# PRATHMESH GAJANAN RAUT

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## EDUCATION

**Dwarkadas J Sanghvi College of Engineering, Mumbai** **Oct 2022 – May 2026**
*B.Tech - **CGPA - 9.20 (Top 1%)*** *Mumbai, India*

**S.K Somaiya College** **Sep 2020 – Aug 2022**
*Maharashtra State Board Exam - Higher Secondary - **Percentage - 85%*** *Mumbai, India*

## TECHNICAL SKILLS

**Languages:** Python, Java, C, C++, JavaScript
**Machine Learning Tools:** Tensorflow ,PyTorch , Scikit-Learn ,Open-CV, Mediapipe ,Transformers ,Stable Diffusion, Yolov8/7,Hugging Face, gym(Open ai Gym) , Amazon Sage Maker,Pillow
**Generative AI:** LangGraph,KnowlegeGraph,Langchain ,Open AI,AutoGen, Azure,Air Flow,Llama Index,nltk,Scapy,Llama ,Gemini(pro,pro-vision,flash),Eleven Labs,DeepGram,Crew AI,Groq,Replicate,Assembly AI,Open AI(API)
**Data Science:** Tableau,Sqlite,BeautifulSoup, Selenium ,Numpy ,Pandas,Matplotlib,Seaborn
**Database:**LanceDB(Multi Modal Retrieval),Neoj(Graph Vectore Databse),FAISS DB,PineCone,ChromaDB,VectorDB,MySQL
**Web Development:** ReactJS,NodeJS,Express,MongoDB,Flask,Tailwind CSS,Bootstrap,Firebase,SASS
**Deployment** Google Cloud Platform (GCP), GCP VM Instances, Compute Engine, Deployment, GCP Storage, Networking, Docker,Kafka, PySpark

## Experience

### Research Intern IIT Hyderabad
*Medical Image Analysis and Segmentation* *Hyderabad, India*

- Developed advanced segmentation models, such as Domain Adaptation UNet, SegFormer, PSPNet, and DANet, for precise medical image analysis.
- Implemented domain adaptation techniques to enhance model performance on diverse imaging modalities, improving segmentation accuracy across different datasets.
- Collaborated in developing a pipeline that efficiently preprocesses and segments medical images, automating the analysis workflow.
- Conducted extensive testing and validation on medical imaging datasets, achieving high accuracy and robustness in segmentation outputs.
- Contributed to projects involving real-time analysis and visualization of segmented images, aiding in medical diagnostics and research.

### AI Intern ChumsAI
*Created an AI Human which used 3D avatar to respond in Real Time* *Mumbai, India*

- Developed a 3D avatar system for real-time interaction, enhancing user engagement and experience.
- Implemented a Retrieval Augmented Generation (RAG) pipeline, integrating advanced AI to improve response accuracy and relevance.
- Created vision capabilities for Large Language Models (LLMs), enabling avatars to visually perceive and interact with their environment.
- Addressed and reduced LLM hallucinations, increasing the reliability and trustworthiness of AI-generated content.
- Successfully developed and delivered three major client projects, leading to strategic partnerships and client meetings.

## Achievements

**Mumbai Hacks Hackathon Winner (Powered by NVIDIA,META and Quantiphi)** **International**
*Winner of the World's Biggest Generative AI Hackathon*
**Hack Heaven Hackathon** **National**
*National Level Winner*

**M Indicator Hackathon** **India**
*Hackathon Winner*
**SIH 2024 Finalist** **National**
*Final Round on 11th December*
**Nexus Kaggle Hackathon** **National**
*Rank Two in Kaggle Competition*

## Projects

**3D Avatar Virtual Human Generator** | 3D Modeling, AI **Jan 2024**

* Developed an advanced system for generating hyper-realistic 3D avatar virtual humans capable of replicating intricate expressions and gestures. Integrated custom pipelines to design and animate avatars, enabling interactive user experiences across multiple platforms. Achieved high rendering efficiency by leveraging GPU acceleration, reducing generation time by 25% while maintaining photorealistic quality.
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**Coded Vision Model From Scratch** | CLIP,UNET,VAE,PyTorch,DDPM **June 2024**

- Developed a Stable Diffusion-based text-to-image model, integrating a UNet generator with self-attention and cross-attention mechanisms for detailed image synthesis. Enhanced the model with CLIP for accurate text-image alignment and a Variational Autoencoder (VAE) using ELBO loss to optimize image diversity and quality. Incorporated upsampling techniques and temporal embeddings to improve image resolution and temporal consistency. Managed the full project lifecycle using Python and PyTorch, focusing on scalable and maintainable code.

**Mumbai Hacks 2024 Winning Project - Mercury** | Generative AI **October 2024**

- Developed an AI-powered productivity platform using Generative AI and LLMs to enhance remote collaboration. Features included real-time task allocation, intelligent meeting note summarization, personalized workspace optimization, and performance tracking, resulting in a scalable and impactful solution for modern work environments.

**Anamoly Detection** | Masked R-CNN, Transfer Learning,Open CV **Nov 2023**

- Created a real-time violence detection system using the Masked R-CNN framework, an interesting choice given its strengths in instance segmentation which can provide detailed context by differentiating individual objects or persons in an image. By not relying on YOLO, which is typically faster but less precise in distinguishing overlapping objects, you've prioritized accuracy in identifying actions and participants involved in violence.

## EXTRACURRICULAR

**DJS Nova Tech Head** **Jul 2024 – Present**
*AI Head* *Mumbai*
- Conduct Research with the space project to apply machine learning on space research papers

**DJS Computee** **Jan 2024 – Present**
*Co Commitee Member* *Mumbai*
- Work on Machine Learning Projects for fulfilling client order and their Request

## CERTIFICATIONS

• Hackathon Achievement Certificate • Convolution in Depth Course - Udemy