Pratik M. Kamble

mail@pratikkamble.com | pratikkamble.com | LinkedIn | GitHub
Google Scholar | ORCID

PROFILE

Ph.D. researcher in computer systems security with experience in program analysis, binary analysis, reverse engineering, and fuzzing. Published at DIMVA 2026; building hardware-assisted forced execution for RISC-V binaries. Combines research systems work in C/C++ and Python with production Java, Spring, and Kafka engineering.

TECHNICAL STRENGTHS

Languages:	C, C++, Python, Rust, Java, Assembly, SQL
Security:	Program analysis, binary analysis, reverse engineering, fuzzing, WebAssembly security, dynamic coverage, software debloating
Systems & Tools:	Linux, RISC-V, LLVM, GDB, Ghidra, WABT, Binaryen, Emscripten, Docker, Git, Kafka

RESEARCH EXPERIENCE

Binghamton University, Research Foundation for SUNY — **Binghamton, NY**
Research Assistant — *Aug 2025 – Present*

- Published DIMVA 2026 research analyzing 8,000+ WebAssembly binaries; combined staged static reachability and dynamic coverage to show 70–85% of functions remain unexecuted under evaluated workloads.
- Quantified security impact of analytical debloating: 4.9–11.6× smaller CFI equivalence classes, up to 40.7% fewer sensitive WASI imports, and removal of up to 81% of memory-store and 84% of `call_indirect` exploitation primitives.
- Develop hardware-assisted, tag-guided forced execution for RISC-V binaries to explore paths missed by conventional fuzzing, integrating coverage profiling and lightweight recovery.

SELECTED RECOGNITION, SERVICE & LEADERSHIP

- **Distinguished Reviewer Award**, USENIX Security 2026 Artifact Evaluation; recognized for thorough, constructive artifact reviews.
- **Artifact Evaluation Committee Member**, USENIX Security 2026; evaluated research artifacts for availability, functionality, and reproducibility.
- **Team Co-Captain**, Binghamton MITRE eCTF 2026; directed defensive firmware and offensive exploit work for a 13-student team placing 13th of 114 competitors.

PROFESSIONAL EXPERIENCE

Vibrent Health — **Fairfax, VA**
Software Engineer — *Jun 2023 – May 2024*

- Engineered a Kafka-based bulk-messaging interface for a precision-health platform serving NIH's All of Us Research Program and Children's National Hospital; improved delivery speed and reduced server load.
- Identified and resolved a critical duplicate-record architecture defect, improving platform stability.

Vibrent Health — **Fairfax, VA**
Software Engineering Intern — *Jun 2022 – Aug 2022*

- Built a GitHub API-based security-vulnerability detection tool and Spring Boot services using REST APIs and JPA/Hibernate; supported Docker, Kubernetes, and CI/CD deployment workflows.

Vignet Inc. — **Pune, India**
Software Engineer — *Jul 2019 – Jul 2021*

- Built Java/Spring client-server applications and Kafka microservices integrating Fitbit data for a precision-medicine platform.

EDUCATION & SELECTED PUBLICATION

State University of New York at Binghamton, Ph.D. in Computer Science, GPA: 4.00/4.00 — Aug 2025 – May 2030 (expected)
University of Florida, M.S. in Computer Science, GPA: 3.80/4.00 — Aug 2021 – May 2023
University of Pune, B.E. in Computer Engineering, GPA: 8.37/10.00 — Aug 2015 – May 2019
Publication: P. M. Kamble and A. Prakash, "Dead Weight: Analyzing Code Bloat and Its Security Implications in WebAssembly Binaries," *DIMVA*, 2026.