Udit Agarwal

Software Engineer

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Summary

Software engineer building agentic systems, production diagnostics, and retrieval-based applications across backend services, cloud infrastructure, and LLM pipelines.

Education

JECRC University 2023 - 2027

B.Tech CSE (AI & ML, IBM) CGPA: 8.24 / 10

Work Experience

Jalaan Technologies / Better - Associate Software Engineer Jul 2026 - Oct 2026

- Built features for **Operate**, a self-hosted agentic SRE platform that investigates production incidents by reasoning across application logs, databases, source code, and observability systems.
- Shipped a **Microsoft Teams bot runtime**: runtime credential provisioning, sender-to-user mapping, agent runs triggered from chat, and failure handling that keeps the bot and its chat history usable.
- Built read-only performance monitoring for **PostgreSQL, MySQL, and MongoDB**, detecting slow and expensive queries using engine-native telemetry and recommending fixes.
- Added the AWS, GCP, and Azure marketplace images built with Packer, each served over HTTPS with Caddy and first-boot provisioning that removes manual application and domain setup.

Open Source Contributor Oct 2025 - Jan 2026

- Fixed stale Start menu app data in **Puter**, preserving cached rendering and search input while handling cancellation and stale responses.
- Merged upstream changes in **stdlib.io** (JavaScript documentation examples and lint errors), **OWASP Nest** (CI skip for generated-data-only changes), and **freeCodeCamp** (ISBN validation exercise), all after maintainer review and CI validation.

Research

JECRC University / HPE Research Collaboration - Student Research Contributor Feb 2026 - Present

- Contribute to JECRC University's research collaboration with **HPE**. Built core parts of **RecRAG**, including ingestion, ontology-guided Neo4j graph construction, vector and text-to-Cypher retrieval, an evaluation harness, and a Streamlit research interface across HotpotQA, MultiHop-RAG, Natural Questions, and NovelQA.
- Benchmarked dense RAG, RAPTOR, HippoRAG2, and GraphRAG on 100 scored questions each. On HotpotQA, GraphRAG raised F1 from 63.8% to 67.0% over dense RAG at 8× the token cost and 7.7× the retrieval latency.
- Measured answer quality, latency, token usage, and API cost per question, and compared hosted API inference with self-hosted models on AWS and GCP.

Projects

Maestro - Native macOS AI Bot GitHub

- Built a fully native SwiftUI macOS app for custom bots and persistent conversations: every bot runs through pi RPC, so provider credentials and MCP authentication stay outside the app and bot definitions carry no secrets.
- Added per-bot libraries, skills, and workspace-aware runs, plus native MCP server setup with per-tool read-only approval for third-party tools such as Notion.

Grafix - Native macOS AI Drawing App GitHub

- Built a fully native Swift macOS drawing app (no web views) with a Codex chat panel that proposes canvas edits for explicit undo-backed review. The base product is done; new features are in progress.

Skills

Languages	Python, TypeScript, JavaScript, Swift, C++, Shell
Backend & APIs	Flask, Node.js, REST APIs, React, Next.js
Databases	PostgreSQL, MySQL, MongoDB, Redis, Neo4j
Infrastructure	AWS, GCP, Docker, Linux, Packer, GitHub Actions
AI & Retrieval	LangChain, LlamaIndex, GraphRAG, RAPTOR, HippoRAG2, text-to-Cypher, MCP
Developer Tools	Git, CLI Tools, SDK Integration, Terminal Interfaces