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Gokulkrishna P Menon

Work Experience

2023 to present — **Vulnerability Researcher**, *Lucid Motors*, Newark, CA.

- Execute fuzzing on ARM-based Linux applications, emulated within containers, using automated discovery methods; incorporated fuzzing into the CI/CD pipeline, targeting revised code to heighten efficiency and scalability.
- Engineered libraries to optimize fuzzing performance and scalability, enabling comprehensive testing and robust vulnerability identification in systems.
- Performed in-depth threat analysis and risk assessments for various Electronic Control Units (ECUs), identifying and mitigating potential security vulnerabilities.
- Developed an end-to-end testing framework responsible for automated testing, bug reporting, and process optimization, resulting in streamlined testing workflows and improved efficiency across the testing lifecycle.

2018–2023 — **Security Researcher**, *Arizona State University*, Tempe.

- Developed a hybrid fuzzing framework called FlakJack that combines mutation-based fuzzing with dynamic patching built on top of AFLplusplus and angr.
- FlakJack offers adaptable patching strategies for bug-specific fixes, facilitating on-the-fly Linux binary patching with Patcherex. Currently in conference submission.
- Participated in CTF competitions with Shellphish since 2018, specializing in reverse engineering and web security challenges, and achieved a top 10 ranking in DEF CON CTF finals.

2015-2018 — **Security Researcher**, *Amrita University*, Kollam.

- Participated in CTF competitions with team bi0s and research projects on web security, reverse engineering, and web privacy.
- Found and reported security vulnerabilities in CMSes, earning CVEs.
- Collaborated with security teams to remediate vulnerabilities and ensure timely patching.

June 2017 - August 2017 — **Security Engineer Intern**, *Mobiliya*, Pune.

- Developed and implemented Ethereum contracts with various functions.
- Created and managed accounts on the Ethereum network.
- Designed and implemented secure voting mechanisms for proposals.

Teaching Experience

2023 — **Teaching Assistant for CSE 365**, *Assisted Dr. Fish Wang in an Information Assurance course, giving lectures, grading, and mentoring students. With other TAs, improved the course content.*

2019 — **Teaching Assistant for CSE 365**, *Oversaw sessions, graded assignments, and offered guidance and assistance to students enrolled in the Introduction to Information Assurance course.*

2019 — **Teaching Assistant for CSE 598**, *Assisted Dr. Tiffany Bao's computer security course, where I led sessions and graded assignments.*

Education

2019-2023 **Masters in Computer Science**, *Arizona State University*, Tempe, Arizona.

2014-2018 **Bachelors in Computer Science and Engineering**, *Amrita University*, Kollam, Kerala.

Publications

2022 **Arbiter: Bridging the Static and Dynamic Divide in Vulnerability Discovery on Binary Programs**, *Jayakrishna Vadayath, Kyle Zeng, Nicolaas Weideman,* ***Gokulkrishna P Menon****, Yanick Fratantonio, Davide Balzarotti, Adam Doupé, Tiffany Bao, Ruoyu Wang, Christophe Hauser, and Yan Shoshitaishvili*, in Proceedings of the USENIX Security Symposium.

Achievements

2020 **CVE 2019-14769, 14770, 14771**, *Discovered two Cross Site Scripting and one Remote code execution bug in Backdrop Content Management System.*

2019 **NullCON CTF**, *As part of Shellphish, secured first position.*

2018 **BlackHat Asia**, *Awarded scholarship to attend BlackHat Asia 2018.*

2016 **CSAW Capture The Flag Finals**, *As part of team bi0s, secured first runners up position.*

Workshops

2017 **Web Application Security workshop**, *As part of Team bi0s, conducted a two-day workshop in Sree Narayana College of Engineering*, Kochi, India.

2017 **InCTF**, *Organized and authored challenges for the International Capture the Flag contest in 2015 and 2017 as part of Team bi0s..*

2016 **PSG College Of Technology**, *Workshop on Web Application Security for Professionals as part of annual PSG Tech Cyber Security awareness week*, Coimbatore, India.

Project

2019–2023 **FlakJack**, *Enhancing fuzzing by dynamically patching Linux binaries to uncover deeper bugs*, Developing a dynamic patching framework to uncover deeper bugs in Linux binaries during fuzzing, Project under conference submission.

2021–2023 **Open-Source Contribution**, *Contributed to and maintained the open-source binary analysis framework Patcherex. I have also improved Phuzzer, a Python wrapper for interacting with fuzzers such as AFL.*

2018 **Privacy badger extension**, *Developed a Chrome extension that offers protection against browser fingerprinting and Spectre attacks. The extension was open-sourced and is based on the Web-privacy/Privacy-Extension GitHub repository.*