HIMANSHU DHURVE

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EDUCATION

San Diego State University — **San Diego, USA**
Master of Science in Aerospace Engineering, GPA: 3.52/4.0 — *2021 – 2024*

Dr. Babasaheb Ambedkar Technological University — **Raigad, India**
Bachelor of Technology in Mechanical Engineering, GPA: 8.57/10.0 — *2014 – 2018*

PROFESSIONAL EXPERIENCE

AI/ML Research Intern, Vizuara AI Labs, India — *Jan 2026 – Present*

- Developed a two-stage system for **technical documentation** (OpenFOAM), enabling standard Q&A and structured report-level outputs with citation-grounded responses.[openfoam-ai-guide]
- Fine-tuned **RF-DETR** on a custom SAR image dataset, achieving mAP **0.614** competitive with published literature; diagnosed overfitting via train/val loss divergence and scoped SARDet-100K as the next data-scaling step.
- Built an **AI agentic pipeline** that converts any research paper PDF into a 15-minute digest, autonomously generating narrative summaries, AI-illustrated diagrams, key tables, and a companion Jupyter notebook.

Aerodynamics Research Assistant, San Diego State University, USA — *Aug 2021 – Dec 2023*

- Ran 3D CFD simulations on an HPC cluster (SLURM), cutting simulation wall-time by **75%** through parallelization; processed and visualized large-scale flow field datasets using Python and ANSYS CFD-Post.
- Quantified surface roughness effects through wind tunnel experiments and high-fidelity CFD: measured a **5**° delay in flow separation and a **16%** lift increase, contributing to a co-authored AIAA 2025 publication.

TECHNICAL SKILLS

Core Competencies	Machine Learning, Deep Learning, Computer Vision, GenAI, Agentic AI, RAG
Languages & Tools	Python, C++, Bash/Shell, MATLAB · PyTorch, TensorFlow, scikit-learn, Hugging Face, Git
MLOps & Infra	HPC/SLURM, Model fine-tuning, Evaluation pipelines, Experiment tracking, MLFlow, Databricks

PROJECTS

Medical MCQ Answering with SFT + GRPO) — *Nov 2025*

- Applied Group Relative Policy Optimization **(GRPO)** to fine-tune **Qwen3-1.7B** for structured medical question answering, managing the full **SFT + GRPO pipeline** on constrained Kaggle GPUs with **4-bit quantized LoRA** (rank 32, 2% trainable params) and **vLLM** accelerated sampling.
- Engineered **multi-signal reward functions** combining binary correctness matching, regex-based format validation, and length-calibrated explanation scoring, achieving **100% format compliance** across all model outputs. [repo]

MAP Competition - Student Misconception Detection (Kaggle) — *Aug – Oct 2025*

- Fine-tuned **Qwen2.5-Math-1.5B-Instruct** with **Unsloth** and attached a compact **MLP classification head** to identify student misconceptions in math reasoning responses.
- Improved MAP leaderboard score from 0.885 to 0.925 (4.5% gain) by combining LLM semantic understanding with task-specific fine-tuning. [repo]

Stable Video OCR System for License Plate Recognition — *Sep 2025*

- Built a real-time license plate detection and recognition system using fine-tuned **YOLO11** and **EasyOCR**. Eliminated OCR flickering by implementing a majority-voting algorithm over a 12-frame rolling buffer, producing stable text output across video frames. [repo]

Video Instance Segmentation using Mask R-CNN — *Sep 2025*

- Implemented a video instance segmentation pipeline using PyTorch's pre-trained **Mask R-CNN**. Performs per-frame object detection and pixel-level segmentation, rendering per-instance colored masks and bounding boxes on video streams. [repo]

PUBLICATION

- Joseph Katz, **Himanshu C. Dhurve**. "Effect of Surface Texture on the Lift and Drag of Small Spinning Balls." *AIAA Aviation Forum and Ascend 2025*. [Paper Link]

HONORS & CERTIFICATIONS

- Machine Learning Specialization - Stanford University & DeepLearning.AI — *Jan 2025*
- Recipient of San Diego State University Master's Research Scholarship — *May 2022*

Public Repositories: GitHub **Publications:** AIAA