

William Goss

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EDUCATION

University of Illinois Urbana-Champaign
Ph.D. in Computer Science

Urbana, Illinois
Aug 2023 – Expected May 2028

- Research interests in Human-Computer Interaction and Education, with a focus on making the hidden processes of programming and debugging visible and meaningful for learners.
- Advised by Dr. Sarah Sterman

University of Massachusetts Amherst
M.S. in Computer Science

Amherst, Massachusetts
May 2020

DePaul University
B.S. in Computer Science

Chicago, Illinois
Jun 2014

WORK EXPERIENCE

Siebel School of Computing and Data Science
Research Assistant, Process, Interaction, and Creativity Lab

University of Illinois Urbana-Champaign
Jan 2024 – Present

- Designed and developed SPIDER (debugging.studio), a standalone web application that makes students' hidden debugging processes visible through an interactive canvas — capturing snapshots, diffs, outputs, and AI-generated summaries at each step. Deployed on AWS and used by over 900 students in CS 101.
- Conducted qualitative research through paper prototyping, semi-structured interviews, open coding, and thematic analysis to evaluate usability and surface opportunities for improving the tool across multiple iterative design cycles.
- Mentored undergraduate students, guiding their contributions across tool development, study design, and data analysis.
- *Research supported in part by a Google Academic Research Award (2024–2026).*

Wisconsin Center for Educational Research
Research Programmer, Interactive Learning & Design Lab

University of Wisconsin–Madison
Dec 2020 – Aug 2023

- Built and deployed a full-stack MERN web application used by hundreds of students in real classrooms, delivering research-based science writing curriculum and integrating an AI feedback tool that allowed students to receive automated guidance while enabling researchers to iterate on content and observe outcomes.
- Led development across multi-million dollar NSF-funded projects in collaboration with UIUC, UW–Madison, Toronto Metropolitan University, and Penn State, coordinating technical contributions across institutions and ensuring alignment with project goals.
- Bridged computing, education, and the learning sciences to pursue new interdisciplinary research directions, and communicated findings at weekly cross-institutional meetings, NSF review events, and academic conferences.

Center for Data Science
Data Science Fellow, Springfield Public Schools

University of Massachusetts Amherst
Jun 2019 – Aug 2019

- Collaborated with Springfield Public Schools to investigate trends and patterns in high school students' secondary education outcomes, working within an underperforming district to surface actionable insights.
- Performed exploratory data analysis, produced clear visualizations to support findings, and served as a liaison between technical and non-technical team members to ensure shared understanding.
- Selected to present the team's work to a large audience of academics, organizational and community leaders, and potential funders at the program's closing showcase.

Software and Requirements Engineering Center
Research Assistant, DePaul CDM

DePaul University
Mar 2014 – Jul 2016

- Developed core research software infrastructure used by Ph.D. students across multiple projects, ensuring code was accurate, reproducible, and well-tested to support peer-reviewed publications.
- Rapidly learned new programming languages, frameworks, and tools as needed to address evolving research questions, adapt-

ing to diverse and changing technical requirements.

- Collaborated with faculty and graduate researchers on software traceability problems, with substantial contributions to system development resulting in multiple co-authored publications at top software engineering conferences.

PUBLICATIONS

Conference

- [1] Singh, P., Gnesdilow, D., Cang, X., Baker, S., **Goss, W.**, Kim, C., Passonneau, R.J., & Puntambekar, S. Design of Real-time Scaffolding of Middle School Science Writing Using Automated Techniques. In Chinn, C., Tan, E., Chan, C., & Kali, Y. (Eds.). (2022). *Proceedings of the 16th International Conference of the Learning Sciences – ICLS 2022*. Hiroshima, Japan: International Society of the Learning Sciences.
- [2] Tarun, A., Andric, V., Yang, L., Tibu, T., Zaccagnini, L., Zheng, L., Hadinezhad, S., Cang, X., **Goss, W.**, Baker, S., Gnesdilow, D., Puntambekar, S., Tissenbaum, M., & Mazalek, A. SimSnap: Supporting Collaborative Learning through Reconfigurable Simulations. In Weinberger, A., Chen, W., Hernández-Leo, D., & Chen, B. (Eds.). (2022). *Proceedings of the 15th International Conference on Computer-Supported Collaborative Learning – CSCL 2022*. Hiroshima, Japan: International Society of the Learning Sciences.
- [3] Rahimi, M., **Goss, W.**, & Cleland-Huang, J. (2016, October). Evolving requirements-to-code trace links across versions of a software system. In *2016 IEEE International Conference on Software Maintenance and Evolution (ICSME)* (pp. 99–109). IEEE.

