

SUCHETA BHARDWAJ

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SENIOR SOFTWARE ENGINEER

Motherson Innovations Tech Ltd.

To achieve excellence through dedicated efforts & positive attitude by being resourceful, innovative and flexible.

PROFESSIONAL SUMMARY:

Working with “Motherson Innovations Tech Ltd.” As a senior software engineer.

Have 7.5 years qualitative work experience to firmware development, debug and design. A team player with strong communication, interpersonal, team building and management skills

COMPETENCY AREAS:

- Tuning and code development of different haptic actuators as per the datasheet along with detecting force and touch sensing coordinates using different technologies like FSR, Capacitive and strain gauze.
- Code development and Integration of wireless communication like BLE module q9090 with NXP's ARM core based MCU.
- Able to design and develop code for device drivers, their application part, integration with MCU peripherals.
- Good knowledge about DLMS data testing as per IS 16444 and responsible for lab testing as per IS 15959 and IS 13779.
- Experienced in customer visiting and understanding requirement and queries to work upon.
- Code developing and debugging using IAR in embedded C language.
- Basic testing & troubleshooting at hardware end.
- Prepare documentation for the design plan, review specifications for modifications, integrating components and testing.
- Strategically plan, analyze and conceptualize the basic requirements while setting up the technical infrastructure of the project as per the client's requirement.

ACCOMPLISHMENTS

- Experienced in Microchip/ NXP/ TI/ Microchip and Vango controllers-based design
- Firmware development using Embedded C on 32 bit/16 bit/ 8-bit Microcontrollers: ARM cortex M0+ based KL25Z, KM34Z and MSP430, V9911
- Strong in peripheral driver development —matrix keypad, GLCD, UART, I2C, SPI, E2PROM, RTC
- Good practice of designing different fonts and graphics on 128*64 Graphics LCD
- Hands on practice on Cortex M0+ and Cortex M4 architecture on NXP platform
- Hands on experience on tools: NXP's FRDM Board, KE06Z, and Cortex M4 controller series- Atmel SAM4L, TI's Launch pad

TOOLS USED

- IAR, Microchip studio, Code Warrior10.5, MCUXpresso IDE, Code Composer, ORCAD 10.5, DSO & Multimeter, Debugging tools of TI, NXP, Microchip and Vango

TECHNICAL EXPERTISE

- Embedded C, RTOS
- Hardware Platform- SAMC21, KM34Z, KL25Z, MSP430, MC9S08PT60
- Protocols- DLMS, I2C, UART, SPI

PROJECT DETAILS

1. Smart Surface:

Overview	PoC on dashboard surface designed with combinations of touch technologies and haptic feedback.
Hardware Platform	SAMC21, MAX11254, BM71, FSR, Cap Touch, strain gauze, LRAs, DDA, Solenoid
Responsibility	BSP Generation, RTOS, Code generation, Documentation

2. Stagger Detection System

Overview	Detecting staggered electric wire between poles used by electric trains for consuming electricity and store the grid constants in memory, laptop.
Hardware Platform	KM34Z, TIANMA12864 GLCD, GPS (SE868V2)
Responsibility	Designing graphics on LCD, developing drivers (LCD, GPS, I2C, EEPROM, UART) Debugging, Testing and Software designing documentation.

3. Smart Solar Lantern

Overview	A highly energy efficient lantern that is charged by Solar Energy and used when light is needed.
Hardware Platform	MSP430G2452
Responsibility	Designing documents and DFDs, Debugging /Testing of hardware Board &software.

4. Follow me Bag

Overview	A bag that will follow consumer's mobile. An application of using GPS system, sensors like magnetometer, gyro meter, accelerometer, and other electronics etc
Hardware Platform	KL25Z/K64F and FX9XIX/Multi B sensor board with Bluetooth module, GPS (JN3)
Responsibility	Analyzing and extracting data form 9Axis sensors (Gyroscope, Accelerometer and Magnetometer) and GPS (positioning vectors and waypoints) designed a set of inputs for motor control which is controlled by Bluetooth module.

5. Three Phase Dual Source Energy Meter

Overview	Prepaid three phase dual source energy meter for measuring energy from two different sources with separate latching relays for remote electricity disconnection.
Hardware Platform	MSP430F47197, segment LCD
Responsibility	Understanding previous designed firmware structure, peripheral drivers of LCD, UART, I2C, GPIOs, Debugging, Testing and Software documentation

6. Tamper Sensing Single Phase Energy Meter

Overview	Prepaid single phase smart energy meter with tamper sensors for detecting, logging and displaying magnetic, shock, tilt, RF and temperature tampers.
Hardware Platform	KM34Z, GLCD TM12864H6CCOWA, AZE-DT143438 Tamper Sensor, BST-902 latch relay
Responsibility	Designing graphics symbols on GLCD, Developing driver for LCD, UART, I2C, Latch Relay, Debugging

7. Three Phase Smart Energy Meter:

Overview	DLMS based (IS 15959) class 1 energy meter which is developed on NXP's chip.
Hardware Platform	KM34Z128/KM34Z256/KM35Z512
Responsibility	LCD modification, communication, Full DLMS stack testing using Kalkitech dongle as per IS 15959 D1.

8. Single Phase DLMS smart Energy meter:

Overview	DLMS based (IS 15959) class 1 energy meter which is developed on Vango's chip.
Hardware Platform	V9911, segment LCD
Responsibility	DLMS modification, Full DLMS stack testing using Kalkitech dongle as per IS 15959.

9. DLMS Protocol

Overview	DLMS is a protocol used in metering for making meters independent of manufacturers' firmware.
Responsibility	Designing and naming new OBIS codes for smart street lighting system as per amendment of IS15959 as studying, analyzing and summarizing the DLMS specification's reference books.

WORK EXPERIENCE

Duration	: 04 Apr 2022- to till date
Organization	: Motherson Innovations Tech Ltd
Profile	: Senior Software Engineer
Duration	: 21 Oct 2019 - 31 Mar 2022
Organization	: Arrow Electronics (I) Pvt. Ltd, New Delhi
Profile	: Application Development Engineer
Duration	: 01 June 2018 - 18 Oct 2019
Organization	: Vango Technologies Inc
Profile	: Firmware Development Engineer
Duration	: 10 Aug 2013 - 31 Mar 2016
Organization	: Narnix Technolabs Pvt Ltd, New Delhi
Profile	: Design Engineer

EDUCATION

2018	: M. Tech, Computer Science & Engineering, RGPV, MP, (78%)
2012	: B. Tech, Computer Science & Engineering, UPTU, UP(73%)
2007	: Board of Intermediate, U.P. Board, UP (74%)
2005	: Secondary School Certificate, U.P Board, UP (68%)

AWARDS & ACHIEVEMENTS:

- Research papers published in IEEE Journals/conference.
- Award winner for Smart India Hackathon 2017, organized by the ministry of NCPCR . Govt of India.
- School Rank 1: Consistently maintained class topper position since childhood.