

RAJ VIGNESH T N

Head - R&D and Partner at Salieabs Electronics Engineers LLP

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Summary

My Technical blog: www.rajvignesh.tn.weebly.com Core Interest & Profile:- Embedded software/firmware, RTOS, SOC. Hardware Proficiency:- ARM, MSP430, PIC, AVR, Arduino, FPGA and Raspberry Pi
Programming Languages:- C, C++, Python and VHDL Tool Proficiency:- MATLAB/Simulink, Proteus, Keil, Arduino, Flowcode, Xilinx ISE & EDK, CANOe and FreeSOC

Experience

Head - R&D and Partner at Salieabs Electronics Engineers LLP (formerly ED Labs)

August 2014 - Present (7 months)

In charge of research, design and development electronic systems for the company's customers in India and overseas. Job responsibilities include Strategic product/solution design and conceptualization. Research & development of remote telemetry systems. Design & development of remote patient monitoring systems. Design and development of wired communication protocols. Design and development of electronic hardware for flight simulators

Visiting Research Associate (Bioinformatics) at Mahatma Gandhi medical College & Research Institute

April 2013 - Present (1 year 11 months)

Playing a key role as external research associate with the bio-informatics department of the university, in developing novel medical electronic systems.

Senior Engineer - R&D at ED Labs

September 2012 - August 2014 (2 years)

Actively participating in research, design and development of embedded systems. Job responsibilities include, # Research & development of remote telemetry systems. # Design & development of remote patient monitoring systems.

R&D Engineer - Electronics at BPL Health Management Solutions

June 2011 - August 2012 (1 year 3 months)

Embedded software development, ARM firmware development, Digital electronic system design.

Education

Coventry University

M.Sc[Engg], Real Time Embedded Systems, 2012 - 2014

Grade: 72.91% First Rank. Gold Medalist.

Sona College of Technology

Bachelor of Engineering (B.E.), Electrical, Electronics and Communications Engineering, 2007 - 2011

Grade: First Class with Excellence - 9.21/10.00

Activities and Societies: Institute of Electronics & Telecommunication Engineering

Holy Cross Mat Hr Sec School, Salem

High School, Mathematics and Computer Science, 2005 - 2007

Grade: Distinction - 91.42%

Activities and Societies: President, HAM Radio Club. President, Nature Club and National Green Corps Unit.

Courses

Bachelor of Engineering (B.E.), Electrical, Electronics and Communications Engineering

Sona College of Technology

Certificate Course in Embedded Systems from Central

Govt of India Certified Agency

Honors and Awards

M. S. Ramaiah Gold Medal

MS Ramaiah School of Advanced Studies

August 2014

Received gold medal for topping the class in M.Sc[Engg] with 71.92% aggregate.

Best Outgoing R&D Student of the College

Sona College of Technology

March 2011

Awarded the best outgoing research student for carrying out aiding research in the field of nanotechnology and embedded systems during college days.

Intel India Embedded Challenge 2010 - Finalist

Intel

July 2010

One of the proud finalists of Intel India Embedded Challenge 2010, to demonstrate the project titled "Green Vehicles" in Intel, Bangalore.

Patents

An arrangement for enabling multiple electronic devices to communicate over single wire in multi master and multi slave mode

India Patent Application 610/CHE/2015

Inventors: RAJ VIGNESH T N

In this invention, a single wire bus with provisions for existence of multiple masters is designed. The invention allows multiple masters to exist on a single wire bus. A method for fair arbitration of bus access is designed and arrived as an arbitration protocol. The arbitration protocol employs a novel access share

distribution scheme to allot weighted access to all the masters on the bus. Frame format in which data will be transferred is also designed such that there is optimal overhead. This invention allows existence of up to 1024 masters and slaves to be connected with a single wire.

Emission Controlled Green Vehicles

India Patent Application 2058/CHE/2010

Inventors: RAJ VIGNESH T N, Ranganathan Obli

A device to absorb carbon emission from vehicular exhaust, which can also be extended to absorb industrial carbon exhausts.

Electronic Traffic Sign Board Announcer using RF Signal

India Patent Application 927/CHE/2012

Inventors: RAJ VIGNESH T N, Harsha Prasanna K P

The project is done with an aim to reduce the road accidents in an efficient way by intimating the four wheeler drivers about the forthcoming humps, bends, ghat sections etc by voice announcement. This intimation is given to the drivers in prior (when they are 100m away from the traffic signal). This in turn helps the driver to be attentive on the road. This project uses Radio Frequency (RF) Signals rather than GPS.

Projects

Multi Parameter Patient Monitor

June 2011 to August 2012

Members:RAJ VIGNESH T N

Cross development of firmware for ARM (LPC2478) for critical monitoring, analysis and data logging system, that handles multiple parameters like ECG, NIBP, PR, SPO2 and temperature. Testing of the same system post development using suitable test cases.

GPS Based Lock for Valuable Cargo

July 2013 to November 2013

Members:RAJ VIGNESH T N, Deepak S, Manjunath Sontakki

Design, development and testing of an embedded system for establishing an intelligent lock on containers carrying valuable cargo. The system is an electromechanical lock that involves the use of remote authentication and entry of cargo into a pre programmed geographical fence as two factors of authentication to open the cargo.

Multi Master 1- Wire Communication Protocol

May 2014 to Present

Members:RAJ VIGNESH T N

Design and development of a simple communication protocol with single wire for data transmission. The design involved the development of an arbitration mechanism and frame format to carry payload of 64 bits. Simulation results prove that the designed protocol is better than I2C and SPI.

