

# Himadri Mishra

Senior AI Engineer

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## SUMMARY

Senior AI Engineer (IIT-BHU, 8 yrs) specializing in agentic AI platform architecture and production LLM systems. Architected Knit 3.0's automated market research platform, replacing multi-day analyst workflows; previously led Computer Vision systems to 98% accuracy at Osmo and cut ML infrastructure costs by 10x at Epic!.

## EXPERIENCE

### Senior AI Engineer

Remote, India

Knit

May 2025 – April 2026

- Served as **principal architect and senior IC** for the India AI team; designed and launched the **Knit 3.0 agentic market research platform**, automating the full pipeline from raw survey data to verified insights, visualizations, and consulting-grade PPTX decks, **reducing post-fielding report turnaround from 48–72 hours to under 1 hour**.
- Engineered the **insight execution engine**: LLM writes Python analytics code, executes it in a persistent **E2B sandbox** reused across 30–50 tasks; a judge LLM verifies each result with its own sandbox code, calibrated until AI-native output **matched and surpassed the prior human-reviewed pipeline** in insight accuracy, narrative quality, and deck visual output.
- Implemented **DAG-based task orchestration with topological sorting** for maximum parallel insight execution; built the **visualization pipeline** producing 15–25 Vega-Lite charts per report with multi-threshold quality scoring.
- Unified all agents onto a **shared Python platform**: multi-provider LLM routing (GPT-4/5, Claude Sonnet/Opus 4.x, Gemini 2.5/3.1 Pro), YAML DAG orchestration, OpenTelemetry and Langfuse observability, pgvector-backed RAG, SSE streaming, and auto-generated REST APIs.
- Built the **data ingestion pipeline** (Knit Platform 2.0 and Qualtrics) and the **memo-to-PPTX deck pipeline**, converting research reports through intermediate representation and HTML to native PowerPoint with iterative LLM-driven visual evaluation.

### Career Break

May 2024 – May 2025

Personal sabbatical

### Senior Research Engineer

Remote, India

Epic! for Kids

February 2023 – May 2024

- **Owned full ML pipeline and infrastructure** post-layoffs across discovery, recommendation, and search; led Elasticsearch autocomplete revamp, **outperforming prior solution in 80%+ cases**.
- Cut Docker build time by **50%**, reduced Kubernetes pod usage by **100x**, slashed spot instance errors by **99%**, cutting platform cost by **10x**.
- Launched ML features (book picker, performance-based carousels) via A/B testing, improving engagement; defined and executed ML roadmap resolving high-impact infrastructure issues.
- Supported backend (PHP), frontend logging (Angular), and analytics including churn prediction.

### Senior Research Engineer

Remote, India

Tangible Play (Osmo)

September 2019 – February 2023

- Acted as **Computer Vision lead** across India and US teams; set technical direction, mentored engineers, and served as primary CV point of contact for the Worksheets product.
- Raised CV accuracy in Worksheets from **93% to 98%** impacting millions of learners; built a real-time U-Net shaded-region detection model achieving **80% IoU**, deployed in Java.
- Led tracing the dots games for Pre-KG to Grade 3, **boosting engagement by 20%**; prototyped

Byju's Board real-time teacher feedback system with **10fps detection**.

- Automated tagging workflows in Go and Dart, **cutting manual effort by 99%**.

## Deep Learning Engineer

Bangalore, India

Whodat (AR startup, acquired by Byju's)

July 2018 – August 2019

- Built fast ORB detector in C++, **20% faster than ORB-SLAM**; researched monocular depth estimation (DeMoN, MvDepthNet). *Team transitioned to Tangible Play/Osmo post-acquisition.*

## SKILLS

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**Generative AI and Agents:** LLM Agents, Agentic Workflows, Multi-Agent Systems, Prompt Engineering, LLM Evaluation, AI Guardrails, Retrieval Augmented Generation (RAG)

**AI Frameworks and APIs:** LangChain, LlamaIndex, Hugging Face, Sentence Transformers, BERT, OpenAI API (GPT-4/GPT-5), Anthropic API (Claude Sonnet/Opus 4.0–4.6), Google Gemini 2.5/3.1 Pro

**Machine Learning and Domains:** PyTorch, TensorFlow, Computer Vision, Natural Language Processing (NLP), Survey Analytics, Market Research, MLOps, Statistics, Optimization

**Programming Languages:** Python, TypeScript, C++, Java, Go, Dart, PHP

**Backend, Data and Platform:** FastAPI, REST APIs, SSE, PostgreSQL (pgvector), Redis, S3, MinIO, SQL, PySpark, Elasticsearch, Vega-Lite, OpenTelemetry, Langfuse, E2B, Kubernetes, Docker, Git, Google Cloud, CI/CD

**Databases:** MySQL, MongoDB, SQLite

**Web and Frameworks:** Django, Angular, Next.js, React

## PROJECTS AND AWARDS

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**Kaggle: FIDE and Google Efficient Chess AI Challenge (2025):** Secured **top 6% globally**, Rank 60 out of 1120.

**Research Intern, UC Berkeley (2017):** Trained neural programmer-interpreters using MuJoCo under Professor Dawn Song. *SN Bose Scholar Program Awardee, 2017.*

**Software Engineering Intern, Microsoft (2016):** Developed dialog-based chatbots for the Incentive Compensation team.

**Earlier competitions:** Top 8% globally, Kaggle Allstate Claims Severity (2017); Honorary mention ACM ICPC Amritapuri Regional (2017); Honorable mention HP Think-A-Thon (2016).

## EDUCATION

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**Indian Institute of Technology (IIT-BHU), Varanasi**

2013 – 2018

Integrated Dual Degree in Computer Science and Engineering

GPA: **9.28/10**