Experience Summary

- Experience with Scrum Master and Project Management with CMMI level 5 embedded product development lifecycle.
- Experience in Client Communication, Status reporting, Project coordination to ensure design iteration, quality and delivery.
- Experience in architecting and delivering products for medical devices in Healthcare.
- Industry experience of 17+ Years in Embedded Firmware and Embedded Linux Development.
- Presently working as a Software Engineer IV at Dozee, Bangalore, India.
- Post Graduate certificate in Artificial Intelligence & Machine Learning from BITS Pilani.

Work Summary

- Experience in Healthcare Product development for Remote Patient Monitoring Systems.
- Experience with smart IoT GSM Modules based on Android BSP and Embedded Linux BSP.
- Completed the Telecom Churn project during the PG certification program in AIML from BITS Pilani.
- Experience in Fire and safety panel devices firmware development in the Fire Domain.
- Experience in Sensor-less fault detection in the BLDC Motor of HVAC system using e-AI solution Project. Embedded Firmware development and specific functional of shunt current measurement and Throughput testing.
- Experience in firmware development using Embedded C, Assembly on 8-bit, 16-bit, 32-bit microcontroller.
- Experience in Embedded Linux Development on ARM SOCs such as TI AM3352, Freescale IMX6 Linux Application Processor.
- Understanding Customer requirement analysis, proposal preparation and project execution.
- Responsible for quality checks, quality assurance for customer deliverables, review meetings and issue resolutions.
- Planning of day-to-day activities involved in project execution.
- Experience in Client Communication and Status Reporting. Worked in high-pressure conditions.

Skills

RTOS/OS	RTOS (uC/OS-II, FreeRTOS, Zephyr), Linux 5.2/5.4, Linux posix threads
Platforms	Quectel SC206 Smart Modules / Qualcomm Chipset 64-bit quad core Cortex-A53 processors, iMX8, AM335x TI Sitara Processor, iMX processor for Embedded Linux, ESP32, 32-bit ARM ST STM32F1x (ARM Cortex family), NRF52833, NRF52840, and NXP LPC2148 (ARM7), 8051 variants (89v51RD2, Silabs F120) and AVR MCU.
Protocol Stacks	RV-C, LIN, CAN, I2C, SPI, RS-485 using Modbus, MQTT Protocol TCP/IP Stack
S/W Frameworks	Linux Application Development using QT Framework and Flutter Framework.
Programming Languages	C, C++, Embedded C, Assembly, socket programming, Shell scripting, Python and JavaScript
IDE, CM tools and DB	IAR Workbench IDE, Eclipse, e2studio, Wireshark, Mosquitto Broker, GIT, CVS, SVN, MYSQL/SQLite, Nginx web server with mqtt support as backend
AIML Tools	Anaconda3 environment with jupyter Notebook using scikit-learn, pandas and tensorflow machine learning libraries.

Project Details

Project 14:

Project Name	F/W development for Health Care Product	Duration	Mar22-now
		Team	6
Description	F/W development feature additions and BSP development for Remote Patient Monitoring Systems.	Role	Principal Firmware Engineer
Contribution	• Design and Development of Firmware. • Embedded Linux BSP development for Qualcomm QCM2290 using Quectel SC206 SoC. • Bluetooth BlueZ 5 stack Integration. • Team leader and mentoring the team.		
Technologies	Embedded C, Embedded Linux, Sensor Integration such as Temperature, SPO2, BCG, Blood Pressure.		
Tools	Jira, Confluence, Quectel BSP Tools, Python 3.8, Flutter, Yocto Linux, Linux Kernel 5.2		

Project 13:

Project Name	F/W development for Health Care Product	Duration	Mar22-now
		Team	4
Description	F/W development feature additions and F/W bug fixes for Remote Patient Monitoring Systems.	Role	Principal Firmware Engineer
Contribution	• Design and Development of Firmware. • Fixing the bugs Health F/W development support. • Wireless BLE and NFC tag integration. • Team leader and mentoring the team.		
Technologies	Embedded C, Sensor Integration such as Temperature, SPO2, BCG, Blood Pressure.		
Tools	Jira, Confluence, IAR Workbench IDE, MPLAB IDE Tools, E2 Studio, VSCODE		

Project 12:

