Yan Chen

CONTACT INFORMATION	ych@vt.edu https://chensivan.github.io/

BIO & RESEARCH INTERESTS

Yan Chen is an Assistant Professor of Computer Science at Virginia Tech (USA) where he directs the Programming with Intelligent Machines & Environments Lab (PRIME). Yan is active in the Human-Computer Interaction (HCI) research community. His research spans programming support tools, software engineering, crowdsourcing, and CS education. His work has been published at top HCI conferences, including ACM CHI, UIST, and CSCW. He received the Best Short Paper award at VL/HCC 2020, the Best Paper at L@S 2024, and Best Paper Honorable Mention Awards at UIST 2022 and CHI 2023. Yan was a Postdoctoral Fellow at the University of Toronto (Canada), working with Tovi Grossman. He received his Ph.D. degree, advised by Steve Oney, from the University of Michigan (USA), and BS and MS degrees in Applied Math and Electrical & Computer Engieering from the University of Colorado, Boulder (USA).

My research in HCI studies challenges that computer programmers at all levels of expertise face when using existing tools and methods to seek support. It combines human and machine computation to create programming support systems that can effectively and scalably assist programmers when needed. The systems I create address challenges including providing within-IDE help in nearly real time, providing feedback to learners at scale, synthesizing code snippets reliably, and testing an interface with high coverage, which neither computers nor humans can effectively solve alone. To make these systems possible, my research explores how to design workflows and interfaces that can effectively coordinate and scale the collective effort of experts, non-experts, and machines.

Keywords: Programming learning at scale, AI for education, Human-AI collaboration.

EDUCATION

University of Michigan, Ann Arbor, MI, US

Ph.D. in Information Science (2014 - 2020)

- Dissertation: On-demand Collaboration in Programming
- Advisor: Steve Oney
- Committee: Mark Ackerman, Mark Guzdial, Philip Guo

University of Colorado, Boulder, CO, US

M.S in Applied Mathematics (2014)

- Master Thesis: Asymptotic Series Solutions To One-Dimensional Helmholtz Equation
- Thesis Advisor: Harvey Segur

B.S. in Applied Mathematics and B.S. in Electrical and Computer Engineering (2014)

PROFESSIONAL EXPERIENCE

Virginia Tech, Blacksburg, VA, USA

- Assistant Professor, Computer Science Department (March 2023 - present)

University of Toronto, Toronto, Canada

- Postdoctoral Fellow, (Jan. 2021 - Dec. 2022)
- Host: Tovi Grossman

Google, Mountain View, CA, US

- UX Research Intern, (May. 2019 - Aug. 2019)

- Host: Dr. Tao Dong
  Supporting programming learning via live streaming [8]

Snap Inc., Seattle, WA, US

- Research Intern, (Jan. 2018 - Apr. 2018)
- Hosts: Dr. Andrés Monroy-Hernández and Dr. Rajan Vaish
  Interviewed with staffed Snap Story curators on their curation tools experience. Drew design implications. Developed a hybrid-machine workflow and system for rapid video curation. Conducted a large-scale (30k+ video) study to explore the effectiveness of the approach [4].

Harvard University, Cambridge, MA, US

- Undergraduate Research Intern, (Jun. 2013 - Aug. 2013)
- Advisors: Professor Katharina Reinecke, Professor Krzysztof Gajos
  Developed a web application that quantifies websites' aesthetics and predicts visual preference of people with different cultural background.

University of Colorado, Boulder, CO, US

- Research Assistant, (Sep. 2012 - May 2014)
- Advisor: Professor Tom Yeh
  Developed and conducted in-lab experiments for the active authentication project on personal computer and smart phone. Applied image and video processing techniques for pattern recognition [1].

University of Colorado, Boulder, CO, US

- Research Assistant, (Sep. 2012 - May 2014)
- Advisor: Professor Harvey Segur
  Generalized hyperasymptotic series mechanism to approximate other functions. Discovered unavoidable oscillation in hyperasymptotic series mechanism.

CONFERENCE PAPERS AND JOURNALS

27. Kevin Pu, Daniel Lazaro, Ian Arawjo, Haijun Xia, Ziang Xiao, Tovi Grossman, **Yan Chen**. Assistance or Disruption? Exploring and Evaluating the Design and Trade-offs of Proactive AI Programming Support. ACM CHI 2025.

