

Gomathi Manisha Bala Muthukumaran

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PROFESSIONAL SUMMARY

Detail oriented and collaborative computer engineering graduate with experience and passion towards design and development of embedded systems using C/C++ in Linux and RTOS environments, actively seeking full time position to start immediately

EDUCATION

Master of Science, Computer & Systems Engineering, University of Houston, Houston | CGPA: 3.4/4.0 **Dec 2022**
Bachelor of Engineering, Electronics & Communication Engineering, Anna University, India | CGPA: 8.3/10 **May 2019**

SKILLS

Programming: C, C++, SQL, UNIX, Shell script, Perl | **RTL coding:** Verilog, System Verilog | **Protocols:** SPI, I2C, CAN, Modbus, UART |

Tools: ModelSim, Quartus Prime, Altium designer, Wireshark Network analyzer, MATLAB, Jira, Oscilloscope, Logic analyzer

RELEVANT COURSEWORK

Hardware Digital design, Computer Architecture, Computer Networks, Embedded Systems, Microprocessor and Microcontrollers, Digital Signal processing, Operating Systems, Data Structures and algorithms, Object oriented programming, Medical devices engineering

EXPERIENCE

Graduate Teaching Assistant | Department of Computer Engineering, University of Houston **Jan '23 – Present**

- Conducted live classes to design systems with FSM, create simulation testbenches using Verilog to evaluate timing analysis in ModelSim software and perform synthesis to realize in a real FPGA using Quartus prime tool
- Assisted in projects using ARM architecture, constructing filter models using MATLAB for digital signal processing applications

System Administrator CO-OP | Centre for Academic Support and Assessment, University of Houston **Jun '21 – Dec '22**

- Updated machines with latest hardware/software updates, ensured DHCP configurations while installing new systems, troubleshooted boot process & device driver issues in various operating systems including Linux, Windows
- Demonstrated communication protocols like Ethernet, LAN, TCP/IP, UART and learnt analysis of networks using Wireshark tool

Systems Design Engineer | Tata Consultancy Services, India **May '19 – Dec '20**

- Collaborated with cross functional teams during all software development lifecycle phases till deployment in production for 100% data amalgamation of 2 financial institutions with 600K+ customers information using RDBMS techniques in Oracle
- Developed C/C++ programs to create modules, Shell Scripting for report generation and Unix/Linux command files to display a dashboard of current processes running in the server in real time and troubleshooted major defects through unit & regression testing within 6 months from requirement analysis using Agile methodology

ACADEMIC PROJECTS

Binary Math game in FPGA (Verilog, ModelSim, Quartus Prime)

- Created block level RTL modules to define Authentication, Access Controller, Timer, on chip RAM to write/store score and on chip ROM to store user ID & password to display through 7 segment display and LEDs using ModelSim software
- Designed a Finite State Machine to perform the game control and developed test benches to verify the block level performance by synthesizing it on a real-time Intel FPGA ter-Asic Altera Cyclone V board using Quartus Prime synthesis tool

Smart Cane to aid visually challenged people (Arduino)

- Prototyped a stick with sensors connected to Arduino microcontroller to aid in obstacle detection, mounted an APR33A3 module to record and alert along with the type of hurdles via earphones within a range of 10 cm to 450 cm
- Implemented a switch on the handle to alarm the emergency contacts using GSM about the location of danger via GPS module

MIPS Pipeline Processor Simulator (Computer Architecture)

- Demonstrated 5 stages of MIPS Pipeline, executed instruction set using different addressing modes and techniques including branch prediction, data forwarding to handle pipeline stalls caused by structural, control and data hazards

Foot Provocation Measurement System (Raspberry Pi)

- Embedded pressure sensors in foot soles wired to Raspberry pi connected with Himax module via UART to record data
- Developed an app to display the interface for monitoring the results based on pressure values to find the posture patterns severity to analyse neurological disorders including Huntington Chorea and Parkinsons disease