

# Gokulkrishna P Menon

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## 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 for automated testing, bug reporting, and process optimization, resulting in streamlined testing workflows and improved efficiency across the testing lifecycle.
  - Conducted hardware testing for fault injection attacks and analyzed hardware-level code for vulnerabilities.
- 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 Patchrex. 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

- 2024 **Fuzz the Future: Uncovering Occluded Future Vulnerabilities by Robust Fuzzing**, Arvind S Raj, Wil Gibbs, Fangzhou Dong, Jayakrishna Menon Vadayath, Michael Tompkins, Steven Wirsz, Yibo Liu, Zhenghao Hu, Chang Zhu, **Gokulkrishna P Menon**, Brendan Dolan-Gavitt, Adam Doupé, Ruoyu Wang, Yan Shoshitaishvili, Tiffany Bao, in Proceedings of the ACM CCS.
- 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.
- 2021-2023 **Open-Source Contribution**, Contributed to and maintained the open-source binary analysis framework Patchrex. 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.