Project Name	Android BSP Support and integration development for Electric Vehicles	Duration	Jul21-Mar22
		Team	4
Description	Android BSP F/W development and F/W bug fixes.	Role	FAE
Contribution	• SDK BSP modifications based on Smart IoT GSM Modules running Android 10. • Support Analysis and reproducing the error fixes. • Android BSP Support Integration and Development.		
Technologies	Embedded Linux, Smart IoT Modules based on Qualcomm Chipsets		
Tools	Jira, Confluence, Qualcomm SDK		

Project 11:

Project Name	F/W sustenance for Fire Panel firmware development	Duration	Dec19-Jul21
		Team	8
Description	Fire Panel F/W development feature and F/W bug fixes.	Role	Project Manager
Contribution	● Scrum Master, managing and mentoring the team. ● Analysis and reproducing the error fixes. ● Fixing the bugs Fire Panel F/W development support.		
Technologies	Embedded C, Loop Controller		
Tools	Jira, Confluence, IAR Workbench IDE, MPLAB IDE Tools		

Project 10:

Project Name	Router Gateway F/W application development	Duration	Sep19-Dec19
		Team	3
Description	F/W application using ESP32 for Router.	Role	Project Manager
Contribution	● Design and Implemented the f/w Protocol translation for converting the message and sending data over connecting AWS cloud using MQTT. ● Mentoring team for F/W Application Development.		
Technologies	ESP32, Wi-Fi, BLE, Embedded-C, LIN, RV-C, CAN		
Tools	ESP-IDF SDK Tools		

Project 9:

Project Name	SDK Porting of the u-boot and kernel source code	Duration	Jun19-Oct19
		Team	3
Description	SDK Porting of the u-boot and kernel source code using TI AM335x platform.	Role	Project Lead
Contribution	● Porting the old u-boot ver2013.01 to new ver2018.01 and old kernel ver 3.14 to new kernel ver 4.14. ● Test scripts for building and testing the AM335x Boards.		
Technologies	TI Sitara AM3352 and TI sitara AM3359 processor		
Tools	TI Sitara Linux-SDK 5.03.07 SDK Tools		

Project 8:

Project Name	Sensor-less BLDC Motor Fault detection of HVAC system	Duration	Mar18-Jun19
		Team	4
Description	e-AI solution for Sensor-less BLDC Motor Fault Detection.	Role	Project Lead
Contribution	● Design and implement the MQTT Client Interface Library. ● BLDC Motor Fault detection of HVAC systems using the e-AI solution.		
Technologies	e-AI using Tensorflow and e-AI Translator Tool), MQTT Protocol, Renesas RZ/T1		

Tools	Tensorflow, e-AI Translator Tool, e2studio, Azure ML Cloud and Wireshark.

Project 7:

Project Name	Secure Bootloader for Leading Industrial Product Manufacture Company.	Duration	Mar17-Feb18
		Team	2
Description	USB Bootloader & F/W upgrade for Fire and Safety Devices	Role	Project Lead
Contribution	● Designed and Implemented Industrial SIL-3 compliant usb bootloader, F/W signing and programming encrypted F/W. ● Running the Klockworks and Vectorcast tools for f/w running on Kernel and ThreadX USB Stack SIL-3 Compliant.		
Technologies	ThreadX RTOS USB Stack SIL-3, USB, Secured Boot, Cryptographic algorithm		
Tools	Visual Studio 2015, IAR Workbench for ARM, VectorCAST and JIRA.		

Project 6:

Project Name	Remote Diagnostic system using GSM/GPRS Modem and OTP SMS Gateway for Leading Fuel Dispenser firm in India	Duration	Oct15 -Feb17
		Team	3
Description	OTP SMS Gateway Server Implementation for Fuel Dispenser's Calibration and Logs management	Role	Senior S/W Engineer
Contribution	● Designed and the Java Servlet Web Application for OTP SMS Gateway, Users Management, Pumps Management and Logs Management. ● Created Stored Procedures, Backup, and Replication scripts, Remote Diagnostic system for the Fuel Dispenser F/W using GSM/GPRS Modem.		
Technologies	GSM based SMS system and JAVA Web Servlets		
Tools	Eclipse, JAVA JDK, MySQL, IAR IDE and J LINK Debugger		

Project 5:

