

PRANAV SHINDE

Computer Vision Engineer | ML Systems, Annotation Infrastructure, MLOps
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PROFESSIONAL SUMMARY

Computer Vision engineer with hands-on production experience building large-scale object detection and segmentation systems. Built and maintained a 500,000+ image annotation pipeline with a custom SAM 2.1 boundary refiner, achieving mAP50 ~0.74 on a 13-class instance segmentation model. Currently working at a government-affiliated defence R&D organisation on AI systems for object detection and tracking. AWS Certified Developer Associate.

TECHNICAL SKILLS

Computer Vision & ML: PyTorch, YOLO (v8/v11, detection + segmentation), SAM 2.1, ONNX, OpenCV, custom loss functions (focal, contrastive, class-weighted), multi-GPU training

Annotation & Data Engineering: CVAT (REST API automation), 500k+ image dataset curation, class balancing, polytrack generation, rule-based classification, watchdog pipelines

MLOps & Deployment: ONNX export, batch inference optimisation, Docker, Kubernetes, systemd, bare-metal Linux, CI/CD

Object Tracking: Kalman Filters, ByteTrack, BoT-SORT, Re-Identification (ReID)

Backend & Infrastructure: Python, TypeScript, Node.js, REST APIs, PostgreSQL, Redis, AWS (EC2, Lambda, RDS, S3), Nginx

LLM & NLP: OpenAI API, Gemini API, LangChain, RAG systems, prompt engineering

EXPERIENCE

Badawe Engineers Pvt. Ltd (AI Engineer) | Govt. Affiliated Defence R&D Organisation 01/2026 – Present

- Built and maintained a 500,000+ image annotation pipeline for object detection and tracking systems, integrating a custom SAM 2.1 boundary refiner to automate mask correction at scale.
- Trained a 13-class YOLO instance segmentation model (mAP50 ~0.74) with custom `WeightedDetectionLoss` using inverse-frequency class weights to handle severe dataset imbalance.
- Engineered a dual-GPU training pipeline (RTX 5080 for training, RTX 3060 for validation) using `subprocess.Popen` to resolve CUDA context conflicts, cutting validation turnaround time by 18% by splitting it on other GPU.
- Migrated inference from PyTorch to ONNX with batch processing, reducing model memory footprint from 9.2GB to 2GB (78% reduction) and enabling parallel frame processing.
- Developed an Automated Hyperparameter Tuning application testing 104 optimizer-loss combinations over 6.5 hours, identified ASGD + ContrastiveLoss as optimal configuration for the transfer learning task.
- Automated the full annotation workflow via CVAT REST API — frame management, rule-based vehicle relabeling, and dataset export — replacing several hours of daily manual effort.

Full Stack Intern (ML Backend) | Vital Vistara Pvt. Ltd. 01/2025 – 04/2025

- Designed AWS infrastructure for ML workloads: VPC, RDS, Lambda for serverless inference, S3 for model artifacts, and CloudWatch for monitoring.
- Implemented CI/CD with Docker builds, ECR/ECS Fargate deployment, and automated ML model versioning.

Frontend Intern | Oneqid Technologies, IIT Delhi 06/2024 – 08/2024

- Modernized frontend using Next.js, improving load time by 35% (3.2s → 2.1s) and Lighthouse score from 65 to 92.

KEY PROJECTS

Athlete Connect — AI Sports Talent Assessment Platform 08/2024 – 10/2024

- Top 10 National Finalist, Smart India Hackathon 2024** (competing against 50,000+ teams nationwide).
- Deployed on-device pose estimation (Google ML Kit) on Android for low-latency, privacy-preserving fitness evaluation.
- Engineered Firebase-backed pipeline for nationwide athlete profiling and leaderboards.

Skill Learn — Sandboxed Code Execution Platform 09/2024 – 12/2024

- Engineered secure sandboxed code execution using Docker with CPU/memory limits on AWS ECS Fargate.
- Implemented PostgreSQL connection pooling (PgBouncer), reducing connection overhead by 70%.

EDUCATION & CERTIFICATIONS

B.E. in AI and Data Science | MMCOE, Pune University, India May 2026

Diploma in Computer Technology | BVJNIT, Pune, India 2020 – 2023

Certifications: AWS Certified Developer Associate (2024), Microsoft Azure Fundamentals (AZ-900)