26. Daniel Manesh, Tong Wu, **Yan Chen**, Sang Won Lee. Understanding and Improving Student Note-Taking in Live Coding Lectures. ACM ICER 2025.

25. Haonan Zhang, Peng Zhang, **Yan Chen**, Meitong Guo, Hansu Gu, Tun Lu, Ning Gu. WePilot: Integrating Younger Family Members and Chatbot to Support Older Adults Learning Smartphone Usage. ACM CSCW 2025.

24. Tong Wu, Xiaohang Tang, Sam Wong, Xi Chen, Cliff Shaffer, **Yan Chen**. The Impact of Group Discussion and Formation on Student Performance: An Experience Report in a Large CS1 Course. SIGCSE 2025

23. Panayu Keelawat, David Barron, Kaushik Narasimhan, Daniel Manesh, Xiaohang Tang, Xi Chen, Sang Won Lee, **Yan Chen**. Dynamite: Real-Time Debriefing Slide Authoring through AI-Enhanced Multimodal Interaction. IEEE Symposium on Visual Languages and Human-Centric Computing (VL/HCC) 2025.

22. Xiaohang Tang, Sam Wong, Kevin Pu, Xi Chen, Yalong Yang, **Yan Chen**. VizGroup: An AI-Assisted Event-Driven System for Real-Time Collaborative Programming Learning Analytics. ACM UIST 2024.

21. Tianjia Wang, Tong Wu, Huayi Liu, Chris Brown, **Yan Chen**. Generative Co-Learners: Enhancing Cognitive and Social Presence of Students in Asynchronous Learning with Generative AI

ACM GROUP 2025

20. Ashley Zhang, Xiaohang Tang, Steve Oney, **Yan Chen**. CFlow: Supporting Semantic Flow Analysis of Students' Code in Programming Problems at Scale. ACM Learning @ Scale 2024 *L@S '24*. (**Best Paper**)

19. Tianjia Wang, Daniel Vargas Diaz, Chris Brown, **Yan Chen**. Exploring the Role of AI Assistants in Computer Science Education: Methods, Implications, and Instructor Perspectives. IEEE Symposium on Visual Languages and Human-Centric Computing *VL/HCC '23*.

18. Ashley Ge Zhang, **Yan Chen**, Steve Oney. RunEx: Augmenting Regular-Expression Code Search with Runtime Values. IEEE Symposium on Visual Languages and Human-Centric Computing *VL/HCC '23*.

17. Kevin Pu, Jim Yang, Angel Yuan, Minyi Ma, Rui Dong, Xinyu Wang, **Yan Chen**, Tovi Grossman. DiLogics: Creating Web Automation Programs with Diverse Logics.*ACM Symposium on User Interface Software and Technology (UIST 2023)*.

16. Ashley Zhang, **Yan Chen**, Steve Oney. VizProg: Identifying Misunderstandings by Visualizing Students' Coding Progress. In *Proceedings of the International ACM Conference on Human Factors in Computing Systems (CHI 2023)*. (**Best Paper Honorable Mention**)

15. Kevin Pu, Rainey Fu, Rui Dong, Xinyu Wang, **Yan Chen**, Tovi Grossman. SemanticOn: Specifying Content-Based Semantic Conditions for Web Automation Programs.*ACM Symposium on User Interface Software and Technology (UIST), 2022*. (**Best Paper Honorable Mention**)

14. Karthik Mahadevan, **Yan Chen**, Maya Cakmak, Anthony Tang, Tovi Grossman. Mimic: In-Situ Recording and Re-Use of Demonstrations to Support Robot Teleoperation. *ACM Symposium on User Interface Software and Technology (UIST), 2022*.

13. Rui Dong, Zhicheng Huang, Ian Iong Lam, **Yan Chen**, Xinyu Wang. WebRobot: Web Robotic Process Automation using Interactive Programming-by-Demonstration. *ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI 2022)*.

12. Jiannan Li, Mauricio Sousa, Chu Li, Jessie Liu, **Yan Chen**, Ravin Balakrishnan, Tovi Grossman. ASTEROIDS: Exploring Swarms of Mini-Telepresence Robots for Physical Skill Demonstration.In *Proceedings of the International ACM Conference on Human Factors in Computing Systems (CHI 2022)*.

