**AJESH ISAAC**

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Embedded Systems Design Engineer with 8 years of experience in conceptualization and development of Narrow Band IOT (**NB-IoT**), **H**igh-**P**erformance **C**omputing Firmware, Board Bring up expertise, Industrial **IOT** automation products, Medical Devices Firmware, Wireless drivers, and proven expertise in wearable technology.

## Engineering Skills

| Skills | Description |
|---|---|
| Analysis & Design, Development | Requirement Analysis, System Design and Review<br><br>Application Implementation, User acceptance Documentation<br><br>Impact Analysis of Firmware |
| Programming Language | Proficiency in C - UNIX/LINUX environment |
| Wireless | WiFi, BLE, LORA, ZIGBEE, nRF, Satellite communication (NB-IOT) |
| Scripting Language | Python, Shell |
| Operating Systems | DOS, WINDOWS and Linux platforms, VxWorks, FreeRTOS |
| Integrated Development Environments (IDE) | CS+, LPC Expresso, AVR Studio, pSoC Creator, Tornado, e2Studio, Arduino |
| SDKs | Intel Real Sense SDK, Raritan BMC SDK, nRF5 IoT SDK |
| Hardware Technology | Circuit designing and debugging, PCB designing, Board Bring up, SMD soldering |

## Expertise
- Hands on expertise in Protocols like SPI, I2C, UART, HSDC, MODBUS, USB
- Have work experience on wireless protocol implementation for LORA personal networks
- Expertise in working with NB-IoT communication protocols
- Expertise in debugging using Logic Analysers, Oscilloscope and Firmware debugging Skills.
- Working knowledge in RTOS environments.
- Working Experience in GIT.

## Professional Experience

### Infostretch Corporation [https://www.infostretch.com/]

**Duration** – June 2021 – present
**Designation –** Technical Lead (CoE)
**Location** – Bangalore, India


### Freelance Consultant

**Duration** – February 2020 – June 2021
**Location** – Marthandam, India.
**Companies worked**
 SSB Associates, Bengaluru
 Aideltecz Labs, Puthukotai
 Skylo Technologies, Bengaluru
 Techno Innovations, Bengaluru
 Innovatrons, Marthandam


### Atos Global IT [https://atos.net/en/]

**Duration –** Sep 2017 – February 2020
**Designation –** Associate Consultant
**Location –** Bangalore, India


### TetherBox Technologies [http://www.tethr.it]

**Duration –** Mar 2016 – Sep 2017
**Designation –** Senior Embedded Developer
**Location –** Bangalore, India


### Tenet Technetronics [http://www.tenettech.com]

**Duration –** Feb 2014 – Mar 2016
**Designation –** Embedded Developer
**Location –** Bangalore, India

# PROJECT ROFILE

| Project | Description |
|---|---|
| Name | **MedTech Centre Of Excellence** |
| Employer | Infostretch Corporation |
| Location | Bangalore |
| Duration | Since June 2021 |
| Description | To Develop Device Architecture and firmware for medical devices and to optimise the existing wearable devices in terms of power and CPU utilisation. |
| Team Size | 3 |
| Responsibility | • To analyse the power profile and the MCU working modes and optimise over the firmware<br>• To make the code base and functionality clean for the product certification.<br>• Coordinate and work across cross functional teams to deliver quality and fix issues inhouse.<br>• Working as a part of IoT and Embedded Centre of Excellence to give architectural feedbacks and help decide the team with guidance on Firmware and Hardware areas |
| Hardware | Cortex M4, BLE devices, LoRA devices, Proprietary Hardwares |

| Project | Description |
|---|---|
| Name | **Intelligent Bus Automation System** |
| Employer | Freelance Consultant |
| Location | Bangalore |
| Duration | Since February 2020 |
| Description | Complete Bus automation solution with entertainment features with Android devices and Centralised server. |
| Team Size | 3 |
| Responsibility | • Analyse the requirements<br>• Made design architecture the and made PoC<br>• Made Schematics and design reviews.<br>• Made Firmware.<br>• Worked on Dashboard for data presentation. |
| Hardware | R5F100FLA, nrf52832, |

| Project | Description |
|---|---|
| Name | **FOTA (Firmware update over the air)** |
| Employer | Freelance Consultant |
| Location | Bangalore |
| Duration | Since April 2020 |
| Description | To upgrade the firmware of the modem and baseboard over the AIR using Satellite RF communication (NIDD) – Non IP data delivery |
| Team Size | 1 |
| Responsibility | • To analyse which protocols to be used<br>• Simplified the varied binaries into a Single binary<br>• Implemented a parser to decapsulate the binary<br>• Developed firmware to make a sub component upgrade, Self-upgrade and Self init. |
| Hardware | Proprietary |

