

SHUBHAM DESHMUKH

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EDUCATION

Virginia Tech

Master's in Computer Science (Minor: AI and Data Analytics) — GPA: 3.75/4.0

Falls Church, VA

Aug 2023 – May 2025

- Relevant Coursework: Machine Learning I & II, Deep Learning, Urban Computing, Information Visualization

Vishwakarma Institute of Technology

B.Tech in Electronics and Telecommunications (Honors: AI and Data Analytics) — GPA: 3.56/4.0

Pune, India

Aug 2018 – May 2022

- Relevant Coursework: Statistics I & II, Computer Vision, Natural Language Processing

EXPERIENCE

Graduate Research Assistant

Virginia Tech - A3 Lab - Commonwealth Cyber Initiative

Aug 2024 – May 2025

Arlington, VA

- Built and compared **5 Deep Learning** models & **1 ViT** model using **PyTorch**, achieving **$R^2 = 0.89$** for predicting optically active water quality parameters (**IEEE Journal submission**).
- Designed **OpenCV** pipeline for **500k+ RGB** images using **Astral & Pixel Filtering**, reducing noise by **40%**.
- Enhanced **U-Net** Water segmentation model using **CUDA** and **GMM validation**, reducing processing time by **30%**.

Software Developer Intern

J. Craig Venter Institute

Jun 2024 – Aug 2024

Rockville, MD

- Implemented **D3.js** and **React** to enhance **HSP 3.0 Data Visualization**, improving researchers' engagement by **40%**.
- Optimized **Data pipeline** using **Python, R, Docker, and AWS (Lambda, S3)**, reducing manual intervention by **70%**.
- Enhanced **API queries**, boosting **database efficiency** and significantly decreasing **data processing** time by **20%**.

Software Developer

Wipro Ltd.

May 2022 – Jul 2023

Pune, India

- Led **14 Enterprise Apps** using **ASP.NET Core**, delivering **100% on-time** and enhancing system scalability by **40%**.
- Administered **Tableau Server**, optimizing **analytics, data workflows** and reducing **report generation** time by **15%**.
- Resolved **42 POS issues**, increasing **uptime** by **20%**, improving **transaction speed** and **system reliability**.

Data Science Intern

IFM Engineering Pvt. Ltd.

Aug 2021 – Jan 2022

Pune, India

- Developed a **Real-Time Patient Monitoring System** using **YOLOv4-tiny**, and **Mediapipe** attaining **95% accuracy**.
- Integrated **Deep Learning** models & **Flask Web App**, mitigating operational issues by **30%** and improving efficiency.
- Presented research on **real-time patient monitoring** at **IEEE MysuruCon 2022**, demonstrating **15% faster doctor response** via optimized alert mechanisms.

PROJECTS

Career Compass | [Project Link](#) | *Python, Groq, LLaMA-3-70B, ChromaDB, AWS EC2*

Feb 2025 – May 2025

- Built a **RAG system** using **Groq API (LLaMA-3-70B)**, **ChromaDB**, and the **O*NET database** for career guidance.
- Deployed on **AWS EC2** with scalable vector search, improving real-time response speed by **40%**.
- Integrated **LangChain** to orchestrate LLM workflows, enabling dynamic, context-aware responses from structured data.
- Reduced inference latency by **35%** using **Groq's high-throughput parallel execution architecture**.

Real-Time Detection of Surgical Instruments | [Github](#) | *Python, PyTorch*

Aug 2024 – Dec 2024

- Trained **YOLOv8** and **Faster R-CNN** on a custom dataset, achieving **76.9% mAP** in surgical instrument detection.
- Leveraged **transfer learning** with **COCO weights**, improving **mAP** by **12%** and reducing misidentification by **15%**.
- Designed **TensorBoard dashboards** to visualize **precision, recall, and F1-score** in real time.

TECHNICAL SKILLS

Languages: Python, C++, SQL, R

ML Libraries: scikit-learn, XGBoost, LightGBM, PyTorch, TensorFlow, Transformers, Hugging Face, OpenCV

Deep Learning: CNNs, RNNs, LSTMs, GANs, ViT, Attention, GPT-4, LLaMA, Mistral, Falcon

MLOps & Deployment: MLflow, Docker, Kubernetes, ONNX, TensorRT, FastAPI, Flask, LangChain

Cloud & Big Data: AWS (Lambda, S3, EC2), GCP, Databricks, Hadoop, Spark

Data Analysis & Viz: Pandas, NumPy, Matplotlib, Seaborn, Plotly, Tableau, A/B Testing, Regression, Hypothesis Testing

Developer Tools: Git, Jupyter Notebook, VS Code, CI/CD, API Development

Certifications: AWS MLE Associate, Google Data Analytics Professional Certificate, CUDA C/C++ (NVIDIA)