11. **Yan Chen**, Tovi Grossman. Umitation: Retargeting UI Behavior Examples for Website Design. *ACM Symposium on User Interface Software and Technology (UIST), 2021*.

10. April Yi Wang*, **Yan Chen***, John Joon Young Chung, Christopher Brooks, and Steve Oney. PuzzleMe: Leveraging Peer Assessment for In-Class Programming Exercises. In *Proceedings of the International ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW 2021)*.

9. **Yan Chen**, Sang Won Lee, and Steve Oney. CoCapture: Effectively Communicating UI Behaviors on Existing Websites by Demonstrating and Remixing. In *Proceedings of the International ACM Conference on Human Factors in Computing Systems (CHI 2021)*, Virtual, USA.

8. **Yan Chen**, Walter S. Lasecki, and Tao Dong. Towards Supporting Programming Education at Scale via Live Streaming. In *Proceedings of the International ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW 2020)*.

7. **Yan Chen**, Jaylin Herskovitz, Walter S. Lasecki, and Steve Oney. A Hybrid Crowd-Machine Workflow for Program Synthesis. IEEE Symposium on Visual Languages and Human-Centric Computing *VL/HCC '20*.

6. **Yan Chen**, Jaylin Herskovitz, Gabriel Matute, April Wang, Sang Won Lee, Walter S. Lasecki, and Steve Oney. EdCode: Towards Personalized Support at Scale for Remote Assistance in CS Education. IEEE Symposium on Visual Languages and Human-Centric Computing *VL/HCC '20* (**Best Short Paper**).

5. **Yan Chen**, Maulishree Pandey, Jean Y. Song, Walter S. Lasecki, and Steve Oney. Improving Crowd-Supported GUI Testing with Structural Guidance. In *Proceedings of the International ACM Conference on Human Factors in Computing Systems (CHI 2020)*, Hawaii, USA.

4. **Yan Chen**, Andres Monroy-Hernandez, Ian Wehrman, Steve Oney, Walter S. Lasecki, Rajan Vaish. Sifter: A Hybrid Workflow for Theme-based Video Curation at Scale. In *Proceedings of the International ACM Conference on Interactive Media Experiences (IMX 2020)*, Barcelona, Spain.

3. **Yan Chen**, Sang Won Lee, Yin Xie, Yiwei Yang, Walter S. Lasecki, Steve Oney. Codeon: On-Demand Software Development Assistance. In *Proceedings of the International ACM Conference on Human Factors in Computing Systems (CHI 2017)*, Denver, USA.

2. **Yan Chen**, Steve Oney, Walter S. Lasecki. Towards Providing On-Demand Expert Support for Software Developers. In *Proceedings of the International ACM Conference on Human Factors in Computing Systems (CHI 2016)*, San Jose, USA.

1. Vishal Patel, Tom Yeh, M Salem, Yangmuzi Zhang, **Yan Chen**, Rama Chellappa, Larry Davis. Screen Fingerprints: a Novel Modality for Active Authentication. *IT Professional* 15, no. 4 (2013):38-42.

OTHER
PUBLICATIONS

14. Xiaohang Tang, Sam Wong, Marcus Huynh, Zicheng He, Yalong Yang, **Yan Chen**. SPHERE: Scaling Personalized Feedback in Programming Classrooms with Structured Review of LLM Outputs *ACM CHI LBW 2025.*

13. Tianjia Wang, Chenyu Mao, Ramaraja Ramanujan, Yi Lu, **Yan Chen**, Chris Brown. DevCoach: Supporting Students in Learning the Software Development Life Cycle at Scale with Generative Agents. *ACM Learning at Scale 2024 (Work-in-Progress).*

12. Kevin Pu, **Yan Chen**, Tovi Grossman. Towards Semantic User Intent Expression and Refinement in Web Automation. *PLATEAU, 2024.*

11. Ashley Zhang, **Yan Chen**, Steve Oney. Visualize Students' Progress To Facilitate Code Communication For In-Class Programming Exercises At Scale. *13th Annual Workshop at the Intersection of PL and HCI, PLATEAU, 2023.*

10. Xiaohang Tang, Xi Chen, Sam Wong, **Yan Chen**. VizPI: A Real-Time Visualization Tool for Enhancing Peer Instruction in Large-Scale Programming Lectures. *ACM Symposium on User Interface Software and Technology (UIST Poster 2023).*

9. **Yan Chen**, Yaxing Yao, Jasmine Jones. WireOn: Supporting Remote Collaboration for Embedded System Development. Demo at *The International ACM Conference on Computer-Supported Cooperative Work and Social Computing (CSCW 2020).*

8. **Yan Chen**, Jasmine Jones, Steve Oney. On-demand Programming Assistance. New Future of Work Symposium at Microsoft Research.

