Ved Prakash Nautiyal

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Education

Graphic Era Hill University, Dehradun, Uttarakhand, India — September 2021-Present
Bachelor of Technology in Computer Science and Engineering — Graduation: August 2025
CGPA (Original: 8.37/10, Converted: 3.6/4.0)

Research Experience

Xu Lab at Carnegie Mellon University under Dr. Min Xu — September 2024-Present
Working on *Denoising Cryo ET/EM Tomograms*.

- Contributed to the project ideation by applying Denoising Diffusion Probabilistic Models (DDPM) to enhance the quality of cryo-ET/EM tomograms, using the SHREC dataset to empirically evaluate noise reduction techniques.
- Explored various advanced denoising techniques, including *DDPM, and wavelet transforms*, to evaluate their efficacy in preserving fine details while minimizing noise in cryo-ET/EM images.

Graphic Era Hill University under Mr. Amrish Sharma — July 2024 - Present
Working on *Developing a Heathcare Assistant* for remote areas.

- Designed and developed a Graph-based Retrieval-Augmented Generation (RAG) model aimed at improving diagnostic accuracy in clinical settings by leveraging knowledge graphs to enhance contextual relevance and mitigate hallucinations.
- Enabled expert-guided medical diagnostics by creating a framework that adapts and learns from feedback loops, ensuring ongoing optimization and reliability in clinical environments and focusing on improving the accuracy of context-aware responses to complex medical queries.

Indian Institute of Technology Roorkee under Dr. Sudip Roy — July 2024 - September 2024
Worked on *Realtime Fire Analysis Module* in resource constrained settings.

- Fine-tuned a lightweight YOLOv8-based fire detection module, enhancing its performance for real-time applications in critical settings such as low-power devices and remote monitoring systems.

Projects

MedicGRAG

- Defined a pressing research problem on LLM hallucinations in medical domain, narrowing down the ideas to successfully implement doctor in the loop to mitigate garbage data in the knowledge graph database and improving the self diagnosis reliability across multiple self treatable diseases.

HireSense ATS

- Applied graph theory to build relationship networks among candidates, identifying connections, referrals, and patterns in applicant pools for improved decision-making.
- Designed and implemented an AI-powered platform for resume screening and recommendation analysis, enhancing HR efficiency and achieving a 40% improvement in recruitment processes.

Imagica

- Developed an image generation model from scratch using a simplified U-Net architecture combined with diffusion principles.
- Implemented a linear beta noise scheduler to optimize noise distribution during training and integrated positional embeddings to enhance spatial awareness within the model.

Achievements

2024 Smart India Internal Hackathon Winner
2023 Student Grafest Winner (Ranked 3/5000)
2022 Hackoholic Hackathon (Top 15%)

Community Involvement

Smart India Hackathon, *Team Lead* — September 2024
Microsoft Learn Student Ambassador — April 2023 - December 2023
Hackoholic Hackathon, *Team Lead* — September 2022
Swaragini (Music & Dance) Club, *Member* — October 2021 - October 2022
Google Developer Student Club, *Member* — September 2021 - Present
School Student Council, *President* — March 2018 - July 2019