Remote Patient Monitoring Kiosk

April 2013 to Present

Members:RAJ VIGNESH T N, Harsha Prasanna K P

Development of an embedded system to remotely monitor patients using GPRS and bio electrical sensors. The device was developed with the aid of Mahathma Gandhi Medical College and Research Institute, Ponicherry. The device is aimed at remotely monitoring rural patients, so that their effort and money in travelling to nearby towns for regular checkups and post surgery checkups are conserved. Parameters monitored by the device are NIBP, SPO2, PR, HR, GSR and Temperature.

Data Logger and Plotter

January 2013 to Present

Members:RAJ VIGNESH T N, Harsha Prasanna K P

Embedded software and GUI development for a configurable data logger and plotter based on AVR micro controller. The device has multiple input channels that could take digital, analog and pulsed inputs and plot the same on the LCD screen as a graph. The data would be stored in the internal memory of the device, which can later be retrieved by an Android/Windows /Linux application. A configuration file can be placed in the device to configure the sensors and gather data accordingly.

Thermal Imaging with Raspberry Pi

September 2012 to Present

Members:RAJ VIGNESH T N, Harsha Prasanna K P

Raspberry Pi is used to gather data from infra red temperature sensor using an external ADC IC. The gathered data is sent to a Processing sketch, that plots the gathered data in varying shades of grey. The sensor was systematically moved on the object to be scanned and pixel colors were accordingly displayed on the screen by the Processing Sketch. Thus this project visualizes the temperature contour of any object as an image.

Blob Detection Using Raspberry Pi

November 2012 to Present

Members:RAJ VIGNESH T N, Harsha Prasanna K P

Development of simulink model to be run on Raspberry Pi. The motive of the project was to capture stream of images from RPI's camera and detect blobs in it. On detection of any movement or blobs, an alarm will be initiated. The captured images will be sent to a mail id also.

Satellite Modem Based Remote Telemetry Datalogger

August 2014 to Present

Members:RAJ VIGNESH T N, Harsha Prasanna K P

The project is about design and development of satellite modem based data loggers and remote telemetry modules that can be used for transmitting physical data from extremely remote areas. The module is designed to have provisions for connecting different kinds of sensors (analog, digital, frequency, pulse and current output) with which parameters can be sensed. The satellite modem pumps data to satellite servers through satellite links. The modems used are Iridium and Globalstar's STX3.

Cutomizable Electronic Safe with advanced GSM Technology

June 2014 to Present

Members:RAJ VIGNESH T N, Harsha Prasanna K P

The main objective of the project is to create lockers that can be customized based on the customers need. OTP based security, Finger print, Passcode and RFID based security systems are included in this locker. This system acts not only as electronic safe but also as the online trading parcel delivery system.

OTP Based Electronic Safes

June 2014 to Present

Members:RAJ VIGNESH T N, Harsha Prasanna K P

The main objective of the project is to create lockers that can be customized based on the customers' need. OTP based security, Finger print, Passcode and RFID based security systems are included in this locker. The system can be customised to have up to 4 factors of authentication

Portable and Customizable PoS Terminal

September 2014 to Present

Members:RAJ VIGNESH T N, Harsha Prasanna K P

Design and development of PoS terminal for use in multiple applications. The firmware is completely customizable with a drag-and-drop software provided along with the device. Special peripherals include RFID reader, smart card reader and fingerprint reader.

Long range Radar based Obstacle Detection System for Mining Safety

May 2014 to Present

Members:RAJ VIGNESH T N, Harsha Prasanna K P

Development of Long range obstacle detection system that is used in mining dumper trucks which enables the facility to warn the driver if there is any obstacle or any movement before the dumper ranging 0 to 20m. This system works even if the surrounding is dusty and the path is not clear to the driver. System Specifications: Detection Range - 20m Operating voltage - 24v Operating Frequency - 24 GHz Detection cone - 70 deg H and 30 deg V Signalling - Audio Visual Temperature Range - -20 to +50 Deg Cel Humidity Tolerance - 0 to 90% RH Current Consumption - 50 mA Enclosure - Water and Dustproof (IP68)

Certifications

Business English Certificate

British English Council

Publications

Autonomous Self Learning Electronic Blending Machine for Manufacture of Nano Crystals

International Conference on Information Technology, Electronics and Communication March 4, 2012

Authors: RAJ VIGNESH T N, Ahalya Ramesh, Harsha Prasanna KP

An embedded system design that includes touch screen and wireless connectivity to automate a blending machine intended to manufacture crystals from nano colloids with extreme control on deviation in properties of the crystals.

Volunteer Experience

Volunteer at Salem Citizens' Forum

March 2010 - Present (5 years)

Volunteered in de silting Mookaneri Lake in Salem and in building up a bird sanctuary. Frequently volunteering during weekends in removal of plastics from the lake bank.

Languages

English	(Full professional proficiency)
Tamil	(Native or bilingual proficiency)
Kannada	(Native or bilingual proficiency)
Telugu	(Elementary proficiency)
Hindi	(Professional working proficiency)

Skills & Expertise

Embedded Systems

Processors

Electronics

ARM

Microcontrollers

Embedded Software

Firmware

Embedded C

VHDL

Arduino

FPGA

Digital Electronics

MSP430

Matlab

Python

Linux

Embedded Linux

IAR Embedded Workbench

RTOS

C++

SoC

Keil

AVR

Raspberry Pi

Interests

Electronics, Embedded Systems, FPGA, Micro Controllers, Linux, Micro Processors, Python, Firmware Development, Embedded Software, Project Handling, Embedded System Testing, Xilinx ISE, SoC, Arduino, ARM, AVR, PIC, FlowCode, Processing IDE, Project Management, Team Management.

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