Vijay Banerjee

Pullman, WA, USA
vijay.banerjee@wsu.edu
Google Scholar

Education

Ph.D, Computer Science January 2021 – May 2025
University of Colorado Colorado Springs, CO, USA

MS, Computer Science January 2021 – May 2023
University of Colorado Colorado Springs, CO, USA ***GPA 4.0***

Experience

Postdoctoral Research Associate September, 2025 – Present
Washington State University
- Investigating side-channel security in real-time cyber-physical systems
- Mentoring undergraduate and graduate students in cybersecurity of embedded systems
- Designing new architecture for network security in P4 programming language pipeline

Postdoctoral Research Associate June, 2025 – September, 2025
University of Colorado Colorado Springs
- Investigating side-channel attack models against hardware-assisted security
- Mentoring undergraduate and graduate students in cybersecurity of embedded systems
- Collaborating with aerospace professionals across the world to understand the current challenges and solutions to the legacy technologies in aerospace.

Open Source Maintainer March, 2020 – Present
RTEMS Project
- Developed a framework for integrating a lightweight graphics library package into RTEMS Operating systems for real-time GUI applications.
- Provided code reviews on incoming code patches for RTEMS projects.
- Facilitated the release process by fixing bugs related to the build systems.

Lecturer January, 2021 – May 2025
University of Colorado Colorado Springs *CO, USA*
- Course: Programming with Unix

Graduate Research Assistant January, 2021 – May 2025
University of Colorado Colorado Springs *CO, USA*
- Researching secure boot-based cyber-physical systems.
- Designed a modular networking framework that facilitates the use of multiple network stacks with RTEMS-based real-time applications.
- Collaborated on the implementation of Strong APA scheduling on a Real-time Operating system.
- Investigated blockchain security in the distributed Bitcoin network.

Visiting Student Researcher June, 2023 – August 2023
Argonne National Laboratory *IL, USA*
- Tested and deployed control systems middleware on an Open Source Real-Time OS.
- Improved support for PowerPC boards on RTEMS.
- Collaborated with international researchers on improving EPICS and RTEMS.

Research & Development Intern May, 2022 – July 2022
Altia Inc. *CO, USA*
- Designed a secure data collection framework for consumer automotive.
- Developed a protocol implementation of privacy-preserving relay-network message collection
- Research privacy issues in consumer data collection methods.

Selected Publications

1. Minhajul Alam Rahat, Vijay Banerjee, Gedare Bloom, and Yanyan Zhuang. Cimalir: Cross-platform iot malware clustering using intermediate representation. In *2024 IEEE 14th Annual Computing and Communication Workshop and Conference (CCWC)*, pages 0460–0466. IEEE, 2024

2. Vijay Banerjee, Sena Hounsinou, Habeeb Olufowobi, Monowar Hasan, and Gedare Bloom. Secure reboots for real-time cyber-physical systems. In *Proceedings of the 4th Workshop on CPS & IoT Security and Privacy*, pages 27–33, 2022

3. Vijay Banerjee, Ryan Rabinowitz, Mark Stidd, Rory Lewis, Philip N Brown, and Gedare Bloom. The tragedy of the miners. In *2022 IEEE 19th Annual Consumer Communications & Networking Conference (CCNC)*, pages 760–765. IEEE, 2022

4. Sena Hounsinou, Vijay Banerjee, Chunhao Peng, Monowar Hasan, and Gedare Bloom. Work-in-progress: Enabling secure boot for real-time restart-based cyber-physical systems. In *2021 IEEE Real-Time Systems Symposium (RTSS)*, pages 524–527. IEEE, 2021

5. Vijay Banerjee, Sena Hounsinou, Harrison Gerber, and Gedare Bloom. Modular network stacks in the real-time executive for multiprocessor systems. In *2021 Resilience Week (RWS)*, pages 1–7. IEEE, 2021

6. Richi Dubey, Vijay Banerjee, Sena Hounsinou, and Gedare Bloom. Strong apa scheduling in a real-time operating system: work-in-progress. In *Proceedings of the 2021 International Conference on Embedded Software*, pages 47–48, 2021

Service

Brief Presentation Committee 2025
Real-Time Systems Symposium (RTSS)

Artifact Evaluation Committee 2025
ACM Conference on Computer and Communications Security (CCS)

Artifact Evaluation Committee 2025
Real-Time and Embedded Technology and Applications Symposium (RTAS)

Artifact Evaluation Committee 2022, 2023
Real-Time System Symposium (RTSS)

Reviewer 2023
IEEE Internet of Things Journal (IOTJ)

Reviewer 2022
Real-Time and Embedded Technology and Applications Symposium (RTAS)

Google Summer of Code Mentor 2020 – 2025
RTEMS Project

Awards & Honors

Graduate Research Fellowship
University of Colorado Colorado Springs *2023, 2024*

UCCS Computer Science Doctoral Tuition Grant
University of Colorado Colorado Springs *2022, 2023*

Colorado Cybersecurity Scholarship
University of Colorado Colorado Springs *2021, 2022, 2023*

O'Neil Graduate Research Assistantship Award
University of Colorado Colorado Springs *2022*