

JYOTIRMOY SINGH

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EDUCATION

Birla Institute of Technology and Science, Pilani, Hyderabad

09/2021 to 07/2026

B.E. (Hons.) Computer Science; M.Sc. (Hons.) Economics | GPA: 8.71/10

Thesis (Advisor: Prof. Anand Rao, Carnegie Mellon University)

Fall 2025 to May 2026

Multi Agent AI Orchestration: The System 3/0 Blueprint

Preprint

- Designed System 3/0: a multi-agent orchestration framework for LLM systems with a meta controller, constrained decoding safety envelope, and 6 tuple AgentSpec registry; proved 6 theorems, 1 lemma, and 2 design arguments for safety and routing.
- 300 paired runs: cascading failure 38.0% $\rightarrow$ 0.0% ($p < 0.001$), $3.6\times$ fewer tokens (5,724 $\rightarrow$ 1,600, $p < 0.001$); validated on 24 GB RAM consumer hardware via Ollama (no GPU).

EXPERIENCE

Google

May 2025 to Aug 2025

Software Engineering Intern

Hyderabad, India

- Wrote the integration test suite for 7 asynchronous microservice schedulers in Backup for Google Kubernetes Engine (GKE) using Go, gRPC, Docker, and Google Cloud Platform (GCP), taking coverage from 0% to 42% and catching 27+ critical bugs before production rollout.
- Built a reusable Go API client for the Cloud Resource Manager Liens API and end-to-end tests for automated resource cleanup, policy-based backup scheduling (RPO/CRON), and fault tolerance across 15+ merged changelists.
- Designed a generic, type-safe polling mechanism using Go generics to test asynchronous operations in a distributed system, replacing flaky patterns and delivering full scope, including stretch goals, 3 weeks ahead of a 12-week schedule.

VENTURES & CONSULTING

Wadanova

Jun 2026 to Present

Founding AI Engineer

Remote

- Re-architected cloud infrastructure for portfolio company Oddsdrive, migrating off AWS to cut monthly hosting costs from \$5,000 to \$60 (~\$60K annual savings); integrated Grubhub, Uber Eats, Uber Direct, and ChowNow REST APIs into a unified dispatch dashboard.
- Building production AI systems for dispatch, support, and finance: ML-based courier routing and ETA prediction, confidence-scored human-in-the-loop escalation for order verification, and multi-agent LLM orchestration with safety guardrails.

Joalent

Aug 2025 to May 2026

Founder (Acquired by Wadanova)

Wyoming, USA

- Built the full AI stack from scratch: an active learning computer vision OCR pipeline hitting 98% field level accuracy and an LLM powered conversational invoice agent at 96% accuracy for automated financial data ingestion.
- Integrated Stripe Connect, QuickBooks, and TaxBandits REST APIs with asynchronous webhooks to automate dunning, W9 collection, and 1099 generation for US based SMBs.
- Wrote the confidence scoring system (field level penalties + human-in-the-loop fallback) that keeps error rates under 1% on financial documents in production.

PUBLICATIONS

Agentic Anomaly Detection with ORCA

arXiv:2608.08859; Submitted to IEEE

- Proposed ORCA, an agentic framework that dynamically adapts temporal receptive fields at inference via lightweight statistical probes for multivariate time series anomaly detection, eliminating per-dataset hyperparameter tuning.
- Achieved AUROC 0.9977 on MIMIC-IV and 0.9993 on WBAN; MinGRU + ConSmax backbone reduces parameters $6\times$ vs. full Transformer with CPU-only inference.

DEM: Distilled Explanation Model

arXiv:2605.31007; Submitted to IEEE

- Proposed a three-stage knowledge distillation framework that distills gradient boosting (XGBoost) experts into interpretable scikit-learn decision trees on clinical tabular data (AUC 0.9964 on MIMIC-IV), with a fidelity metric measuring student-teacher explanation alignment.
- Reduced attribution latency $1,235\times$ vs. SHAP (0.17 ms per 1,000 samples), enabling real-time, scalable batch explanation generation.

HONORS & AWARDS

- National Level Gold Medalist** in Mathematics
- Qualified **Regional Math Olympiad**
- Invited to **OpenAI Emerging Talent Community** (2025 Cohort)
- Accepted to **Y Combinator** Startup School
- Teaching Assistant, Machine Learning, BITS Pilani (Spring 2025)

TECHNICAL SKILLS

Languages: Python, Go, C++, Java, SQL

ML & AI: PyTorch, scikit-learn, XGBoost, LangChain, LangGraph, Multi-Agent Orchestration, Pandas

Systems & Cloud: AWS, GCP, Docker, Kubernetes, gRPC, Microservices, Distributed Systems