# Ayush Agarwal

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## Education

**IIT BHU Varanasi** - BTech in Electronics Engineering (ECE) (CGPA = 9.04) 2020 – 2024

## Experience

**ASIC DESIGN + FORMAL VERIFICATION (HARDWARE ENGINEERING) INTERN AT NVIDIA -** May 2023 – July 2023

- **Tools:** Verdi, Jaspergold, System Verilog Assertions (SVA), Viva, Perforce, Unix, gVim
- Performed **Semi-Formal Verification** over Second Level Clock Gating Modules. Deployed SLCG SFV flow over **3 modules**. Coded RTL changes in Nvidia's internal language Viva. Discovered and **debugged 1** critical RTL **bug** in the chip.
- Analyzed signals, discovered and **debugged 1 RTL bug**. Coded **SVA** assumptions to drive Jaspergold's Miter Construction. Created quality documentations on Nvidia's official page "Confluence".
- **Analyzed ~8000 Netlist Linter outputs** to ensure best practices are followed in the netlist.

**DATA SCIENTIST AT INFO EDGE (NAUKRI) -** May 2024 – Jan 2025

- **Reels Notification pipeline** - Constructed **ETL Pipelines** for **Data Engineering** to deliver notifications to **6,00,000+ users** achieving **5x DAU** (Daily avg Users) on Naukri reels. Integrated data from multiple AWS and Mongo DBs, translating complex business logic into code computing dynamically computed user pool.
- **Notification Generation using GenAI** - Used **Prompt Engineering** over **Llama** (8B) to automate notification content generation, leveraging video data (title, transcription(using Whisper AI)). Designed **guardrails**(profanity checks, length check etc) to ensure quality content, processing 400+ videos with zero manual effort.
- **Other Projects -** Metrics Mailer and Dashboard, Meme Scrapper, Sallie (Sales Intelligence AI), Reels Recommender System, News Recommender System

## Honours and achievements

- **SPECIAL MENTION - GYMKHANA AWARD:** Among **top 20 students across IIT BHU** in technical proficiency
- **3rd POSITION IN X-IoT-A UDYAM IIT BHU :** Internet of Things(IoT) event .(Made Innovative Oscillating Fan) (Link)
- **6th POSITION IN IDEEAVOLT, IIT ROORKEE :** Idea Pitching Competition.(Made Innovative Electronic Door) (Link)
- **2nd IN ART OF FLIGHT AMC TECHNEX :** FPV Drone Flying event.(Used FPVFreeRider Drone Simulator)
- **Hobbies :** Guitar, Photography, Dance, Reading, Travelling

## Projects -

### INNOVATIVE ELECTRONIC DOOR

- **Exposure :** Verilog , Digital, Analog Electronics, mechatronic system designing, Vivado, Proteus, ASIC Design (GitHub Link)
- A cost effective multi-featured Electronic door which can be operated contactlessly, has privacy, password, emergency mode, opens automatically during fire , can indicate crowdiness inside room and can automatically switch on light when person inside

### VOICE CONTROLLED MECANUM BASED FORKLIFT (VOCMEF)

- **Exposure :** Mechatronics, Robotics, Machine Learning, Electronics, IoT, Communications, Arduino, CAD (Fusion 360)
- A redesign of the presently available forklifts to counter faced challenges like toppling of goods, low capacity etc .
- Voice signal sent into microphone , detected by Deep Learning based Model (86% accuracy) , encoded into binary , then sent over bluetooth to VOCMEF's Microprocessor which then performs the required motion . (GitHub Link)

## Skills and Technologies

**Skills:** Machine Learning (Deep Learning), Electronics, Robotics, Mechatronics, Product Management, ASIC Design, PCB Design

**Technologies:** Verdi, Jaspergold, MATLAB, Vivado , Proteus, OrCAD, Simulink, EagleCAD, Fusion 360, Arduino, Perforce, gVim, Python, Mongo DB, Kafka, Aerospike, Flask APIs, SQL, Cron, Git, Confluence, C++

## Position of Responsibility (POR) - Digisim Coordinator - Udyam 22 (ECE Dept Fest)

- **Skills Demonstrated:** Time Management, Communication Skills, Mentorship, Innovation.
- **Taught 50+ juniors** how to make their first PCBs (Printed Circuit Boards), introducing the culture of Backend VLSI. Guided juniors in **designing innovative** electronic **solutions emphasizing customer needs**.
- Designed multiple real-life digital electronics **practice problems** biweekly (question collection now available as a free book). Created the final Problem Statement (PS) - EVM on PCB, Model Blockchain digital electronics, etc.