

AMan Saini

Test Lead

Profile

"Highly skilled and detail-oriented Embedded Test Engineer with 9 years of experience in ensuring the quality and reliability of embedded systems. Proficient in developing and executing comprehensive test plans, test cases, and test scripts for hardware and software components. Experienced in utilising industry-standard testing methodologies and tools to identify defects, analyse test results, and drive product enhancements. Strong expertise in embedded systems testing, including firmware validation, system integration testing, and hardware-software interaction analysis. Proven track record of collaborating with cross-functional teams to deliver high-quality products on time. Excellent problem-solving abilities and a strong commitment to delivering exceptional results. Seeking opportunities to leverage my technical expertise and passion for quality assurance to contribute to the success of embedded systems development projects."

Contact

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WORK EXPERIENCE

Jan 2022 - July 2023

Tech-Mahindra -**Test Lead(U4)**

Worked on firmware validation for the sound processor.

April 2021 - October 2021

Tessolve Semiconductor -**Team Lead.**

Led a team working on Bluetooth classic and Low Energy firmware testing.

May 2020 - November 2020

Ausy Technologies - **Senior software engineer.**

Worked on connected car services.

November 2018 - April 2019

Mirafr Technologies- **Member of Technical staff**

Validated USB 2.0 and USB 3.0 firmware.

March 2018 - November 2018

Eximius Design - **Module Lead**

Worked on storage validation as part of the client-side team at Western Digital.

October 2015 - March 2018

D2 AUTOMATION - **Senior Embedded Engineer.**

Led a team, participated in client discussions, performed requirement analysis, and conducted quality analytics.

July 2012 - October 2015

Windtech SOFTWARE - **Embedded Engineer.**

Worked on bare-metal programming, hardware-software integration, and analog circuits.

- Embedded C, Python, Robot-test, Unit-test, Py-test.
- Appium, Selenium, Postman, Talend.
- Protocol Validation (UART, SPI, I2C, USB, Bluetooth), IoT, MQTT, CAN.
- Unit testing, Functional Testing, System testing, Storage testing, Cloud security testing (SRP, PM).
- Integration testing, Interoperability testing.
- Firmware Testing and validation.
- Team Leadership, Requirement Analysis, Quality Analytics.
- Hardware-Software Integration

Skills

- Experience in testing embedded systems, including hardware-software integration testing, firmware validation, system-level testing, and troubleshooting.
- Proficiency in various testing methodologies, such as black-box testing, white-box testing, unit testing, integration testing, and regression testing.
- Ability to develop and implement automated test frameworks, write test scripts using languages Python and C, and utilize test automation tools to improve efficiency and accuracy.
- Strong skills in designing and writing effective test cases, considering functional and non-functional requirements, test coverage, and edge cases.
- Proficient in using debugging tools, analyzing log files, and identifying and resolving issues in embedded systems, including hardware, firmware, and software interactions.
- Familiarity with using various test equipment and tools, such as logic analyzers, protocol analyzers, JTAG debuggers, and software debugging tools.
- Knowledge of common communication protocols used in embedded systems, such as UART, SPI, I2C, CAN, Ethernet, and wireless protocols (Bluetooth classic and Bluetooth LE).
- Proficiency in scripting language Python and programming language C for test automation, test framework development, and firmware testing.
- Ability to review and analyze system requirements, identify testable scenarios, and ensure test coverage aligned with project specifications.
- Understanding of quality assurance processes, adherence to coding standards, best practices, and familiarity with industry standards and regulations relevant to embedded systems testing.
- Strong teamwork and communication skills to collaborate effectively with cross-functional teams, including developers, hardware engineers, and project managers.
- Proficient in documenting test plans, test cases, test results, and defects, and generating comprehensive test reports for stakeholders.

