ASHUTOSH BARKULE

Machine Leaning Engineer

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📍 Pune, MH

OBJECTIVE

A passionate Machine Learning Engineer with ~**3 years** of professional experience in training Deep Learning models across 2d and 3d Computer Vision domains. Proven ability to support the research and development of innovative techniques, striving for excellence and advancement in the field.

SKILLS

PyTorch   TensorFlow   OpenCV   Deep Learning   2d & 3d Computer Vision   NLP   LLM

Python   Linux   CUDA   Wandb   AWS/Azure   ArcGIS   DreamBooth   Prompt Engineering

EXPERIENCE

01/2021 – NOW

Chennai, TN

Computer Vision Engineer – Deep Learning

MavenAI - (Startup)

○ **3D Semantic Segmentation and Object Extraction Expertise**

- **Innovative Model Development**: Leveraged Kernel Point Convolution (KPConv) capabilities within PyTorch to design a tailored 3D object detection model.
- **Data Fusion**: Combined 3D data from LiDAR with regular 2D pictures to make the tool more accurate in finding objects.
- **Rigorous Data Validation**: Employed CloudCompare software for meticulous annotation and validation of point cloud datasets, ensuring a robust foundation for model training.
- **Advanced Extraction**: Post-model inference, adeptly pinpointed objects in fresh datasets and their exact geo-coordinates.
- **Post-Processing Excellence**: Managed tasks like removing objects from data and fine-tuning details to meet the project's goals after the tool has made its guesses.

○ **2D Computer Vision Expertise (Object Detection & Segmentation)**

- **Collaborative Strategy**: Worked hand-in-hand with the CEO to define and execute the vision for the company's advanced AI solutions.
- **Versatile Model Training**: Proficiently trained and optimized cutting-edge models including Detectron2, YOLO, and SSD for tasks in 2D object detection and instance segmentation.
- **Automated Annotation**: Designed and rolled out an automatic image annotation tool, enhancing the speed and uniformity of data preparation.
- **Optimization and Monitoring**: Leveraged "WandB.ai" to methodically manage and fine-tune diverse model configurations, ensuring top-tier performance metrics.
- **Focused Team Leadership**: Directed and upskilled a dedicated annotation team, prioritizing high fidelity in annotated data production for 2D visual tasks.

- **Advanced Techniques**: Implemented model pruning strategies for efficient deployment and executed mask extraction techniques for enhanced blueprint mapping applications.
- **Client Commitment**: Successfully cemented a partnership through a signed **Memorandum of Understanding (MOU)**, underscoring the project's significance and direction.

Large Language Models (LLM's) Research and Development Specialist

- **Implementation and Enhancement**: Developed and executed cutting-edge techniques for precise information retrieval (RAG) from vast document datasets.
- **Toolkits & Framework Proficiency**: Gained hands-on experience with leading NLP toolkits including notably LangChain, to question-and-answer operations for documents.
- **Langchain Mastery**: Optimized LLM performance using the Langchain framework, achieving faster response times and elevated result accuracy.
- **LLM Expertise**: Demonstrated deep proficiency with top-tier LLMs including OpenAI's GPT-3, GPT-Turbo, GPT-4.
- **Innovation & Trend Adaptation**: Pioneered solutions tailored to evolving needs while actively aligning with the latest research developments in the Large Language Model sphere.

Custom AI Model Development using DreamBooth

- Developed and **fine-tuned** custom **generative AI** models using the **DreamBooth** technology.
- Specialized in generating varied artistic renditions of **self-images based** on specific prompts while maintaining the distinct **facial features** of individuals.
- Demonstrated proficiency in machine learning, with a focus on personalized **image generation and style adaptation**.
- Utilized advanced techniques to ensure the model's adaptability in generating images across **diverse artistic styles** while preserving the accuracy of **individual facial characteristics**.

EDUCATION

2019 – 2022

Pune, MAH

MASTER OF COMPUTER APPLICATION

Sinhgad Institute of Management

2016 – 2019

Pune, MAH

BACHELOR OF COMPUTER SCIENCE

Sinhgad Collage of Science

CERTIFICATION

Microsoft Azure Fundamentals (AZ-900), Microsoft.

- Acquired fundamental knowledge in cloud services and Microsoft Azure, focusing on cloud concepts, core Azure services, security, and privacy.