| Project | Description |
|---|---|
| Name | **HPC Firmware (BULL Sequana)** |
| Employer | Atos Global IT |
| Location | Bangalore |
| Duration | Since Sep 2017 |
| Description | To develop the firmware for the High-Performance Computers. Worked majorly on the power supply management Section. |
| Team Size | 1 |
| Responsibility | • Analysed and created software design document for the HPC Firmware<br>• Firmware development for new Power shelfs<br>• Debugging and creating working results in the Firmware |
| Hardware | Proprietary |

| Project | Description |
|---|---|
| Name | **Hydro Pneumatic Automation** |
| Employer | TetherBox Technologies |
| Location | Bangalore |
| Duration | Since Jan 2017 |
| Description | To automate the Hydro pneumatic system where the project scope is to monitor the parameters like pressure, flow, time and control the pumps based on the user settings |
| Team Size | 3 |
| Responsibility | • Design and architect the system<br>• Firmware development for peripherals<br>   - WiFi for establishing communication to internet<br>   - BLE for engineer mode<br>• Schematic design |
| IDE | CS+ ( Renesas) |

| Hardware | R5F100FLA (RL78/G13), Differential pressure sensor, Flowmeters (RS485) |
|---|---|

| Project | Description |
|---|---|
| Name | **RO AQUA** |
| Employer | TetherBox Technologies |
| Location | Bangalore |
| Duration | Mar 2016 to May 2017 |
| Description | To automate the RO system,<br>The scope of the project is Process Automation and Quality monitoring by IIOT fashion<br>The big data analysis is been carried out on the recorded parameters |
| Team Size | 3 |
| Responsibility | • Firmware development for peripherals and integration<br>• Developer level Testing and Validation<br>• Schematic design and Board Bring up |
| IDE | CS+ (Renesas) |
| Hardware | RF5100PGA (RL78/G13), pH sensors, TDS sensors, ORP sensor, DO Sensors, |

| Project | Description |
|---|---|
| Name | **Non-Intrusive Three Phase High Speed Data Acquisition System** |
| Employer | Tenet Technetronics |
| Location | Bangalore |
| Duration | Sep 2014 to Jan 2015 |
| Description | High Speed Data Acquisition for 3 phase energy monitoring of various parameters as Apparent power, Real power, Harmonics etc |
| Team Size | 2 |
| Responsibility | • Firmware development for ADE7880 HSDC reading<br>• Developed Firmware for high speed data writing in SD card (10 ms accuracy) |
| IDE | LPC Expresso |
| Hardware | LPC1769 (Cortex M3), ADE7880, |

| Project | Description |
|---|---|
| Name | **Home Automation System** |
| Employer | Tenet Technetronics |
| Location | Bangalore |
| Duration | Apr 2014 to Nov 2015 |
| Description | Smart automation of home using WiFi enabled control panels, TRIAC sine wave dimming, TFT display, Capsense Touch are the features |
| Team Size | 3 |

| Responsibility | • Analyzed and Architected the design of the hardware and the Firmware<br>• Developed Firmware for the system<br>• Developed firmware for nRF based asset tracking sub module<br>• Developed firmware for BLE beacons |
|---|---|
| IDE | CS+ (Renesas) |
| Hardware | R5F100AAA (RL78/G13), ILI9327, Cypress Capsense |

| Project | Description |
|---|---|
| Name | **IIOT WDS (Water Dispensing System)** |
| Employer | Tenet Technetronics |
| Location | Bangalore |
| Duration | May 2014 to Aug 2014 |
| Description | Water vending machine and the cumulative data is been stored on the cloud.<br>Remote operations and diagnostic modes of the system to check the health of the system |
| Team Size | 2 |
| Responsibility | • Developed Firmware for the data upload and peripherals<br>• Board Bring up and soldering (SMD) |
| IDE | CS+ (Renesas), Eagle |
| Hardware | R5F100AGA (RL78/G13), M66 Quictel, Pressure and temperature sensors |

## Workshops and Certifications
- Presented for the ITC IOT hackathon, an intelligent farming scenario.
- Attended ROBOTRYST workshop cum competition conducted by IIT Bombay
- Attended ANALOG DESIGN CHALLENGE conducted by TEXAS INSTRUMENTS in Cranes Software International.
- Attended internship training in KELTRON.

## Educational Profile
- Bachelor of Engineering in Electronics and Communication Engineering from Anna University (2009-2013) with 69%
- HSC from Tamil Nadu State Board (2007-2009) with 70%
- SSLC from Tamil Nadu Matriculation Board (2006-2007) with 82.3%

## Declaration

I do hereby declare that the above-mentioned information is true to my knowledge.

AJESH ISAAC