Agastya Raj Singh

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EDUCATION

University of California, San Diego Sep 2022 – Expected Mar 2027

B.S. Mathematics–Computer Science, Minor in Economics

Coursework: Computer Vision & Deep Learning, Design & Analysis of Algorithms, Data Analysis & Inferential Statistics, Linear Algebra, Optimization

EXPERIENCE

Co-founder & Head of AI — SkyAI Mar 2026 – Present

India (remote) | AI analytics for SkyJumper trampoline parks

- Co-founded and lead AI development and business strategy for a CCTV intelligence platform, live at the first center and approved for rollout across SkyJumper's 30 centers in 19 cities.
- Coordinate on-site IT staff across 19 cities for installation, and work closely with a core AI and management team of 4–5 people.
- Built the business case and commercial proposal, projecting ₹8–20 lakh in recovered revenue per center per year, or ₹2.4–6 crore (~$0.3–0.7M) annually across 30 centers.
- Own the edge deployment path from the first commissioned Jetson node to multi-city rollout: site surveys, camera and NVR integration, RTSP capture, remote operations and per-center configuration with no branch-specific code.
- Built the CV stack: YOLO11n detection and ByteTrack on a Jetson Orin NX edge node integrated with the site NVR, with FastAPI, React and a Cloudflare live API.
- Measured against hand counts: within 2 people on 90% of 205 moments (about 1 person average error), and on 100% of 51 held-back moments at parties of up to 30 guests; flagged 4 of 4 over-booked test parties.
- Designed preregistered evaluations with event-level leakage control, separating staff, glass reflections and décor from guest counts on 4K video.
- Shipped live party-hall counting, booked-versus-counted checks, over-booking alerts with evidence frames, a reception queue service, a management dashboard and weekly PDF reports; POS integration and staff face recognition in development.

Founding Computer Vision Lead (Intern) — Sports Analytics AI Jan 2025 – Jan 2026

Playar Inc. | San Diego, CA

- Joined at the company's earliest stage as head computer vision engineer, laying the groundwork for proprietary cricket vision software not available on the market, alongside experienced founders and a team of Qualcomm engineers.
- Combined engineering with product and management work, shaping priorities with leadership as the startup grew into an established company.
- Developed real-time cricket ball detection with YOLOv11 and DeepSORT, reaching 98% mAP@0.5 on simulated match footage.
- Integrated MediaPipe pose estimation with ball-contact events, improving reliability ~18% on edge-case contact frames.
- Cut per-frame latency from ~15 ms to ~5 ms (3× speedup, ~200 FPS) using TensorRT and ONNX Runtime.
- Designed physics-based post-contact trajectory prediction for virtual match simulation at 60 Hz.

Computer Vision Intern — AI for Agricultural Robotics Jul 2025 – Sep 2025

Tech Mahindra | Pune, India (part-time)

- Engineered a tomato-ripeness segmentation pipeline reaching 91% mAP and 0.85 IoU for harvest-readiness classification.
- Implemented ByteTrack and DeepSORT tracking to eliminate duplicate crop counts across video frames.
- Generated 100,000+ synthetic training images in Blender with domain randomization across lighting, leaf density and occlusion.

Lead Engineer (Intern) — Industrial Safety AI Jun 2024 – Aug 2024

VertexPlus Technologies Ltd. | Jaipur, India

- One of the lead engineers on factory safety software detecting helmets and safety vests, registering workers and managing in/out times for compliance.
- Software deployed across multiple factories and still in use today; contributed to management and business decisions alongside engineering.
- Developed YOLO-based real-time detection for factory safety compliance, integrated with security infrastructure for live alerting.
- Ran iterative model testing and hyperparameter tuning to improve detection reliability and reduce false positives.

Peer Educator — Academic Integrity Program Mar 2025 – Present

UCSD Academic Integrity Office | San Diego, CA

- Facilitate group sessions and mentor students through accountability processes, building communication and conflict-resolution skills.

PROJECTS

Playar — Monocular 3D Ball Tracking & Trajectory Analyzer 2025

- Built a phone-camera edge application locating ball pitch and bounce using monocular 3D lift, physics priors and Kalman filtering; piloted at batting academies.

FinSight — Predictive ML Analytics Platform Jan 2025 – Present

- Built a full-stack platform on 9 years of S&P 500 data with 15+ indicators; backtested Sharpe ≈ 1.3, CAGR ≈ 14% vs SPY ≈ 11%, max drawdown ≈ 18%.
- Added Kelly and vol-target position sizing, risk decomposition and 10K-path Monte Carlo stress tests in a Streamlit/FastAPI dashboard.

RipeNet — Tomato Ripeness Detection for Agricultural Robotics Jul 2025 – Sep 2025

- Combined deep segmentation with multi-object tracking and procedurally generated Blender data to improve generalization across occlusion and lighting.

TECHNICAL SKILLS

Languages: Python, C++, SQL

CV / ML: PyTorch, TensorFlow, OpenCV, Ultralytics YOLO, DeepSORT, ByteTrack, MediaPipe, Roboflow

Deployment: ONNX Runtime, TensorRT, NVIDIA Jetson, RTSP/NVR, FastAPI, Docker, Linux, AWS, Cloudflare

ATHLETICS

National-Level Rifle Shooter — Top 10 national prospect; 3× State Champion. Olympic Gold Quest (OGQ) "Project Leap"; $120,000 training scholarship (2018–2020). Assistant Coach, Competitive Shooting Program (2019–2021).