7. Yan Chen. Mocking-up Desired UI Behaviors from UI Element-Based Recording. Graduate Consortium at *IEEE Symposium on Visual Languages & Human-Centric Computing (VLHCC'19).*

6. **Yan Chen**, Steve Oney, and Walter S. Lasecki. Enhancing Context and Guidance for Asyn-

chronous Collaboration. Poster at *Human Computer Interaction Consortium (HCIC'18)*.

5. Sang Won Lee, **Yan Chen**, and Walter S. Lasecki. Speech-To-Tasks: Real-Time Crowd Generation of Task Lists from Speech. Demo at *The AAAI Conference on Human Computation (HCOMP '17)*.

4. Sang Won Lee, **Yan Chen**, Noah Klugman, Sai R. Gouravajhala, Angela Chen, and Walter S. Lasecki. Exploring Coordination Models for Ad Hoc Programming Teams. Late-Breaking-Work at *International ACM Conference on Human Factors in Computing Systems (CHI 2017)*, Denver, USA.

3. **Yan Chen**, Steve Oney, Walter S. Lasecki. Expert Crowd Support Systems for Software Developers. Collective Intelligence 2016, New York, USA. (Oral presentation)

2. **Yan Chen**, Steve Oney, Walter S. Lasecki. Automatically Capturing Context to Create Microtasks for Software Development. Workshop at *International ACM Conference on Human Factors in Computing Systems (CHI 2016)*, San Jose, USA.

1. Esther Vasiete, **Yan Chen**, Ian Char, Tom Yeh, Vishal Patel, Larry Davis, Rama Chellappa. Toward a non-intrusive, physio-behavioral biometric for smartphones. In *Proceedings of the 16th international conference on Human-computer interaction with mobile devices & services. (MobileHCI 2014)*, pp. 501-506. Toronto, Canada.

TEACHING EXPERIENCE

Virginia Tech (as the primary instructor)

- Introduction to GUI Development and Graphics (Undergraduate, 90 students, F2025)
- Social Computing and Computer-Supported Cooperative Work (Graduate, 20 students, F2024)
- Creative Computing Studio (Undergraduate, 30 students, S2024)
- Advanced Topics in HCI: Human Factors in AI-powered Systems (Graduate, 20 students, F2023)

University of Michigan (as a teaching instructor)

- Introduction to Programming (with Anthony Whyte), (Fall 2019)
- User Interface Development (with Walter Lasecki), (Winter 2019)
- User Interface Development (with Mark Guzdial), (Fall 2018)
- User Interface Development (with Mark Ackerman), (Fall 2017)
- Introduction to Programming (with Steve Oney and Paul Resnick), (Fall 2016)
- Data Visualization (with Eytan Adar), (Fall 2015)

STUDENTS (CO)ADVISED

Current

- **Yue Shen** (2025 Fall), PhD student at VT.
- **Panayu Keelawat** (2024 Fall), PhD student at VT.
- **Xiaohang Tang** (2023 Fall), PhD student at VT.
- **Kevin Pu** (2021 Fall), PhD student at U. of Toronto (w. Dr. Tovi Grossman).
- **Aravinda Kashyap** (2025 Fall), MS at VT.
- **David Barron** (2024 Fall), MS at VT.
- **Darshan Nere** (2024 Fall), MS at VT.
- **Rezky Dwisantika** (2025 Summer), Undergrad at SNIT, Indonesia
- **Zicheng He** (2024 Summer), Undergrad at UVA.
- **Sam Wong** (2023 Summer), MS at U. of Washington.

Alumni

- **Griffin Ogura**, MS at VT.
- **Bogdan Perlroth**, Undergrad at VT.

