

SHANE K. PANTER

Department of Computer Science

College of Engineering

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RESEARCH INTERESTS

Empirical software engineering, software security, software supply chain security, technical lag and software abandonment.

EDUCATION

- **Ph.D., Computing**, Boise State University 2026
 - Dissertation: *Measuring Technical Lag in Software Ecosystems: An Empirical Approach*
 - Emphasis: Computer Science
 - Advisor: Nasir Eisty, Ph.D.
- **M.S., Computer Science**, Boise State University 2013
 - Emphasis: Machine Learning
 - Advisor: Tim Andersen, Ph.D.

ACADEMIC APPOINTMENTS

I have held several academic appointments at Boise State University, progressing from a strictly teaching role to a hybrid teaching/research position in my current role.

- **Assistant Clinical Professor**, Boise State University 2023 - present
- **Lecturer III**, Boise State University 2021 - 2023
- **Lecturer II**, Boise State University 2013 - 2021
- **Faculty Fellow**, Idaho AI Combine Fall 2026 - present

PUBLICATIONS

My primary research interests are empirical software engineering, software security, and software supply chain security. I have publications in venues including ESEM (CORE A) and the *Empirical Software Engineering* journal, with collaborators in the Computer Science department at Boise State and at external universities.

Journal Articles

1. **S. K. Panter**, L. S. Hindman, and N. U. Eisty. “PVAC: Package Version Activity Categorizer, Leveraging Semantic Versioning in a Heterogeneous System.” *Empirical Software Engineering* 30, 118 (2025). [Springer](#), [arXiv](#), [pdf](#)

Conference Papers

1. **S. K. Panter** and N. U. Eisty. “Technical Lag as Latent Technical Debt: A Rapid Review.” *IEEE/ACM International Conference on Technical Debt (TechDebt)*, Rio de Janeiro, Brazil (2026). CORE B. [ACM](#), [arXiv](#), [pdf](#)
2. **S. K. Panter** and N. U. Eisty. “Rusty Linux: Advances in Rust for Linux Kernel Development.”

18th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM), Barcelona, Spain (2024). CORE A. [ACM](#), [arXiv](#), [pdf](#)

3. A. Joshi, M. Schmidt, **S. Panter**, and A. Jain. “Evaluating the Benefits of Team-Based Learning in a Systems Programming Class.” *IEEE Frontiers in Education Conference (FIE), Uppsala, Sweden (2020).* [IEEE](#), [pdf](#)

In Preparation

1. **S. K. Panter** and N. U. Eisty. “MALTA: Maintenance-Aware Technical Lag Estimation to Address Software Abandonment.” Revision in preparation for *ACM International Conference on the Foundations of Software Engineering (FSE)*. Preprint (2026). [arXiv](#)

Posters and Other Work

1. T. M. Klabo, T. Valdez, T. Whitehead, N. Petitmermet, C. Young, A. Moll, N. Salzman, V. Stieha, **S. Panter**, and S. Latta. “Assistive Technology: Robot Arm.” *Undergraduate Research Showcase 96* (2020).
2. **S. Panter**, M. Schmidt, and A. Jain. “Team-Based Learning in Computer Science.” *Poster, Great Ideas for Teaching and Learning Symposium* (2014).

GRANTS

I have been Co-PI on two funded NSA grants totaling \$645,890 that bring cybersecurity education to K-12 teachers and classrooms. I am preparing an NSF proposal as PI, with Nasir Eisty as Co-PI, that extends my dissertation work on technical lag and software abandonment.

Funded

- **Integrating AI and Cybersecurity into the Elementary Classrooms**, NSA NCAE-C-001-2026. Co-PI (PI: Jyh-haw Yeh). \$495,890 for years 1 and 2, plus \$227,770 for an optional year 3. Subawards to College of Eastern Idaho and Whatcom Community College. 8/03/2026 - 9/30/2028, or 9/30/2029 with the optional year.
- **GenCyber 2024 Summer Camp at Boise State University for Secondary Teachers**, NSA. Co-PI (PI: Jyh-haw Yeh; Co-PIs: Doug Twitchell, Edward Vasko). \$150K. 7/24/2023 - 7/24/2025.

In Preparation

- **Abandonment-Aware Update Management in Heterogeneous System Software Stacks**, NSF. PI (Co-PI: Nasir Eisty, University of Tennessee, Knoxville). Planned submission February 2027.

