DIPTIMAN HAZRA

diptiman.hazra@mavs.uta.edu ◆ 924 W Mitchell Street, Apt 248, Arlington TX - 76013
◆ **+1 (682) 551-9066** ◆https://www.linkedin.com/in/diptiman-hazra-86575741

H-1B Approved

OBJECTIVE (Computer Engineering: Embedded Software)

Technically sound Computer Engineer with a specialization in Embedded systems and Control systems design. Proficient in coding with Firmware/software development, clear concept of communication protocols, testing and debugging. Looking for full time opportunities.

TECHNICAL SKILLS

Programming Languages: C, C#, ASP.NET, C++, Embedded C, Python, Relay Ladder Logic, MATLAB, Assembly.
Applications/IDE: Visual studio, Code composer studio, Matlab/Simulink, Turbo C, SQL server Mgmt. Studio.
Hardware: Microcontroller 8051 / Arm Cortex M4F/ ATMEGA8, Microprocessor 8086/80386, Arduino, IAR, PLCs, Beagle Bone Black.
Software suite: IBM Cognos 8.3 and Cognos 10.2, Tidel Scheduler, MS Office, AutoCAD, LTSpice.
Database applications: Oracle 11g/MS SQL/ MySQL, Datamanager, MS-Access.
Certifications: Core Java (NIIT, Bangalore) , Allen-Bradley PLC troubleshooting(Rockwell Automation)
Networking/Protocols/Standards: TCP/IP, SPI, I2C, RS-232, CAN BUS, UART, RS-485, JTAG, USB.
Operating System: Linux(ThreadX), Windows.

EDUCATION

Master of Science: Electrical Engineering from University of Texas at Arlington, Arlington, Texas, USA (Graduation, May 2017).
Bachelor of Engineering: Electronics and Communication Engineering, Visvesvaraya Technological University, Karnataka, India. (June 2012)

PROFESSIONAL EXPERIENCE

- **Firmware Designer** at Berean Group International Inc. (Client: Schneider Electric, March 16, 2020 – July 2020)
- **Electrical Engineer** at Verde GSE Inc.(Palmetto, FL -- June 2019 – March 13, 2020)
- **Amazon Control Systems Technician** at C&W Services(Coppell, TX -- December 2017 – May 2019)
- **Systems Engineer** at Tata Consultancy Services for (Client: Johnson & Johnson pvt. ltd) (Bangalore, India. February 2013-June 2015).

Projects in Details

Firmware Designer at Berean Group International Inc. (Client: Schneider Electric, 4 months)

1. Modify existing firmware to meet marketing requirements
2. Performs development (coding and/or testing) of a part of an embedded software solution whose specification and architecture are defined.
3. Conduct firmware design reviews with peers to gain knowledge on the best practices.
4. Firmware development using Integrated Development Environment(IAR, Visual Studio, etc).

Electrical Engineer at Verde GSE Inc. (10 months)

1. C/C++ programming, Embedded systems Testing and Debugging. Programing included Wifi and Bluetooth based IoT.
2. Refrigeration, HVAC applications and Engineering.
3. Electrical Diagrams using AutoCAD and Testing Documentation.
4. Worked on **CAN bus J1939** protocol to communicate with operation Boxes and Raspbery Pi based HMI.
5. Design of ZigBee based Mesh networks for IoT application using TIVA C series MC

Control Systems Technician at C&W Services for **Amazon (1 year 5 months)**

1. Mechatronics, Material Handling Systems, Controls Engineering and Trouble shooting.
2. Troubleshooting, design/implement/document control solutions for Camera systems.
3. Perform assigned tasks **Allen Bradley ControlLogix PLCs**, Control View **HMI**, OPTO Controllers
4. Use AutoCAD to review, develop and maintain electrical schematic and conveyor layout drawings
5. Received On site Training from Intelligrated, Rockwell Automation, Cognex and Procentec for individual component troubleshooting.

Systems Engineer at Tata Consultancy Services for (Client: Johnson & Johnson pvt. ltd).**(2 years 5 months)**

1. Trained on topics like OOAD, Layered Architecture, SDLC, UML, etc.
2. Worked on Linux environment for Medical Devices to code in Embedded C for maintenance and upgradation through remote server. Also for file management and repository we used Linux terminals to search, extract and update script through Shell.
3. Bluetooth based programming on top of ThreadX OS.
4. Created Data warehouses for ETL load using Oracle Sql taking data from the SAP BW tables being provided with all table details.
5. Administration of User access for Cognos files and folders in Cognos version 7, 8 and 10.
6. Running and executing Jobs, cubes and queries on ADHOC basis according to project requirement. Creation and publish of cubes.
7. Movement of packages for Migration from Cognos 8.3 to Cognos 10.2.
8. Coordination with Several teams for Collective issue resolution and ticket management using IRIS, BMC, SOLMAN Tools,etc
9. Resolution of data mismatch related issues and monthly data load.
10. Communicate with users (international clients) regarding urgent and critical issues and changes if any over call.
11. Worked on an in-house project in Tata consultancy Services by creating website using C#(.Net) for an insurance company

ACTIVITIES

- Participated in AIAA Missile Systems Technical Committee 2016-2017 Design Competition.
- Presented paper (#10063 – 9, 10063 – 16, 10063 - 34) at SPIE Photonics West (2017) conference in San Francisco.
- Designing and coding my own official website using C#, ASP.NET, SQL server, CSS, HTML.

