H Bharath Bhat

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hbharathbhat.github.io

Experience

Indian Institute of Science, Bengaluru **September 2024 - January 2025**

Research Intern *Hybrid*

- Worked under the guidance of **Dr. Sumit Kumar Mandal**, Assistant Professor, Dept. of CSA, IISc on the **Comparative analysis of Matrix Multipliers**.

November 2023 - April 2024

Research Intern *Onsite*

- Worked on **Energy-Efficient Hardware Accelerators for Machine Learning Algorithms** in the **Future Computing Systems (FIST)** group within the **Computer Science and Automation Department, IISc, Bengaluru**.
- My work also includes contributions to literature on **Communication-aware Heterogeneous 2.5D Systems for Energy-efficient LLM Execution at Edge** published at the IEEE Journal on Emerging and Selected Topics in Circuits and Systems.
- **Skills Enhanced**: Verilog · C · RTL Design · Python · Cadence
- https://www.csa.iisc.ac.in/∼ *skmandal/bharat.html*

Education

JSS Academy of Technical Education, Bengaluru **2021 - Present**

Visvesvaraya Technological University (VTU) *Aggregate: 8.65 CGPA*

Bachelor of Engineering in Electronics and Communication Engineering

Projects

Hardware Implementation of Cussen's Algorithm | *C · Verilog · RTL Design* **September 2024**

- Implemented Cussen's Algorithm in C and analyzed its execution time using the *perf* tool.
- Developed a Verilog implementation of Cussen's Algorithm and synthesized it using Cadence Genus to evaluate area, power, and timing metrics.
- Automated Verilog code generation using a custom Python script.
- github.com/hbharathbhat/cussen.git

Hardware Implementation of Minimally Biased Multipliers | *Verilog* **June 2024**

- This project involves Hardware Implementation of **Minimally Biased Multipliers for Approximate Integer Multiplication** using **Verilog**.
- This project also involves synthesis of the algorithm using **tsmc90** technology library on **Cadence Genus Tool** to analyze area, power and speed.
- github.com/hbharathbhat/minimally_biased_multipliers.git

Tech Fusion Cruiser | *Embedded C* **January 2024**

- This project was developed on **ARIES V3.0** Development Board as a part of Inter-branch workshop conducted at **JSS Academy of Technical Education, Bengaluru**.
- Won the 1st prize in the contest held post the workshop.
- github.com/hbharathbhat/cdac_vega_tech_fusion_cruiser.git

Hardware Implementation of Systolic Array | *Verilog · RTL Design · Python* **August 2023**

- This project involves Hardware Implementation of **nxn Systolic Array integrated with Softmax Model** using **Verilog**, which was later synthesized using Cadence Design Tool.
- This project was developed during the internship period at Indian Institute of Science, Bengaluru.

Collection of RTL Codes | *Verilog · RTL Design* **June 2023**

- This hobby project includes a collection of RTL codes, featuring components such as flip-flops, adders, latches, multiplexers, encoders, ALUs, counters, RAMs, ROMs, and more.
- github.com/hbharathbhat/rtl_codes.git

Technical Skills

Languages: Verilog · C · Python · HTML/CSS
Hardware Design & Synthesis: Xilinx Vivado/ISE · Cadence Genus · Cadence Design Tools
Software Development: VS Code · Git · Jupyter Notebook · Spyder · Code Blocks
Development Boards: Vega Processors: Aries V2.0 and V3.0 · Arduino UNO
Technologies/Frameworks: Multisim · Tina-Ti · Cedar · Matlab · Arduino IDE

Major Courses

Programming, Data Structures and Algorithms using Python, IIT Madras
· Python Notes - hbharathbhat.github.io/python
Introduction to Programming in C, IIT Kanpur
Hardware Modeling Using Verilog, IIT Kharagpur
Digital Design with Verilog, IIT Guwahati
C Programming Bootcamp, Udemy
· github.com/hbharathbhat/c

Workshops

Present and Future Computing Systems, CSA, IISc, Bengaluru
Semiconductor Technology and Microfabrication, CeNSE Summer School, IISc, Bengaluru
Vega Processor and its Applications, JSSATE, Bengaluru

Extra Curricular

Carnatic Music **2017**
Junior *Karnataka State Board*

- Has cleared Karnataka Music (Vocal) Junior Examination.

Trekking · Cycling · Chess

Interests: Herpetology · Geo-politics · Aviation