

# Aditya Kushal

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## SUMMARY

Developed deep learning and computer vision models, focusing on model compression and domain-specific AI applications such as chatbots and object detection. Skilled in designing scalable AI/ML solutions and optimizing model performance for real-world deployment

## EDUCATION

**RV University – CGPA: 9.54/10**

*B.Tech in Computer Science, Minor in FinTech*

Bengaluru, KA

Nov. 2022 – Jun. 2026

## EXPERIENCE

### Deep Learning Intern

*VectraTech Global*

Jun. 2024 – May 2025

Bengaluru, KA

- Designed deep learning models for breast cancer detection using annotated mammography datasets
- Implemented **BIRADS classification** (VGG16) and **Breast Cancer Object Detection** (YOLOv7)
- Trained **Breast Density Estimation** model on VGG16, reaching **99.76% accuracy** on public test sets
- Generated robust training/testing samples with **Augmentor** for data augmentation, improving generalization

### Artificial Intelligence Intern

*Shaale*

Aug. 2023 – May 2024

Bengaluru, KA

- Built a **domain-specific chatbot** integrating **OpenAI API** with company knowledge base, improving response accuracy
- Enhanced retrieval relevance with **Cohere Reranker API**, boosting response quality for domain-specific queries
- Integrated **Tavily Web Search API** to provide real-time external knowledge, extending chatbot capabilities

## PROJECTS

### Deep Model Compression | *PyTorch, NumPy, Torchpruning*

Feb. 2025 – Ongoing

- Applied **structured pruning** to CNNs (LeNet-5, VGG-16, ResNet-50, DenseNet-121) on MNIST and CIFAR-10
- Reduced parameters by up to **99.6%** and FLOPs by **98.5%** with only **1.14–5.09% accuracy drop**
- Achieved **14.5× model size reduction** (VGG-16), enabling edge deployment

### Obstacle Avoidance System for Visually Impaired | *YOLOv8-nano, PyTorch*

Aug. 2023

- Trained a **YOLOv8-nano detector** for potholes, poles, vehicles, and roadside stalls
- Added **auditory feedback** to guide visually impaired users during navigation

### PDFBot Llama | *Python, LLaMA, OpenAI, Gradio*

Sep. 2024

- Developed a system to **chat with PDFs** using **OpenAI API** and **local Ollama inference**
- Built three interfaces: Jupyter (OpenAI), Jupyter (Ollama), and **Gradio web interface**
- Processed PDFs up to 200 pages efficiently
- Achieved **≈ 90% answer accuracy** with **≈ 28s average response time** due to local hardware constraints

## TECHNICAL SKILLS

**Languages:** Python, SQL

**Deep Learning:** PyTorch, TensorFlow, YOLOv7/YOLOv8, Model Pruning/Compression, Transfer Learning

**Machine Learning:** Scikit-learn, Pandas, NumPy

**APIs/Tools:** OpenAI API, Cohere API, Tavily API, Git, Conda/Pip

## ACHIEVEMENTS

- Awarded merit-based scholarship for ranking in **top 5%** of B.Tech cohort
- Led the winning team in **Tarkash'25 Data Analytics** hackathon, focusing on **data cleaning, visualization (Tableau), and presenting actionable insights** to the jury