

# PARTHIV DHOLARIA

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## SUMMARY

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ML Engineer with 1 year of experience building and deploying end-to-end computer vision pipelines at scale across mining, pharmaceuticals, cement, and energy sectors. Proficient in YOLOv8/SAM-based detection and segmentation, classical image processing, and model serving via TorchServe. Experienced in deploying production ML systems on AWS EC2 and on-premise Windows servers with robust process monitoring and >95% uptime.

## TECHNICAL SKILLS

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**Languages:** Python, C++, C, Java

**ML / DL:** PyTorch, Ultralytics YOLO family, SAM, GDINO, LangSAM, OpenCV, HuggingFace, TorchServe, Roboflow

**Cloud & Infra:** AWS EC2, GCP, Azure, Docker, Linux, systemd, NSSM

**Tools & Frameworks:** Git, Django, MongoDB, MySQL, Conda, RTSP Streaming

**Domains:** Computer Vision, Object Detection, Segmentation, Image Processing, NLP, GenAI (RAG and AgenticSDK)

## WORK EXPERIENCE

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**Ripik.AI** | *ML Engineer*

May'25 – Present

- Optimized Ripik Optimus to enhance production planning and manpower scheduling for Sun Pharma, reducing scheduling time by 20% using novel linear-time complexity algorithms.
- Built an end-to-end Computer Vision sizing pipeline using **YOLOv8 and SAM served via TorchServe** to determine percentage composition of materials on conveyor belts for clients including Adani, HZL, JSPL, JSW, CSN Brazil, and Cemex Mexico. Achieved >90% alignment with lab data, improving blend composition accuracy.
- Built a ferrous content prediction pipeline for BirlaWhite Cement using **classical image processing (HSV masking, Otsu thresholding, CLAHE)**, achieving >90% accuracy against ground truth measurements.
- Built a workforce safety monitoring pipeline using **fine-tuned YOLOv8 (trained on Roboflow-curated datasets)** to detect helmets, gloves, and PPE kits in high-risk hazardous zones. Achieved a true alert rate of >95% for safety violations.
- Built a solar panel defect detection system using **YOLOv8 segmentation with Ultralytics tracking** on drone-recorded video for PGP Glass. Identified 90% of true defects (cracks, hotspots).
- Led deployment hardening across **AWS EC2 (Linux) and on-premise Windows servers**. Implemented watchdog-based process monitoring with systemd (Linux) and NSSM (Windows) for automatic restart on failure, achieving >95% uptime across all deployed pipelines.

**NX Block Trades Pvt. Ltd.** | *ML Intern*

Jan'25-May'25

- Analyzed high-frequency monthly options trading data and engineered systematic trading strategies with full backtest pipelines.
- Designed a Quantile Regression Network to generate ON/OFF signals for strategies at the start of each trading day, resulting in a 10% increase in cumulative PnL.

## RESEARCH EXPERIENCE

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**CISPA, Germany** | **TU Dortmund (Dr. Christian Rossow)** | *Research Intern*

May'24 – Jul'24

- Investigated vulnerabilities in TLS handshakes and developed an ML-based detection system for server-side attacks, increasing detection rate by 18%.
- Automated attack simulations across diverse server configurations and built an end-to-end pipeline for dataset curation, model training, and evaluation.

**MIDAS Labs, IIIT Delhi (Prof. Rajiv Ratan Shah)** | *Undergraduate Researcher*

Jan 2024 – May 2024

- Worked on ASVSpoofer 2019 genuine vs. spoofed speech detection. Replicated one-class learning approaches combined with ResNet18 deep architectures for classification.

## EDUCATION

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### B.Tech, Computer Science and Engineering

2021 – 2025

Indraprastha Institute of Information Technology, Delhi | CGPA: 8.42

## PROJECTS

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### CSIRO Biomass Estimation Competition (Kaggle) | [Github](#)

Jan 2025

- Predicted pasture biomass components (dry total, green, clover, dead matter) from field images using a **DINOv2-Large backbone with 2x2 tiled processing, spatial position embeddings, and multi-head attention aggregation**. Applied physics-constrained outputs to enforce compositional consistency. Used CLAHE, laser-dot removal, and inpainting for preprocessing, with 5-fold ensemble and TTA. Ranked top 48% (1822/3804 teams).

### NumerAi: Crowd-Sourced Hedge Fund Competition | [GitHub](#)

Nov 2024

- Predicted stock returns on live data with varying market features and concept drift using metric-based meta-learning (Matching Networks, Prototypical Networks), achieving a target correlation of 0.0221.

### Evaluating Mathematical Reasoning of LLMs | [GitHub](#)

Nov 2024

- Benchmarked Mixtral-8x7b, LLaMA-3.1-8b, and Gemma-9b on SVAMP, GSM8k, and GSM-Hard datasets across multiple prompting strategies (ZeroShot, CoT, ReAct, RAG).
- Developed a novel multi-agent framework combining specializer and master agents with RAG, achieving up to 100% accuracy on SVAMP using CoT prompting.

### ARC: Abstract and Reasoning Corpus

Aug 2024

- Developed two novel approaches for the ARC challenge: brute-force DFS over DSL function permutations (optimized via DP), and an LLM-guided heuristic search. The LLM-guided approach achieved 2x the solve rate of the brute-force baseline.