



Arya Agarwal
Electrical Engineering
Indian Institute of Technology Bombay

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B.Tech.
Gender: Male
DOB: 29/05/2003

Examination	University	Institute	Year	CPI / %
Graduation	IIT Bombay	IIT Bombay	2025	

Pursuing a minor in **Computer Science and Engineering** from the Department of CSE, IIT Bombay

SCHOLASTIC ACHIEVEMENTS

- Secured percentile of **99.83** in **JEE Main** among a pool of **1 million** students appearing across the nation ('21)
- Achieved percentile of **99.52** in **JEE Advanced** out of over **0.25** million candidates appearing nationwide ('21)

PROFESSIONAL EXPERIENCE

Research Intern | Datsons Electronics Pvt. Ltd. | Research and Development Department (May '23 - Jul '23)

*Datsons specializes in power conditioning equipment including smart **Power Distribution Unit (PDUs)***

- Developed a system using **Arduino UNO(ATmega 328)** to control and detect fan failure in **PDUs**
- Incorporated a **PT100 sensor**, a resistance thermometer, to accurately sense temperature variations and validated the circuit on **Proteus Software** and **Breadboard** to ensure functionality and feasibility
- Established communication using **RS485-Modbus protocol**, enabling interaction with Arduino acting as a slave and utilizing a **relay module** to send control signals to the fan based on temperature thresholds
- Implemented a circuit to detect fan failure, consisting of a **10-ohm 2W resistor**, **rectifier**, and used Arduino which analyses resistor current and sends output signals triggering an **LED indicator**

KEY PROJECTS

IITB-RISC-2023 | Course Project | Prof Virendra Singh, IIT Bombay (Apr '23)

- Designed a **16-bit** Reduced Instruction Set Architecture (RISC) to execute **17** different instructions using VHDL
- Contributed in constructing digital components such as **ALU**, **register**, **encoders**, **memories**, **sign extenders** and designed the **flowcharts**, **control logic** and **datapath** in a team of 4, deploying the processor in **Quartus**
- Designed a **6 stage pipeline architecture** for better performance and added **stalling** to avoid **data hazards**
- Developed hazard detection mechanisms to ensure proper handling of **control hazards** and integrated **data forwarding** and **clock freezing** techniques to tackle these hazards to optimize data flow within the microprocessor
- Implemented a memory system and **8 General Purpose Registers** to facilitate data storage and retrieval operations

Microprocessors Laboratory | Prof. S. Vijayakumaran | Prof. Nikhil Karamchandani (Jan '23-Apr '23)

- Interfaced **PT-51 board** with a keypad and used Embedded C to authenticate the password typed on the keyboard
- Established serial communication between Pt-51 microcontroller and a computer using a **USB-UART** module
- Interfaced an analog-to-digital converter **ADC MCP3008** as a slave with **8051 microcontroller** as a master using the **Serial Port Interface (SPI)** protocol to measure the real time voltage readings across a potentiometer
- Built a **stopwatch** using timers and interrupts and displayed execution time between two events on an LCD screen

Digital Logic Design in VHDL | Course Project | Prof. Maryam Baghini (Aug '22 - Nov '22)

- Implemented digital circuits using **Intel Quartus Prime** and **VHSIC Hardware Description Language (VHDL)**, focusing on Finite State Machines based **sequence generators**, **multiplexers** using structural modelling
- Used **UrJTAG** and **ScanChain** for successful implementation of digital logic on **Xenon FPGA Board**
- Developed and designed structural models in VHDL for various components, including a **multiplier circuit** to multiply a 4-bit input with a 3-bit input, a **4-bit adder-subtractor** circuit, and a signed **3-bit comparator** circuit

Analog Circuit Design | Course Project | Prof. Anil Kottantharayil (Jan '23-Apr '23)

- Designed and implemented active filters and **instrumentation amplifier** using **LM741**, **TL084**, **INA128** ICs
- Studied and implemented a **logarithmic amplifier** which can be used for direct conversion of analog values to decibels and assembled the circuit using a **TL084 opamp**, diodes and resistor values as obtained from simulation
- Synthesized netlist, devised **Ngspice commands** to perform the simulations to obtain desired parameters

TECHNICAL SKILLS

Programming VHDL, Python, Embedded C, HTML5, CSS, C++

Software & Packages Keil, Quartus, Matplotlib, Atom, Proteus, Arduino IDE, Pycharm

EXTRACURRICULARS

- Selected as one of the top **16 players** to represent the IIT Bombay Football Team at the 55th **Inter-IIT Sports Meet** held at **IIT Roorkee** leading the team to an impressive **3rd place** finish in the tournament ('22')
- Secured **2nd** and **1st** position in the inter-hostel Football GC and Institute Football League respectively ('23')
- Represented IIT Bombay in **Mumbai District Football Association(MDFA)** Second Division League ('22')
- Completed a comprehensive year long course on **YOGA** at National Sports Organisation, IIT Bombay ('22')