Kapildev Palanisamy

ML Engineer & Computer Vision Specialist

+91 99443 36673
kdev.palanisamy.pr@gmail.com
linkedin.com/in/kapildev-palanisamy
github.com/kapildev21
eportfolio.mygreatlearning.com/kapil-dev2

SUMMARY

Machine Learning Engineer specializing in computer vision and deep learning, with proven expertise in developing and deploying production-ready models for complex visual analysis applications. Combines advanced deep learning research with strong MLOps practices to build scalable, enterprise-grade solutions that translate cutting-edge technology into real-world impact.

EXPERIENCE

ML Engineer
August 2025 – December 2025

labelbees.ai

- Developed and deployed inference pipelines for foundational models (CLIP, SAM2, Grounding DINO, Grounded SAM) on AWS SageMaker for automated labeling applications
- Engineered scalable deployment solutions using SageMaker Model Registry and created reusable model bundles for production environments
- Established MLOps workflows, model versioning standards, and deployment best practices in collaboration with backend and infrastructure teams
- Conducted R&D on Large Language Models (LLMs) and Large Vision Models (LVMs) to identify emerging capabilities for production integration

Data Scientist
November 2022 – August 2025

labelbees.ai

- Built end-to-end instance segmentation pipeline for ship detection across SAR (Capella, Umbra) and optical imagery (Planet SkySat, SpaceNet) using Mask R-CNN, Oriented R-CNN, and Mask2Former with ResNet and Transformer backbones
- Developed multi-class LULC classification models using Sentinel-2 and SpaceNet imagery with DeepLabV3+ and UNet++ architectures
- Created transfer learning pipeline for building footprint extraction and achieved F1-score of 0.82 for flood detection using multi-spectral imagery
- Processed and analyzed 500+ large-scale satellite scenes, implementing automated QC, EDA, and benchmarking workflows
- Developed preprocessing pipelines for satellite imagery including radiometric/atmospheric correction and geometric transformations using GDAL
- Implemented dataset balancing strategies using offline augmentation and UMAP clustering for outlier detection

Data Science Intern
May 2022 – November 2022

labelbees.ai

- Mastered deep learning fundamentals and computer vision techniques for production deployment
- Developed parsing scripts for COCO JSON format and conducted EDA on annotated datasets to identify quality issues
- Performed dataset cleaning and annotation validation using Labelbox, COCO Annotator, and CVAT
- Trained and benchmarked computer vision models using F1-score and IoU metrics

TECHNICAL SKILLS

Languages: Python

Deep Learning: PyTorch, TensorFlow, Hugging Face Transformers

Computer Vision: OpenCV, MMDetection, Segmentation Models PyTorch, Mediapipe, GDAL

Architectures: DeepLabV3+, UNet++, Mask R-CNN, Mask2Former, SAM2, CLIP, Grounding DINO, Oriented R-CNN, Rotated FCOS, ViT, Swin Transformer

Cloud & MLOps: AWS SageMaker, EC2, Model Registry

Tools: Git, Jira, Labelbox, COCO Annotator, CVAT, UMAP

Satellite Imagery: Capella/Umbra SAR (0.25-0.5m), Planet SkySat (0.5m), SpaceNet, Sentinel-1/2

PRACTICE AND EXPERIMENTAL PROJECTS

Sidewalk Detection | *Semantic Segmentation, DeepLabV3+*

- Developed semantic segmentation model for urban infrastructure mapping using Google Open Street Map data

Gaze Direction Estimation | *MediaPipe, Computer Vision*

- Built gaze tracking system using MediaPipe face mesh and iris detection for screen focus analysis

Trash Object Detection | *Quality Assurance*

- Performed data cleaning and quality assurance on iPhone imagery for waste management applications

EDUCATION

Great Lakes Institute of Management 2022
PGP Data Science and Engineering

Sri Krishna Adithya College of Arts and Science 2021
B.Sc. Mathematics *CGPA: 79.4%*