

Varun Tulsian

Head of AI | Principal Applied Research

0→1 GenAI, Retrieval, Agent Systems

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Summary

I build AI systems that help customers **produce outcomes**, not just answers. My pattern is **eval-first**: scope small, **ship a thin slice**, measure, then scale, balancing reliability and cost-efficiency. At Needl.ai I grew a lean org and shipped agentic workflows that turned long-form finance docs into **analyst-ready artifacts** with citations and trust scores. Previously at Walmart, I tied ranking/personalization to retail KPIs across marketplace and search. I'm a practical problem-solver: make the **evidence-based decisions quickly**, move, and raise the bar. Hold a high bar on user-facing reliability (no silent errors, verifiable citations); move fast on non-critical internals.

Selected Outcomes

- **AskNeedl (Enterprise QA, on-prem):** ~85% precision, 55–31 vs OpenAI on complex finance QA(Internal eval); **joint #1** on [Kensho](#); enabled analysts to **draft credit notes and extract covenants with citations** from up to 2.5k-page PDFs.
- **Custom Reports (credit rating, capital markets):** Idea → POC → deploy in ~3 months; 80%+ coverage of 120+ criteria (rest partial), **citations, trust score**; analyst-ready UX and ROI case.
- **Org/Systems:** Grew AI team 2→7; instituted **eval harnesses**, cost-efficiency guardrails, **decision records**, and **clear ownership** to avoid diffused responsibility.

Work Experience

VP, Head of AI (Promoted from Director)

Needl.ai | Bengaluru • Apr 2023 – Present

Scope: Led strategy and execution for new AI systems, focusing on evaluation, reliability, and tangible product outcomes for clients.

- **Custom Reports (credit rating, capital-markets reports):** Single-threaded owner from idea → POC → deploy; designed **typed outputs, citations**, and a **criterion-level trust score**; partnered with design for analyst-ready UX; delivered the business case that unlocked deployment.
- **AskNeedl (long-doc QA):** Shifted focus from “answers” to **outcomes/analyst artifacts**; established internal evals, **typed outputs** to prevent silent errors, and **source attribution** for trust; achieved benchmark-leading performance.
- **Org & operating system:** Grew AI team 2→7; instituted **clear ownership** and **eval-first scoreboards**; individualized coaching (direct, fast feedback) in a light environment with **high accountability**.
- **Technical depth:** Retrieval and long-doc QA; fine-tuning small LMs, bi-encoders, cross-encoders; parallel LLM inference (TorchServe/vLLM); layout-aware PDF parsing; **structured generation**; agentic orchestration; on-prem deployment

Professional Development — Career Break

Oct 2022 – Mar 2023

- Deepened expertise in deep learning and generative AI; built diffusion-model tutorials on 2D datasets and EMNIST for graduate-level learning.
- **Work:**[GenAI Image Model Tutorials](#) • **Repo:**[Github](#) (60+ stars; used by grad students)

Senior Manager, Data Science (Search Marketplace)

Walmart Global Tech | Bengaluru • Apr 2020 – Sep 2022

- **Assortment gap analysis** → **\$ impact:** Built semantic search/embedding pipeline; enabled \$20M incremental assortment sales.
- **Search conversion** → **KPI lift:** Led multi-objective ranking; increased search conversion by +61 bps, orders by +1.9%.
- **Seller recommenders** → **adoption:** Launched NLP/transformer recommenders adopted by 7K sellers across 400K products.

Staff Data Scientist (Lead, Personalization)

Sensara Technologies | Bengaluru • Jun 2019 – Apr 2020

- Served ~1M events/hour for 300K+ users; embeddings + knowledge graph models powering the “+You Page.”

Staff Data Scientist (Search)

Walmart Global Tech | Bengaluru • Aug 2013 – May 2019

- **Grocery relevance:** Applied CNN intent/attribute models to lift conversion.
- **Sam’s Club personalization:** Developed Bayesian reorder models, increasing conversion by ~+1%.
- **Clickstream ranking:** Led offline/online calibration efforts, resulting in a +1.9% increase in orders.

Research Intern (Software Verification)

Microsoft Research | Bengaluru • Jan 2013 – Mar 2013

- Co-authored MUX, a foundational paper on algorithm selection for model checkers, with the Software Verification team.

Education & Achievements

ME, Computer Science — Indian Institute of Science (IISc) | Bengaluru • Aug 2011 – July 2013

- Top 10% of cohort; CGPA 6.8/8
- Secured AIR 8 (100th percentile) in GATE Computer Science among 136,000 candidates

Selected Publications & Patents

- **Patent-pending:** Reliability for long-doc QA (enhanced context retrieval for RAG)
- [MUX](#) (algorithm selection for model checkers) — 40 citations
- [MintHint](#) (automated repair hints) — 120 citations
- More available at: <https://varun-ml.github.io>