BHANU PRAKASH VELIVELA

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CAREER OBJECTIVE

Passionate and skilled in Embedded Systems, Hardware Testing and Troubleshooting PCB's, eager to contribute innovative solutions for technological progress. Seeking a full-time opportunity to apply expertise and drive exceptional results. Highly motivated professional committed to advancing the future through technology.

Experience

University of Houston **August 2022 – November 2022**

Graduate Assistant *Houston, Texas, United States*

- Ensured an optimal examination environment through diligent oversight of exam administration, precise scheduling of exam timetables, and vigilant supervision of undergraduate tutors.
- **SKILLS:** Analytical Skills, Management, Problem-Solving, Operational Planning, Positive Can-do Attitude.

EFFTRONICS SYSTEMS PRIVATE LIMITED **May 2021 – January 2022**

Firmware Engineer *Vijayawada, Andhra Pradesh, India*

- Collaborated with senior engineers to troubleshoot and debug hardware and software issues, contributing to the successful completion of projects that deal with Printed Circuit Board Assemblies using test equipment like ATE, ICT, JTAG, AOI, ESD Tester, Digital Oscilloscope, Korad KA3305P DC Power Supply.
- Conducted BIOS testing, debugging, troubleshooting, and validation procedures to ensure the reliability and performance of embedded systems using several test methodologies, power generators, digital multi-meters, and KiCAD EDA.
- Actively participated in meetings to analyze testing processes and implemented improvements for increased efficiency.
- **SKILLS:** Team Collaboration, Adaptability, Test Automation, Selenium, Android Studio, TestRail, Keil uVersion.

Defence Electronics Research Laboratory (DLRL) **November 2020 – May 2021**

Research And Development Intern *Hyderabad, Telangana, India*

- Developed high-efficiency embedded programming for ARM microcontrollers.
- Optimized software for ARM-based SoC architectures and mobile use cases.

Electronics Corporation of India Limited (ECIL) **May 2019 – June 2019**

Embedded System Engineer *Hyderabad, India*

- Developed and integrated software for systems using DRAM and NAND architectures.
- Collaborated with hardware teams for seamless integration and system validation.
- Optimized software for ARM-based SoC architectures and mobile use cases.
- **SKILLS:** Prototyping, Simulink, Algorithms, Attention to Detail, Product Development, and Technical Leadership.

Academic Projects

Binary Math Challenge Game with Hardware Security (FPGA and ROM): | *FPGA, Verilog* **August 2023**

- Engineered a mental binary math game on an Altera Cyclone V FPGA using VHDL, allowing for hands-on engagement.
- Integrated on-chip ROM IP and RAM IP to implement multi-player gameplay with authentication and score tracking.
- Programmed the FPGA using Intel Quartus and performed block-level verification using ModelSim simulator.
- Designed and implemented various digital logic elements such as Timers, Flip-Flops, State Machine, Counters, ETC.
- **SKILLS:** Team Player, Innovative Coding, Fast Paced, Empathy, Communication, Program Management.

Embedded Driver Development of F2806x peripherals - GPIO, SPI, CAN, BLE, Ethernet: **January 2023**

- Developed peripheral drivers in C for TMS320F28069 MCU configuration and control GPIO pins.
- Leveraged internal peripherals including EXTI, NVIC, and RCC to provide full peripheral management capabilities.

Design and verification of APB (AMBA) protocol in UVM based system verilog. **December 2022**

- Utilized UVM methodologies to create reusable verification components, testbenches, and functional coverage models for exhaustive protocol verification. Implemented the APB protocol based on AMBA standards.
- Software Used: Cadence Conformal, QuestaSim, EDA playground, Microsoft Office.

Human activity recognition with an open CV and deep learning. **October 2022**

- Developed a human activity recognition system using OpenCV and deep learning with ResNet, involving sensor selection, data preprocessing, model design, and real-time deployment. Integrated a user-friendly HMI using Qt for real-time activity monitoring. Conducted extensive testing to ensure high accuracy and reliability.

Hardware Testing Automation Framework Development. **June 2022**

- Implemented a robust automation framework to streamline hardware testing processes, integrating lab equipment such as Fluke 87V Digital Multimeter, Tektronix TBS1052B Digital Storage Oscilloscope, Korad KA3305P Variable DC Power Supply, Rigol DSA815-TG Spectrum Analyzer, Agilent 33250A Function/Arbitrary Waveform Generator.
- Integrated LabVIEW-based graphical user interfaces (GUIs) for intuitive control and monitoring of lab equipment parameters, facilitating seamless interaction and data collection during hardware testing.

Processor performance of SPEC2000 Benchmarks using Simple Scalar Simulator. **May 2022**

- Evaluated the performance of SPEC2000 using the various given benchmarks and compared their performance in terms of CPI, No. of references, and miss rates with different sets of Cache Configurations working on a Linux platform.
- Developed Performance Simulation models using TLM2 to evaluate the performance of SSDs.
- Analyzed DDR4 and compared ASIC and Simulator performance to identify bottlenecks and propose solutions.
- Selected appropriate benchmarks, DIMMs, configured the simulator, ran simulations, collected, and analyzed performance data, and drew conclusions about the performance of the benchmarks.

IOT-based Paralysis Patient Monitoring System. **November 2021**

- Utilized sensors like ESP32, ADXL335 accelerometer, MAX30100 heart rate sensor, and Blynk technology to collect, display, and transmit data on vital signs, hand gestures, and movements.
- Analyzed real-time data to provide insights and support caregiving for remote assistance and intervention.

Web Based Data Acquisition System. **April 2021**

- Utilized Free RTOS, Embedded C, ESP32, Blynk, and a range of sensors including DHT11, IR, gas, analog, and pulse input levels, to create web-based data acquisition. Enabled remote monitoring and control of sensors and devices in real-time from any web-enabled device.

Technical Skills

Programming Languages: Embedded C, System C, TLM 2.0, VHDL, C, C++, RTL Design, PowerShell, Java, Python.

Designing Software: MATLAB, ArduinoIDE, AutoCad, CAPL Scripting, MASM Assembly Language, KiCad, GIT.

Analytical Tools: Cadence, Altium, Xilinx Vivado, Quartus, Jira, CANape, CANoe, Jenkins, Eclipse, dSPACE, Modelsim.

Protocols: I2C, SPI, LIN, CAN FD, APB, Flex Ray, TCP/IP, LoRa, CoAP, UART.

Education

University of Houston (UH) **GPA: 3.4**
Master of Science in Computer and Systems Engineering *Houston, Texas*

Gandhi Institute of Technology and Management (GITAM) **GPA: 3.5**
Bachelor of Technology in Electrical Electronics and Communication Engineering *Hyderabad, India*

Relevant Coursework

- RTOS and IOT
- Hardware Verification
- VLSI Design and Testing
- Electronic Circuits
- Digital Image Processing
- Digital Control Systems
- Cyber Security
- Microprocessor
- Micro-controllers
- Digital Circuits
- Digital Logic Designs
- Advance Hardware Design
- Computer System Architecture
- Data Communication Networks
- Digital Communications
- Principals of Internetworking

Publications and Certifications

- Certification course from **Cadence design systems** on **Designing with the 3D-IC Integrity Platform**.
- Awarded Certificate in Microcontroller Programming Embedded C and Assembly Language.
- **Certified from Coursera:** Interfacing with the Raspberry Pi, Cryptography, Packet Switching Networks, Introduction to Linux, and Python Programming Language.
- **Hewlett Packard Enterprise Data Science Institute (HPE DSI):** Cluster Computing, Machine Learning.