

Aswin C

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EDUCATION

- **Amrita Vishwa Vidyapeetham** Kollam, India
Bachelor of Technology in Computer Science and Engineering; GPA: 9.1 July 2019 - June 2023
- **Ben-Gurion University of the Negev** Be'er Sheva, Israel
Summer school in Data Mining and Business Intelligence for Cyber Security Applications July 2022 - August 2022

WORK AND RESEARCH EXPERIENCE

- **Google Code-In** Remote
Student developer July 2018 - Sept 2018
 - Completed Google Code-In and received the certificate of participation. Got a gist of what open source software development is and how it works in Ubuntu and OpenSUSE.
- **teambi0s** Kollam
Member & mentor July 2019 - Present
 - Helped in coordinating InCTF Nationals and InCTF Internationals—both Capture The Flag tournaments—by mentoring students and creating puzzles in the area of reverse engineering.
 - Developed a custom hardware badge for InCTF 2019, a device to enable students learn about IoT security.
- **Google Summer of Code—Rizin Organization** Remote
Student developer May 2021 - Sep 2021
 - **Support for CPU and Platform Profiles:** Added support for editable CPU and platform profiles, which added flexibility in maintaining platform-specific data about MMIO and IO ports of development boards.
 - **Developed rz-uefi:** Ported and improved a tool for analyzing UEFI modules with the Rizin reverse-engineering framework.
 - **Developed rz-svd:** A tool which can parse SVD descriptor files and add the relevant information as comments and labels in the Rizin reverse engineering framework.
- **Schneider Electric** Remote
Freelancer April 2022 - June 2022
 - Developed Capture The Flag tournament challenges (puzzles) for the categories: firmware reversing and Linux kernel programming.

OPEN SOURCE EXPERIENCE

- **radare2 Organization** Remote
Contributor June 2020 - Dec 2020
 - Developed a pseudo-disassembler plugin for RISC-V architecture—a tool which displays the raw assembly instructions in a pythonic syntax—making reverse engineering programs written for the RISC-V architecture easier.
 - Refactored the implementation many existing commands which supported the JSON output mode to use dedicated APIs.
- **Rizin Organization** Remote
Member of the organization and developer March 2021 - Present
 - Implemented RzArch—a single module to house all architecture related APIs and data structures.
 - Implemented a tree-sitter based command parser for better performance in parsing user commands.
 - Contributed to the Rizin book—Rizin's usage manual: wrote articles, added examples, helping tips and documentation for the APIs. Ported Rizin's documentation book from the mdBook framework to the Quarto publishing framework.
- **Arch Linux** Remote
Community member March 2022 - Present
 - Contributed to asknot-ng—a web app that helps beginners navigate through what they can do for the Arch Linux community depending on their area of interest.

PROJECTS

- **Adversarial attacks on Speaker Recognition models:** Implemented a Fast Gradient Fourier Transform and Projected Gradient Descent attack on the DeepSpeech2 speaker recognition model—under Prof Asaf Shabtai and Shoham Hanina of the Ben-Gurion University of the Negev, Israel.
- **Firmware security analysis of Internet appliance devices from SonicWall:** Employed a full-stack penetration test on the devices which involved testing the on-chip implementation of chip-level protocols such as UART and JTAG, and of the software-level protocols such as HTTP and FTP.
- **DataSketch:** a web-app to easily plot graphs and visualize data with just a few clicks—aimed at people who are inexperienced with code.
- **kin-ecdote:** Created an audio-streaming platform for the elderly to share their stories and wisdom. Worked on engineering the audio streaming backend and UI design.
- **kalyani:** a simple tool to control the screen brightness for Linux machines that can make the screen look like a Kindle for better reading experience in dark environments.

PUBLICATIONS

- **FuzzRTOS—a novel framework to find vulnerabilities in FreeRTOS applications (Ongoing):** Aravind Machiry, , Anand Balaji, **Aswin C**, Gourav Singh Bajeli, Hrishikesh Pankaj

CAPTURE THE FLAG TOURNAMENTS AND OTHER COMPETITIONS

Hardware Security CTF at Nullcon Security Conference, Goa: Won the Hardware Security CTF with teambi0s at the Nullcon security conference in Panaji, Goa. Interacted with experts of automotive security and Software Defined Radio.

CSAW Embedded Security Challenges finalist: Completed the initial set of puzzles and qualified for the finals of CSAW ESC 2020 and 2021- a CTF aimed at embedded devices' security hosted by NYU and CSAW. The puzzles were about reverse engineering firmware written for the RISC-V architecture, and Side Channel and Fault Injection attacks.

IEEE National RFID Challenge 2021 runner up: Implemented a COVID-19 vaccine verification system using RFID-based secure authentication for the IEEE National RFID Challenge 2021 using a MFRC 522 for reading the RFID, MLX 90614 for measuring temperature and ReactJS for interacting with CoWIN-API.

MITRE Collegiate eCTF: Worked on designing and securing a radio technology protocol based on Secure Common Embedded Wireless Link (SCEWL) protocol. The competition involved securing the SCEWL Bus Controller from replay attacks, and counter packet injection.

Hac'KP Hackathon: Researched and proposed a GPS-free geo-location tool by implementing low-power LoRaWAN technology for law enforcement to track inmates.