

# SANATAN KAFLE

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## SUMMARY

Machine Learning Engineer focused on the complete ML lifecycle, from data engineering to production deployment. Proficient in MLOps methodologies, cloud infrastructure, Deep Learning, Computer Vision, and NLP. Proven ability to architect and deploy scalable machine learning models into robust production environments. Machine Learning Engineer focused on the complete ML lifecycle, from data engineering to production deployment. Proficient in MLOps methodologies, cloud infrastructure, Deep Learning, Computer Vision, and NLP. Proven ability to architect and deploy scalable machine learning models into robust production environments.

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## WORK EXPERIENCE

### Machine Learning Engineer *Shrig Solutions*

17th Sep 2024 - Present

- **Deep Learning:** Designed and trained advanced vision models for object detection, segmentation, classification, depth estimation.
- **AR and 3D analytics:** Engineered 3D length estimation algorithms leveraging LiDAR data and AR technologies
- **Edge Development:** Optimized, trained and compiled models for low-latency inference on mobile devices
- **MLOps:** Streamlined end-to-end ML workflow by building automated data ingestion, training, and deployment pipeline using AWS, MLflow, Grafana
- **Cloud & API Integration:** Deployed Machine Learning architectures on AWS and developed backend REST APIs using FastAPI to serve model inference to production through microservices
- **Research and Development:** Researched and implemented projects like video inpainting, Duplicate Image Detections, Vision Transformers.
- **Mentorship and Training:** Trained and mentored multiple trainee and interns on machine learning concepts.

### Machine Learning Engineer Junior *Shrig Solutions*

7th Jun 2024 – 16th Sep 2024

- **Computer Vision Development:** Developed and fine-tuned YOLO-based architectures for object detection, pose estimation, and instance segmentation, alongside monocular depth estimation models.
- **Data Engineering & Automation:** Engineered automated scripts for keypoint annotation workflows within CVAT, significantly reducing manual data labeling time and accelerating model training cycles.
- **Applied Machine Learning:** Translated core machine learning concepts into practical implementations, directly contributing to the foundational development and testing of early-stage computer vision pipelines.

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## EDUCATION

### Bachelor of Computer Engineering

#### *Institute of Engineering, Pulchowk Campus (Nov 2019 – Apr 2024)*

- Completed coursework in Object-Oriented Programming, Databases, Data Structures, Artificial Intelligence, and Software Engineering.
- Chose Applied Data Science as an elective to deepen expertise in data analysis and machine learning.
- Actively contributed to event organization, including Locus, a premier student-led tech event.

### High School *St. Xaviers* *College, Maitighar*

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## PROJECTS

Nov 2022 – Mar 2023

### Used Mobile Price Prediction using Regression, *Academic*

- Predicted resale price of mobile phones based on age, brand, and features.
- Scraped and cleaned pricing data using BeautifulSoup.
- Used Random Forest Regression for accurate predictions.
- Tech Stack: Python, Django, Git, Scikit-learn, Pandas, BeautifulSoup.

May 2023 - Mar 2024

### Gen AI-based Notes and Question Generation, *Academic*

- Fine-tuned T5-base Transformer for question generation, enhancing contextual accuracy.
- Implemented notes summarization using TF-IDF and TextRank for key topic extraction.
- Tech Stack: Python, Django, Git, Scikit-learn, Pandas, T5-Transformer

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## SKILLS

- **Machine Learning & Deep Learning:** PyTorch, TensorFlow, Ultralytics (YOLO), Vision Transformers (ViT), Scikit-Learn.
- **Computer Vision & Data Science:** OpenCV, Instance Segmentation, Depth Estimation, Video Inpainting, Pandas, NumPy, Matplotlib, Seaborn.
- **MLOps, Edge & Cloud:** ONNX, TensorRT, Docker, MLflow, ClearML, Grafana, AWS (EC2, S3, SageMaker, Lambda, Glue, ECS).
- **Software Engineering & Backend:** Python, FastAPI, Django, Flask, REST APIs, Microservices Architecture.
- **Databases & Tools:** MongoDB, MySQL, Git, CVAT, Linux/Bash.

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## COURSES AND CERTIFICATIONS

- Machine Learning by Andrew Ng (Coursera)
- Deep Learning for LLMs & Generative AI (DeepLearning.AI)
- Programming & AI – Samsung Innovation Campus (Completed two specialized courses)
- Active Kaggle participant, solving real-world data science challenges
- Continuously learning through various MOOCs and online platforms