Submitted

- **Mozilla Responsible CS Challenge**, Mozilla. Co-PI (PI: Donald Winiecki; Co-PI: Amit Jain). \$144,388. 2019.
- **Running Like the Wind: Boise State Broncos CWC20**, National Renewable Energy Laboratory. Co-PI (PI: Lynn Catlin). \$20K. 2019.
- **Predictable Ryde**, Idaho Department of Commerce. Co-PI (PI: Bogdan Dit). \$131,995. 2018.

SOFTWARE AND ARTIFACTS

- **OSS-Lag**: dataset and tooling that measure technical lag and abandonment of open source packages across Linux distributions. [GitHub](#)

- **PVAC:** dataset and scripts for the PVAC study of version activity in Ubuntu. [figshare](#)

TALKS

I have presented my research at ESEM and TechDebt. I am also invited to speak on cybersecurity to teachers, industry, and students, including a hands-on workshop at Boise State's Teach the Tech: Digital Literacy Summit.

Conference Presentations

- "Technical Lag as Latent Technical Debt: A Rapid Review," TechDebt, Rio de Janeiro, Brazil 2026
- "Rusty Linux: Advances in Rust for Linux Kernel Development," ESEM, Barcelona, Spain 2024

Invited Talks and Workshops

- "Staying Secure in a Connected World," ICCU Career Investment Day, Boise, Idaho October 2026
- "Lock It Down: Cybersecurity Essentials for the Modern World," workshop at Teach the Tech: Digital Literacy Summit, Boise State Extended Studies June 2026
- Faculty speaker, Spring 2026 CS Graduation Celebration, Boise State University May 2026

AWARDS AND HONORS

- Golden Apple Award nominee, Boise State University Spring 2026

TEACHING

I have taught 20 unique courses across all levels of our curriculum, from undergraduate to graduate, covering a broad range of CS topics. I have been the course coordinator for 11 of the department's courses and originated 6 courses from scratch. I also have extensive experience in developing and teaching asynchronous online courses at the undergraduate level. Over the last five-year period, I taught an average of 21 credits per year across 53 undergraduate and graduate courses, totaling 3,409 student-credit hours. I coordinated CS481 Senior Design from 2018 to 2021, supervising more than 75 student teams on projects sponsored by industry, nonprofits, and Boise State faculty.

Courses Taught

- **CS117** C++ for Engineers, course coordinator Fall 2015 - present
- **CS119** Introduction to Java
- **CS121** Introduction to Computer Science I
- **CS155 (250)** Introduction to Version Control, course coordinator Spring 2018 - present
- **CS208** Introduction to Full Stack Web Development, course coordinator Spring 2023 - present
- **CS221** Introduction to Computer Science II
- **CS253** Introduction to Systems Programming, course coordinator Fall 2015 - Spring 2018
- **CS331** Computer Security and Information Assurance
- **CS333** Network Security and Defense, course coordinator Spring 2023 - present
- **CS354** Programming Languages
- **CS401** Introduction to Web Development, course coordinator Spring 2020 - Fall 2024
- **CS408** Full Stack Web Development, course coordinator Fall 2024 - present
- **CS425** Computer Networks
- **CS452** Operating Systems, course coordinator Fall 2019 - present
- **CS471** Software Engineering
- **CS481** Senior Design, course coordinator Spring 2018 - Spring 2021

- **CS516** Introduction to Web Development, course coordinator Spring 2020 - Spring 2022
- **CS525** Computer Networks
- **CS552** Operating Systems, course coordinator Fall 2019 - present
- **CS554** Advanced Operating Systems

Teaching Innovation

- Integrated LLM coding and support into upper-division courses Spring 2026
- Coordinated the curriculum across all cybersecurity courses Fall 2025
- Introduced GitHub Codespaces into core undergraduate courses Fall 2023
- Quality Matters peer review of CS401 Summer 2022
- Integrated and configured an AWS security profile for web development courses Spring 2021
- Configured and implemented GitHub Classroom in core undergraduate courses Fall 2015
- Procured and configured an enterprise GitHub account for coursework submission Spring 2014