- **Marcus Huynh**, Undergrad at VT.
- **Tejas Navadan**, Undergrad at VT, first position SWE at Nutanix.
- **Xi Chen**, Undergrad at VT, first position SWE at Paypal.
- **Raman Khatri**, Undergrad at VT, first position SWE at X.
- **Jacob Martinage**, Undergrad at VT.
- **Zhixuan Chen**, Grad student at U. of Michigan.
- **Huayi Liu**, Undergrad at VT. first position: MS at NUS

THESIS COMMITTEE   Virginia Tech

- Taufiq Daryanto, Spring 2025
- Wei Liu, Spring 2025
- Daniel Manesh, Spring 2025
- Chenyu Mao, Spring 2025
- Andy Luu, Fall 2024
- Ramaraja Ramanujan, Spring 2024
- Yi Lu, Spring 2024
- Lemara Faith Williams, Spring 2024
- Daniel Vargas Diaz, Spring 2024

INVITED TALKS   T6. *Designing Adaptive Programming Assistance*

- Apple's Human Centered Machine Intelligence (Nov. 2025)
- UIUC iSchool (July 2025)
- Children's National Hospital, Division of Emergency Medicine (July 2025)
- Code.org (June 2025)
- Hong Kong University of Science and Technology (June 2025)

T5. *Hybrid Intelligence for Programming Support*

- Peking University, EECS (October2021
- Microsoft PROSE Research Team (September 2021)

T4. *On-demand Collaboration in Programming*

- University of Toronto (June 2020)

T3. *Support Programming Learning via Livestream*

- Google Flutter Team (August 2019)

T2. *Improving Crowd-Supported GUI Testing with Structural Guidance*
- Snapchat Research Team (April 2018)

T1. *CodeOn: On-demand Expert Support for Software Development*
- Tsinghua University (June 2015)

GRANT   **G6** (awarded) VT Instructional Grant 2025 (PI), Total: $10k.
G5 (awarded) VT TLOS Learning Innovation Grant 2024 (PI), Total: $5k, personal share: $5k.
G4 (awarded) VT 4VA 2025 (Co-PI), Total: $10k. (w. PI, Jake Grohs at VT)
G3 (awarded) VT Instructional Grant 2024 (Co-PI), Total: $10k. (w. PI, Sang Won Lee at VT)
G2 (awarded) VT TLOS Learning Innovation Grant 2023 (PI), Total: $5k, personal share: $5k.
G1 (awarded) 4VA 2023 (PI), Total: $30k, personal share: $30k. (w. Co-PI, Thomas Latoza at GMU)

REVIEW SERVICE	NSF Proposal Review Panelist (x1) PC: CHI (23-26), UIST (22, 25), CSCW (23, 24), VLHCC (21,25), L@S (24) Reviewer: CHI, UIST, CSCW, L@S, VLHCC, TiiS, HCOMP

SERVICE

S3. Faculty Meet ups: C-Tech^2-BEE VT-TechGirls (2024, 2025)

S2. Led "POSSE Workshop: Introduction to Web Programming" (Workshop) @ POSSE Foundation, 2018, Ann Arbor, MI, United States

S1. Michigan Interactive and Social Computing Research Group (MISC) student coordinator ('19)

HONORS & AWARDS

H9. Best paper, L@S'24.

H8. Best paper honorable mention award, CHI'23.

H7. Best paper honorable mention award, UIST'22.

H6. University of Michigan Rackham Graduate School Research Grant ('19)

H5. Best short paper award, VL/HCC'20.

H4. Special Recognition Received for Excellent Review CHI'19.

H3. Selected as a HCIC-Funded Student in University of Michigan to participate in Human Computer Interaction Consortium(HCIC) 2018 "AI & HCI".

H2. University of Michigan Rackham Graduate School Student Travel Grant ('16, '17, '20)

H1. University of Michigan School of Information Student Travel Grant ('16, '17, '20)

PRESS

P4. Technology grant program fosters teaching innovation, VT News (2024)
(web article: http://bit.ly/3NVeakk)

P3. Best practice guidance for live streaming programming, Google (2019)
(youtube: https://bit.ly/36W0Pkg)

P2. Best practices for hosting a live streaming coding session, Google (2019)
(medium: https://bit.ly/2SfEavb)

P1. Codeon is the intelligent assistant for software developers, UMich CSE News (2017)
(web article: https://bit.ly/3bMGd2l)