Project Name	BLDC Motor Control Project for Leading Oil and Gas Company in USA	Duration	Aug14-Oct15
		Team	2
Description	Develop the CAN based PC Motor Control utility for BLDC Motor Control and CAN Bootloader for F/W upgrade.	Role	Senior S/W Engineer
Contribution	● Analysis, design and implementation f/w to handle the application commands over CAN bus to control BLDC Motor. ● Design of IAP (In Application Programming) with F/W update commands over CAN bus and implemented the Bootloader.		
Technologies	1553 Protocol, TI SM470R1B1M microcontroller		
Tools	IAR Workbench IDE and J-link Debugger		

Project 4:

Project Name	Reverse Engineering for Leading Oil and Gas Company in USA	Duration	Dec13-Aug14
		Team	2
Description	Reverse Engineering for Controller Board Replacement	Role	Senior S/W Engineer

Contribution	● Porting 1553 protocol Assembly code to Embedded C. ● Interacting with onsite coordinator and understanding the requirement.
Technologies	1553 Protocol
Tools	Keil IDE and ULINK2 Debugger

Project 3:

Project Name	POS and handheld devices Application development for leading BUS transportation companies	Duration	Aug10-Nov13
		Team	4
Description	POS Embedded Linux development and OTA F/W upgrade	Role	Team Lead, S/W Head
Contribution	● F/W Application development using QT framework for the Linux based handheld devices. ● Shell scripting for App upgrade with version control & rollback. ● Mentoring the team and executing the projects. ● Training the clients for using the SDK for the application development for the handheld devices.		
Technologies	Bootloader OTA FW upgrade via GSM Modem, Embedded Linux QT framework.		
Tools	QT IDE, Shell Scripting, Embedded Linux Cross Tools for ARM		

Project 2:

Project Name	White board Image capturing using Atmel AT91SAM9260 ARM9 based processor running Embedded Linux OS	Duration	Jun08-Nov09
		Team	2
Description	White board Image captures the raw data using a camera sensor and converting the RGB data to BMP format.	Role	Team Member
Contribution	● Library development to capture the raw data from camera sensors and implement an algorithm for converting the RGB data to BMP format.		
Technologies	OpenCV Image Processing Library		
Tools	Embedded C, Open source GNU ARM tool-chains, Eclipse IDE		

Project 1:

Project Name	Entry Exit Recorder for time and attendance for Hotels in India and SPI programmer using 8051uC	Duration	Dec07-May08
		Team	2
Description	Time and attendance device using fingerprint authentication.	Role	Team Member
Contribution	● Develop the F/W to identify the user and store the user logon/logoff with timestamp using Fingerprint Module. ● Develop the SPI Programmer using a PC parallel port to flash ATMEL MCU.		
Technologies	Fingerprint sensor module, SPI, Bootloader, PC Parallel Port		
Tools	Keil IDE for 8051, Visual Basic 6.0		

Professional Experience

Sr. No.	Company	From	To	Total	Profile
1	Dozee	April 2023	Present	Till Months	Software Engineer IV
		Mar 2022	Mar 2023		Principal Firmware Engineer
2	Quectel Wireless Solutions	Jul 2021	Mar 2022	9 Months	Field Application Engineer
3	L&T Technology Services Limited	Jul 2019	Jul 2021	24 Months	Project Manager
		Jul 2016	Jul 2019	36 Months	Project Leader
		Nov 2013	Jul 2016	33 Months	Senior Software Engineer
4	PowerCraft Electronics Pvt Ltd	Apr 2012	Nov 2013	19 Months	Head of Software Department
		Apr 2011	Apr 2012	13 Months	Senior Embedded Engineer
		Aug 2010	Apr 2011	9 Months	Embedded Engineer
5	ThinkLABS	May 2008	Aug 2010	28 Months	PD / Embedded Trainer / Assistant Manager
6	Shree Samartha Systems	Dec 2007	May 2008	6 Months	Embedded Engineer

Educational Qualification & Certifications

P.G.	Post Graduate certificate program in Artificial Intelligence & Machine Learning from BITS Pilani, Completed in 2020
B.E.	B.E. in Computer Engineering, Completed in 2007
DIPLOMA	Diploma in Computer Engineering, Completed in 2004
SSC	SSC, Completed in 2001

Personal Information

Full Name	Hardik Balmukund Shah
Hobbies	Listening Music, Playing Cricket and traveling.
Mobile	+91-9029153331
Email	edgytechiecoaching@gmail.com
Linked-In	https://linkedin.com/in/hardik-s-b5b09318