Mentoring

- **CS481 Senior Design:** Supervised more than 75 student teams over seven semesters, on projects sponsored by industry, nonprofits, and Boise State faculty, including Micron, HomeCU, Biomark, Valley Regional Transit, and Boise Brewing Spring 2018 - Spring 2021
- **Eric Melin:** Software supply chain security, open source ecosystems, attack detection, and technical debt (independent study) Spring 2026
- **James Collet:** Developing an ultra-high throughput sequencing-based assay for ligase ribozymes to study evolutionary innovations (committee member) Spring 2016 - Fall 2018
- **Jake Buckley:** Exploring machine learning with the Go programming language (independent study) Fall 2016
- Faculty advisor for three student clubs: Smash Brothers, CS Swing Dance, and Circus Arts

PROFESSIONAL EXPERIENCE

I have a decade of full-time industry experience before joining Boise State University as a faculty member. My experience allows me to enhance my curriculum and deliver engaging lectures, bridging academic theory to industry practice.

- **System Firmware Engineer**, Hewlett-Packard 2011 - 2012
 - Firmware for enterprise LaserJet printers in kernel and user space, focused on energy efficiency
- **Software Developer**, Western Trailer 2005 - 2011
 - ERP and MRP systems for production planning and inventory, including Microsoft Dynamics and Infor Visual Manufacturing
- **Network Technician**, Price Electric 2002 - 2005
 - Installed and maintained both high-voltage and low-voltage electrical systems, including networking and home automation systems

SERVICE

I have served on departmental, college, and university committees, reviewed for ESEM, and worked with local industry as a university liaison.

Professional

- ESEM 2025, sub-reviewer for the technical papers track
- ESEM 2024, sub-reviewer for the technical papers track

Department

- Cybersecurity course alignment for CS331, CS332, and CS333 Fall 2026
- AI Integration Committee, committee member Fall 2025 - Spring 2026
- Computer Science Department Outreach, committee member Spring 2023 - present
- Computer Science Department Curriculum, committee member Spring 2017 - Spring 2023
- Interim tutor center manager Fall 2018 - Spring 2019
- Curriculum Committee, interim chair Spring 2017 - Spring 2018
- Lecturer search and hiring committee, chair Spring 2016

College and University

- Graduate College LaTeX Thesis/Dissertation Template Working Group Fall 2026
- Engineering and Science Festival, volunteer Spring 2025
- COEN Senior Design Committee, committee member Spring 2019 - Spring 2021
- University Finishing Foundations, committee member Spring 2019 - Spring 2021
- Dean of Students, Academic Misconduct Review, board member Spring 2015 - Spring 2017

Industry Engagement

- Idaho Cyber Range, university liaison Spring 2023 - Fall 2025
- Senior Design, university liaison Spring 2019 - Spring 2021

Community

- Boy Scouts of America troop committee member Spring 2025 - Summer 2026
- Business Professionals of America (BPA) judge Spring 2017 - Spring 2024
- Boise Brewing [smart tap handle for charity](#) Spring 2019
- Interfaith Sanctuary [Adopt-a-meal website](#) Spring 2018
- IHSAA speech and debate judge Fall 2019 - Fall 2021
- Lowell Scott Middle School, CS Club instructor Fall 2015 - Spring 2016
- [Coding is Cool Workshop](#) for high school students and teachers Spring 2014

PROFESSIONAL DEVELOPMENT

I have participated in professional development through Boise State's Center for Teaching and Learning, eCampus, and the Linux Foundation.

- Reflection Teaching Certificate, Center for Teaching and Learning 2026
- Student Partners Program for CS333, Center for Teaching and Learning 2026
- Midsemester Assessment Program (MAP) reviews of CS425/525 (2026), CS452/552 (2025), and CS453 (2016), Center for Teaching and Learning
- 14-week eCampus online course development for CS155 and CS208 2025
- Basic Online Course Design and Basic Online Teaching certificates, Boise State eCampus 2024
- Linux Kernel Debugging and Security (LFD440), Linux Foundation 2021
- Flexible Teaching for Student Success Initiative, Tiers 1 and 2, Boise State University 2020
- Introduction to Accessibility and Universal Design for Learning, Instructional Design and Educational Assessment 2018

MEMBERSHIPS AND CERTIFICATIONS

- Association for Computing Machinery June 2016 - present
- Society of Manufacturing Engineers (Lean Manufacturing), Certificate No. 112833 (expired)