Projects

1. Company: Tech-Mahindra (Jan 2022 - July 2023)

- Working as a test lead at Tech-Mahindra, assigned to the Cochlear project.
- Collaborated closely with the client, Cochlear, to perform firmware testing for the SP17/21 and Kanso2/3 sound processors for the deaf.
- Conducted both manual and automation testing of the firmware, ensuring its functionality, reliability, and compliance with project specifications.
- Developed and executed comprehensive test plans, test cases, and test scripts using Python programming language.
- Tested the firmware's connectivity and functionality using Bluetooth classic/LE, Wi-Fi, UART, I2C, and SPI protocols.
- Tested the firmware's compatibility and integration with multiple devices, including Android and iOS platforms, and cochlear devices.
- Utilized Diet simulations to simulate real-world scenarios and evaluate the performance and usability of the firmware.
- Leveraged tools such as ADB, PyCharm IDE, Perforce, Keil, and TeamCity to enhance the testing process, automate test cases, and manage version control.
- Collaborated with cross-functional teams, including firmware developers, hardware engineers, and project managers, to ensure seamless integration and alignment of the firmware with the sound processors.
- Conducted integration testing to verify the stability and reliability of the firmware after updates and modifications.
- Documented test plans, test procedures, and test results, providing clear and concise reports to communicate findings and facilitate issue resolution.

2. Company: Tessolve Semiconductor (April 2021 - October 2021)

- Worked as an Sr. Software engineer at Tessolve Semiconductor, assigned to the Zebra Technologies project.
- Collaborated closely with the Zebra Technologies client to perform interoperability testing for the Panbu project.
- Designed, tested, and automated various test cases for Bluetooth Classic and Low Energy protocols.
- Developed comprehensive test plans, test cases, and test scripts using Python programming language.
- Conducted testing and validation of TCP/IP functionality for Bluetooth Classic and Low Energy on Linux and Android platforms.
- Tested the interoperability of the build server across different chipsets, including Marvel, Nordic, and Texas Instruments.

- Utilized tools such as ADB (Android Debug Bridge), PyCharm IDE, Gungnir, and Trinir to enhance testing efficiency and accuracy.
- Collaborated with cross-functional teams, including hardware engineers, software developers, and project managers, to ensure successful integration of Bluetooth and TCP/IP functionalities.
- Conducted performance testing to assess the functionality, performance, and reliability of the build server under various scenarios.
- Developed and maintained test automation frameworks to automate test cases and increase testing productivity.
- Conducted debugging and troubleshooting using appropriate tools and techniques to identify and resolve issues related to Bluetooth over TCP/IP communication.

3. Sr. Software Engineer Ausy Technologies (May 2020 - November 2020)

- Worked as an embedded test engineer at Ausy Technologies, assigned to the Renault Connected Car Services project.
- Collaborated closely with the Renault client team to design, test, and automate various connected car features, including remote engine start/stop, push messages, secure remote protocol, remote charging start/stop, remote lock/unlock, my car finder, and track with telematics.
- Utilized the Robot-test framework, Rest API, and Python programming language to develop and execute comprehensive test cases for connected car functionalities.
- Worked with protocols such as CAN, MQTT, and SRP to ensure proper communication and integration of connected car systems.
- Conducted testing on both Linux and Windows platforms to validate the functionality and compatibility of connected car services.
- Leveraged tools such as ADB (Android Debug Bridge), PyCharm IDE, Matrix, VIT, and CANon for test automation, debugging, and analysis.
- Developed automated test scripts using the Robot-test framework, allowing for efficient and repeatable testing of various connected car features.
- Performed end-to-end testing of connected car services, including simulating real-world scenarios and assessing the performance, reliability, and security aspects.
- Collaborated with the Renault client team, software developers, and other stakeholders to ensure seamless integration and alignment with project goals and milestones.
- Documented test plans, test procedures, and test results, providing clear and concise reports to communicate findings and facilitate issue resolution.
- Adhered to project timelines and deliverables, effectively managing tasks and priorities to meet project deadlines.
- Stayed up-to-date with emerging trends and advancements in connected car technologies, industry standards, and best practices, integrating them into testing methodologies.

4. Company: Miraфра Software Technologies.(November 2018 - April 2019)

- Worked as a software engineer at Miraфра Software Technologies, assigned to the Qualcomm India project.
- Collaborated closely with the Qualcomm India client to perform USB protocol testing.
- Developed and debugged Python code for testing and automation of USB protocol on the Qualcomm Board.
- Implemented automation using Python scripts for various USB protocol functionalities, including enumeration, data transfers, stress testing, and USB in suspend mode.
- Conducted extensive testing to validate the compliance and reliability of USB protocol implementation.
- Tested USB functionality on multiple platforms, including Android, Linux, and Windows.
- Utilized tools such as ADB (Android Debug Bridge) and PyCharm IDE to enhance the testing and debugging process.
- Collaborated with cross-functional teams, including hardware engineers and project managers, to ensure successful integration and alignment with project goals.
- Conducted performance and stress testing to evaluate the robustness and stability of the USB protocol implementation.
- Documented test plans, test procedures, and test results, providing clear and concise reports to communicate findings and facilitate issue resolution.
- Adhered to project timelines and deliverables, effectively managing tasks and priorities to meet project deadlines.