University of Texas at Arlington

Relevant Coursework: Computer concepts and C programming(06CCP13), Programming in C++(06EC661), Logic Design(06ES33), Microcontrollers with Lab(06ES42/06ESL47), Microprocessors with Lab, Embedded system design(06EC82), Embedded Microcontroller Systems (EE 5314), Microprocessors Systems (EE 5313), Advanced Microprocessors Systems (EE 6313), Intelligent control systems (EE5322), Programmable Logic Controller(EE5355), Advanced Embedded Microcontroller Systems(RTOS), Digital communication, Wireless communication.

RELEVANT PROJECTS (Academic)

- **Design of a Real-time Operating System(RTOS) using TIVA C series MC** (Arm Cortex M4F)**.** (Jan 2018-April 2018).
  Coded using **Embedded C**, for an ARM M4F controller that implements cooperative and preemptive RTOS solutions with support for semaphores, yielding, sleep, priority scheduling, priority inheritance, and a shell interface.
- Deployed **PLC IP3416** to implement **WATER PUMPER** with flowmeter to measure the volume of water, and **BAGGAGE HANDLING SYSTEMS** of an airport and **WATER LEVEL CONTROLLER** using relay ladder logic. (Oct. 2016-Dec. 2016).
- Designed **32-bit RISC Microprocessors** based with **4-stage pipeline** and Harvard architecture. The instruction and data memory interfaces, ALU, and the entire pipeline control logic including full resolution of all structural, control, and data hazards. (August 2016-Oct. 2016)
- Few mini projects on **Intelligent Control systems** using **Matlab/Simulink**, like Single Hidden-Layer Neural Network, Adaptive Control, Proportional Derivative (PD) Controller, Mamdani Fuzzy Inference System (FIS), Kalman Filter, Batch Learning, Mobile Robot Control.
- **SDRAM Controller Design for 32-bit microprocessor 80386DX** (March 2016-May 2016).
  Interface of SDRAM memory(MT48LC8M8A2) with microprocessors (80386DX) having only asynchronous memory support. Solution including state machine, row, column, and bank signal generation, data masking, data flow, ready logic, and refresh support was provided.
- **Embedded Microcontroller System Design using TIVA C series** (ARM 7 Microcontroller - Cortex M4F)**.** (Sept 2015-Dec 2015).
  - **Stage Lighting system:** Built a device capable of acting as either a controller(Master) or a device(slave) for a timing intensive asynchronous communications interface based on the DMX512-A (RS232, RS485) protocol with EF1 topology. The device can send and receive data (Half duplex) while acting upon it. We have used TM4C123GXL board and **Embedded C** for implementation.
  - **Low Cost LCR Meter:** Designed a system capable of measuring resistance, inductance (and ESR), and capacitance using **Python** in Beagle Bone Black Embedded Debian Linux. Used ADC, PWM and IRQ concepts for current and software flow handling.
- **Digital Communication Projects**: Multiple Input Multiple Output (MIMO) QPSK and QAM MATLAB Simulation Using Dual Polarization Diversity. Implementation of: the zero-forcing (ZF) linear equalizer, the linear minimum mean-square error (LMMSE) equalizer and the ML decision rule and test its performance for the two channels
- **Motion Sensors to detect and Identify Human Intrusion using Arduino.** (Feb 2012-June 2012).
  Designed a security system by designing hardware involving Passive sensors (PIR sensor), GSM module(SIM300), microcontroller (ATMEGA8), mechanical motor sprinkler (with smart water) and programmed the microcontroller using Embedded C.

- Worked on Virtual Reality lab for upgrading Haptics in Surgical Simulation using Ghost/OpenHaptics SDK, DSP, C++ algorithms.
  Configured stepper motors with motor driver ST5-Q-EN with features of speed and direction control using LabVIEW NI DAQ I/O device.

- Studied in detail about the architecture of ARM Cortex – M0 and ARM cortex – M4 and started coding various aspects of the architecture by using TIVA C M4F microcontroller and its datasheet. Coded Timer control interrupt, GPIO and UART control interrupts and checked the results through Oscilloscope, logic analyser or on soldered LEDs on Circuit Board. Designed Electronic Firmware circuit through LTSpice and soldered the Electrical components on a circuit board according to the simulated design.

- Used Stellaris in-circuit Debugger to debug C code in Code Composer Studio where all the variables (local and global) can be checked under Auto or watch variables window. Also, all the memories and stacks were studied during line by line decoding of the source code while debugging.

- All the implementation above are done in Embedded C programming. To have a strong hold on C programming, various algorithm based C programming is done on Visual Studio involving Linked List, trees and graphs, Library development, device driver development, address manipulation and bit wise operations.

- Outside the above work, few extra components were tested and configured including an IR sensor, ZigBee module(XB24 AW001), WIFI(ESP8266 Serial WIFI transceiver), Ethernet stack(SPI), SSD1306 OLED(I2C), Servo motor(PWM). Also, Beagle Bone Black Rev C Evaluation board is tested and was a part of R&D to code various devices to implement various projects in Linux Environment.