Journal

- [1] Lian, X., Zhang, L., Jiang, J., & **Goss, W.** (2018). An approach for optimized feature selection in large-scale software product lines. *Journal of Systems and Software*, 137, 636–651.
- [2] Pruski, P., Lohar, S., **Goss, W.**, Rasin, A., & Cleland-Huang, J. (2015). Tiqu: answering unstructured natural language trace queries. *Requirements Engineering*, 20(3), 215–232.

Tool Demo

- [1] Lin, J., Liu, Y., Guo, J., Cleland-Huang, J., **Goss, W.**, Liu, W., Lohar, S., Monaikul, N., & Rasin, A. (2017, October). Tiqu: a natural language interface for querying software project data. In *2017 32nd IEEE/ACM International Conference on Automated Software Engineering (ASE)* (pp. 973–977). IEEE. **Best Tool Demo Award**

Workshop

- [1] Cleland-Huang, J., Guo, J., Monaikul, N., Lohar, S., **Goss, W.**, & Rasin, A. Using Natural Language Processing to Translate Software Project Queries into Structured Form. In: *Workshop on the Naturalness of Software, Seattle, USA, Nov 13, 2016*.

Symposium

- [1] **Goss, W.**, Singh, P., Puntambekar, S., Gnesdilow, D., Kim, C., & Passonneau, R.J. (2022). Combining Student and Teacher Feedback for Effective Science Writing. In Weinberger, A., Chen, W., Hernández-Leo, D., & Chen, B. (Eds.), *Proceedings of the 15th International Conference on Computer-Supported Collaborative Learning – CSCL 2022*. International Society of the Learning Sciences.

Poster

- [1] **Goss, W.**, Dey, I., Dickler, R., Hirshfield, L., Tissenbaum, M., & Puntambekar, S. Developing Dynamic Dashboards for Classroom Orchestration. In Chinn, C., Tan, E., Chan, C., & Kali, Y. (Eds.). (2022). *Proceedings of the 16th International Conference of the Learning Sciences – ICLS 2022*. Hiroshima, Japan: International Society of the Learning Sciences.
- [2] Dey, I., Dickler, R., Hirshfield, L., **Goss, W.**, Tissenbaum, M., & Puntambekar, S. (2022). Using Participatory Design Studies to Collaboratively Create Teacher Dashboards. In Rodrigo, M.M., Matsuda, N., Cristea, A.I., & Dimitrova, V. (Eds.), *Artificial Intelligence in Education. AIED 2022*. Lecture Notes in Computer Science, vol. 13356. Springer, Cham.

TEACHING EXPERIENCE

University of Illinois Urbana-Champaign
Head Teaching Assistant, CS 417: Virtual Reality

Champaign, Illinois
Spring 2026

- Coordinated a team of course assistants, aligning on grading standards and ensuring consistent, timely feedback across a large enrollment.
- Provided structured feedback on assignment design and grading rubrics, collaborating with the instructor to improve clarity and fairness.
- Managed and resolved student issues arising within collaborative assignments, mediating group conflicts and ensuring equitable contribution.

MENTORSHIP

- Ritvik Sinhal, URAP Mentee, UIUC (2025)
- Caelan Kleinhans, Undergraduate Researcher, UW–Madison (2022–2023) — Software Engineer, Meta
- Longjie Guo, Undergraduate Researcher, UW–Madison (2023) — Ph.D. Student, University of Washington

AWARDS & SCHOLARSHIPS

Best Tool Demo Award, IEEE/ACM International Conference on Automated Software Engineering (ASE) 2017
 Awarded for the Tiqui tool demo: a natural language interface for querying software project data.

HSBC STEM Scholarship, DePaul University 2013–2014
 Recognition for high academic achievement in STEM fields.

SKILLS

- *Programming Languages*: Python, JavaScript, SQL, Java
- *Libraries & Frameworks*: React, Express.js, Node.js, Flask, Material-UI
- *Tools & Platforms*: AWS (DynamoDB, Cognito, Amplify, S3, SES), MongoDB, Git, $\LaTeX$
- *Research Methods*: Semi-structured interviews, thematic analysis, open coding, paper prototyping, participatory design, annotated visual analysis

OUTREACH

DREAAM & UIUC FabLab Summer Camp Urbana, Illinois
Volunteer Technologist and Community Mentor Summer 2026

- Developed software enabling middle and high school students to build community-relevant applications through natural language, without directly writing or viewing code, lowering barriers to creative computing for underrepresented youth.
- Provided on-site technical support throughout the week-long camp, troubleshooting issues in real time to keep participants engaged and on track.
- Mentored students from DREAAM — a Champaign County organization serving boys and young men ages 3–24 — and the UIUC FabLab, offering encouragement and hands-on guidance to help them navigate challenges and complete their projects.