

Mitch Gerhardt

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RESEARCH SUMMARY

I study generative AI adoption in STEM higher education across four organizational levels - students, instructors, institutions, and national contexts - drawing on qualitative, quantitative, and mixed methods from education, sociology, engineering, and Science & Technology Studies. My work spans empirical studies of graduate students' AI use, instructors' mental models of GAI, institutional and transnational AI governance (VT, Cornell, Fulbright Brazil, NYSSBA), and methodological contributions to LLM-infused qualitative research. I have industry experience at two Fortune 100 firms and work as an "AI translator" between technical, educational, and policy communities shaping responsible AI.

EDUCATION

- Ph.D. in Engineering Education**, Virginia Tech, GPA: 3.95/4.00 May 2027 (expected)
 PhD Candidate (advanced Fall 2025); Committee: A. Katz (Chair), C. Faber, H. Matusovich, N. Pitterson
 2025 NSF GRFP Honorable Mention; 2024 Google PhD Fellowship Nominee; 2023–2024 Davenport Fellow
- M.S. in Computer Science**, Virginia Tech, GPA: 3.90/4.00 December 2026 (expected)
 Committee: S. Hooshangi (Chair), A. Katz, S. Das. Coursework: *ML, NLP, AI Tools for Software Engineering*
- Graduate Certificate, Cognition and Education**, Virginia Tech, GPA: 4.00/4.00 May 2025
- B.S. in Electrical Engineering** (*Magna Cum Laude*), Virginia Tech, GPA: 3.69/4.00 December 2020

SELECTED RESEARCH EXPERIENCES

- Graduate Research Assistant** Aug. 2025 – Present
 Department of Engineering Education, Virginia Tech Blacksburg, VA
 NSF CAREER #2339702: "Minds and Machines: Engineering Faculty Mental Models of Generative AI and Instructional Decisions"
- Conducting qualitative interviews with 170 engineering faculty to study how AI shapes instructional decisions, assessment practices, and workplace norms
 - Developing LLM-infused qualitative analysis workflows and ethnomethodological frameworks examining epistemic cultures and expertise recognition in AI-mediated educational environments
- Principal Investigator, Multi-Institutional GAI Survey Study** May 2025 – Present
 IRB-approved study of STEM graduate students' generative AI adoption Multi-institutional
- Designed and deployed survey across six R1 U.S. institutions, yielding 370+ responses - one of the largest empirical datasets on STEM graduate students' GAI use to date
 - Findings reveal significant polarization in how graduate students relate to AI, impacting disciplinary understanding, advising relationships, and perceived legitimacy with peers
 - Mixed-methods design pairing descriptive statistics, correlational analyses, and demographic models with planned qualitative interviews on socialization and norms around GAI use

SELECTED JOURNAL & CONFERENCE PUBLICATIONS

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| 2025 | Gerhardt, M. , & Katz, A. "Automated Analysis of Knowledge Types in CS Textbooks: A NLP Approach to Understanding Epistemic Climate." <i>2025 ASEE Annual Conference</i> , Montreal, QC. |
| 2024 | Katz, A., Gerhardt, M. , & Soledad, M. "Using Generative Text Models to Create Qualitative Codebooks for Student Evaluations of Teaching." <i>International Journal of Qualitative Methods</i> . |
| In Revision | Gerhardt, M. , Coloyan Fleming, G., Wei, S., & Katz, A. "Leveraging Large Language Models in Engineering Education Research: Methods and Applications." Book chapter, <i>2027 Cambridge International Handbook on Engineering Education Research Methods</i> . |
| Under Review | Gerhardt, M. , & Katz, A. "Improving GAI Qualitative Research Workflow Quality: Techniques and Documentation Strategies." <i>Studies in Engineering Education</i> , Special on GAI in Methods. |

Submitted	Gerhardt, M. , Shiekh, K., Katz, A., & Chaback, B. "It's like 'X': How Engineering Faculty Metaphors Construct (and Constrain) GAI Understanding." <i>2026 ASEE Annual Conference</i> .
Submitted	Chaback, B., Gerhardt, M. , Katz, A., & Shiekh, K. "When Can GAI Be Used Anyway? An Analysis of Engineering Faculty's GAI Policies." <i>2026 ASEE Annual Conference</i> .
In Prep.	Gerhardt, M. , Katz, A., & Hooshangi, S. "Addictive GAI Use Among STEM Graduate Students: Dependency-Based Technological Diffusion." Targeting <i>SIGCSE 2026</i> .
In Prep.	Gerhardt, M. , Werth, A., & Kim, S. "Did You Get That? The affordances and challenges of AI-assisted transcription for qualitative research." Targeting <i>IJQM 2026</i> .

SELECTED GRANTS & AWARDS

Co-Principal Investigator, NSF CCSS Seed Grant (\$4,500), Cornell University Fall 2025
Bridging the Conversational AI Gap: Synthetic Dataset Generation for Engineering Education Dialogue

- Developing methodology for synthetic multi-speaker speech datasets that preserve conversational phenomena (overlapping speech, pauses, turn-taking) critical to studying workplace learning; fine-tuning open-source ASR models on 500–1,000 ElevenLabs-generated dialogues

Co-Facilitator, Fulbright Brazil International Collaboration Sept. 2025 & May 2026

- Selected with advisor and VT colleagues for intensive multi-day faculty development programs on GAI adoption; presented to 80+ engineering faculty from Brazilian universities on GAI fundamentals, assessment transformation, ethics, and institutional policy

NSF Graduate Research Fellowship Program, Honorable Mention 2025

Google PhD Fellowship in Human-Computer Interaction, Nominee 2025

SELECTED INVITED TALKS & WORKSHOPS

March 2026	Workshop Lead , "Effective GAI Course Policies for Graduate Instructors," Virginia Tech. IRB-approved cross-institutional workshop with the Graduate Honor System, CETL, and TLOS.
Dec. 2025	Guest Lecturer , "AI Research Ethics in Engineering Education," University of Pittsburgh ECE Graduate Seminar.
Nov. 2025	Guest Lecturer , "LLMs in Qualitative Engineering Education Research," UT Austin (Dr. M. Borrego).
Oct. 2025	Invited Speaker , Cornell DBER Research Group (2 presentations on LLMs in engineering education research).
May 2025	Invited Student , Virginia Tech Board of Visitors (discussed GAI adoption research with university leadership).

SERVICE

Associate Chair, Panelist, & Discussion Mediator, VT Graduate Honor System Aug. 2023 – Present

Web Master & Search Committee Member, ASEE National Graduate Studies Division June 2025 – Present

Mentor, NSF GRFP Applications, Cornell University Fall 2025

Reviewer: ASEE Annual Conference (2024–2026), *Frontiers in Education* (2026), *International Journal of Qualitative Methods* (2024–2025), Capstone Design Conference (2024)

TECHNICAL SKILLS

Qualitative & Mixed Methods: Ethnography, participant observation, semi-structured & key-informant interviews, grounded theory, ethnomethodology, discourse & conversational analysis, phenomenography, survey design, factor analysis, mixed-methods triangulation

AI / Computational Methods: Large language models, prompt & context engineering, LLM-infused qualitative research, RAG, agent-based systems, NLP, computational text analysis

Theoretical Frameworks: STS, epistemic cultures, social construction of technology, sociology of expertise, HCI, academic integrity

Programming & Tools: Python, JavaScript, C++, SQL, React, FastAPI, Docker, PyTorch, HuggingFace Transformers, DuckDB, MCP, Git