5. Company: Eximius Design.(March 2018 - November 2018)

- Worked as a software engineer at Eximius Design, assigned to the Western Digital client project.
- Collaborated closely with the Western Digital client to perform white box testing for HDD (Hard Disk Drive) products.
- Developed Python scripts for modeling and analyzing big data related to 200GB read/write commands, and generated plots for data visualization and analysis.
- Implemented a Python script with a GUI environment to automate manual testing processes, enhancing testing efficiency and accuracy.
- Integrated hooks in the Livet framework to reduce the time required for Video Speed Class (VSC) testing.
- Wrote test cases in a SystemC environment to verify the model for BICS3/4 (Binary Incremental Coding Scheme). Conducted extensive testing and validation of the HDD using the SD (Secure Digital) protocol on the Windows platform

6. Company: Eximius Design.(March 2018 - November 2018)

Project Name: Automation of HMI UI.

Programming Language: Python.

Platform: Windows, Android.

Tools: ADB, VNC.

Project Details: Develop and debug the python code for testing the UI of Android phones with mirroring the screen and getting the screen shots. Implemented the automation with python script for the UI automation for different features of the application.

7. Project Name: Sensor Processing Platform

Description: This ultra-low power, processing-efficient system enables OEMs to extend battery life while designing in sophisticated, always-on sensing capabilities on mobile devices. Advanced sensor algorithms such as voice triggering, motion compensated heart rate monitoring, and indoor navigation can be achieved at significant power reduction compared to competing MCU-based solutions.

Responsibilities: Writing, debugging and unit test cases for UART, SPI and I2C for Cortex M4 along with python script to Validate the unit test cases for UART, SPI and I2C.

Tool Chain: IAR workbench, Code view, Flash magic, python IDE 2.7.

8. Project Name: Designing a tool for automation of web servers.

Description: This board is an embedded AVR Webserver. It is based on ATMEGA32 and ENC28J60 chipset. It can serve web pages as well as can be controlled from a PC Application. It has an on board temperature sensor, ADC Pre-set and two LEDs to quickly start using the board.

Responsibilities: Design and development of tools using python under GUI environment for testing the board.

9. Project Name: RFID access control system.

Description:

This is an automatic identification and access control system. This project deals with an interesting manner of security access control with the help of RFID technology where only people with valid cards are allowed to access the door or any secure area.

Responsibilities:

Code development in embedded C. Unit testing. Validation of the whole system with power optimization and power performance for the whole system.

10. Project Name: Home Automation

Description: Home automation is to automate the home smartly. Smart home automation consists of a lot of aspects and technology. We have developed a smart device that will work smartly with your android phone and control the electrical appliances wirelessly.

Responsibilities:

Design of Bluetooth controlled wireless Switches which serves as full functional devices in the network. Development and integration of driver code and application layer in embedded Troubleshooting the run time related issues.

11. Project Name: Sudden-stop of PLC of rolling machines.

Description: Using Ultrasonic range finder HRX LWRC-MB7367 to find the accurate distance between range of 30 cm to 500 cm and to stop the PLC under user defined range if any of undefined objects comes in user defined range.

Chipset: HRX LWRC-MB7367, PIC18f4550, Allen Bradley.

Tool chain: Mikro-C, Pickit2.

Responsibilities:

Design and development of hardware and PCB design to interface the sensor with microcontroller. Testing the hardware and PCB for high voltage and current.

Writing and testing the firmware in embedded C and python to test the sensor hardware. Integrate the hardware with PLC.

12. Project Name: Wireless ECG Monitoring.

Description:

Design and development of Heart rate monitor using AD8232 with ECG electrodes and display the data as analog output on scope wirelessly using Zigbee (CC2530F256).

Chipset used: - AD8232, CC2530F256, Atmega32.