please see the Publication Section for conference paper presentations.

Podcasts

- Guest on *The CS-Ed Podcast, S4E13: "Academic Help-Seeking Approaches and Behavior"* — 11/3/2025

Panels

- "Discipline-based research writing", at *Duke Thompson Writing Program 315S Argument Across the Disciplines* — 10/3/2024
- "What Ph.D. programs are like", at *Duke Plus Programs* — 7/5/2023
- "Why MOOCs?", at *NTU Teaching Innovation Lab* — 12/26/2016

Invited Research Talks

- "Characterizing computing students' help-seeking behavior in office hours, now, in our own classrooms", at PSUT CSEd Group — 5/29/2023
- "Characterizing computing students' academic help-seeking behavior across courses and help resources", at UCSD CSEd Lab — 5/15/2023

Guest Lecturing

- Probability in the Real World (2), at Duke CS171 Learning How to Learn with AI — 10/30/2025
- Probability in the Real World (1), at Duke CS171 Learning How to Learn with AI — 10/28/2025
- Introduction to Probability, at Duke CS171 Learning How to Learn with AI — 10/21/2025
- Exam Review, at Duke CS230 Discrete Mathematics — 6/18/2025
- Random Variables and Expectation, at Duke CS230 Discrete Mathematics — 6/17/2025
- Probability, at Duke CS230 Discrete Mathematics — 6/16/2025
- Permutations and Combinations, at Duke CS230 Discrete Mathematics — 6/12/2025
- Introduction to Counting, at Duke CS230 Discrete Mathematics — 6/11/2025
- `NumPy` and `Pandas`, at Duke CS216 Everything Data — 9/11/2024
- Counting and Probability, at Duke CS230 Discrete Mathematics — 10/18/2023
- Proofs by Induction, at Duke CS230 Discrete Mathematics — 9/13/2023
- Visualization (2), at Duke CS216 Everything Data — 3/31/2023
- Visualization (1), at Duke CS216 Everything Data — 3/29/2023

Miscellaneous

2014: **Co-editor** of *Benson's amazement in probability*, a collection of student-generated peer assessments in flipped undergraduate probability classes in Taiwan. ISBN: 9789861371832