Jagan Murugan M

AI Engineer

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SUMMARY

AI engineer with 12+ years of software engineering experience and a background in technical leadership, enterprise document automation and production systems. Hands-on experience building LLM applications, retrieval-augmented generation (RAG) systems and tool-using agents with Python, LangChain, LangGraph and OpenAI API. Practical experience across the RAG lifecycle—including document ingestion, parsing and chunking, embedding generation, vector indexing, retrieval, prompt/context construction and LLM-based answer generation. Also exploring LLM post-training and reinforcement-learning methods, including RLHF, DPO and GRPO/RLVR. Brings a strong production mindset in architecture, monitoring, troubleshooting and delivering systems at enterprise scale.

TECHNICAL SKILLS

RAG & Knowledge Systems: Document ingestion and parsing, chunking strategies, embeddings, vector databases, similarity search, retrieval pipelines, prompt/context engineering, reranking concepts, retrieval evaluation

LLM Agents & Applications: OpenAI SDK, LangChain, LangGraph, tool/function calling agent workflows, MCP (Model Context Protocol)

Post-Training & Reinforcement Learning: GRPO / RLVR, Hugging Face TRL, Gymnasium & OpenEnv

ML Frameworks: PyTorch

Vector & Data Platforms: Pinecone, Hugging Face Datasets, SQL Server

Languages: Python, C# / .NET, SQL

Enterprise Document-AI Platforms: Kofax TotalAgility, Transformation Designer, Kofax Insights, Captiva, IBM FileNet P8

PROJECTS

Paul Graham Essays RAG Application github.com/JaganMurugan/pg-essays_agent

Python, Pinecone, BAAI/bge-m3, OpenAI embeddings, Google Gemini, Hugging Face Datasets, tiktoken, pytest, uv

- Designed and built an end-to-end, modular RAG application over Paul Graham's essays
- Implemented the ingestion workflow using Hugging Face Datasets, paragraph-aware token chunking, BGE-M3 embeddings (1,024 dimensions) and Pinecone vector indexing.
- Built retrieval and generation workflows that retrieve relevant essay passages and use Gemini to produce context-grounded answers with source references.
- Added practical ingestion safeguards including deterministic chunk IDs, checkpointing, batched processing, retries and configurable embedding/vector-store components.
- Exposed ingestion, retrieval, question-answering and retrieval-candidate collection through a command-line interface
- Established retrieval-evaluation foundations, including candidate collection and Recall@K, Precision@K and MRR metric implementations; along with manual relevance annotation.
- Structured the code as a modular, uv-managed Python package (loaders, chunking, embeddings, vector stores, retrieval, generation, evaluation) with a four-command CLI and a pytest suite covering chunking, checkpointing, retrieval, metrics, retries, and CLI behavior.

LifeOps – Agentic AI Assistant github.com/JaganMurugan/lifeops
Python, LangGraph, LangChain, OpenAI API, Ollama, Gemma 4, Pydantic, pytest, uv

- Designed and developed a modular AI assistant architecture with configurable LLM providers, supporting OpenAI API and locally hosted models through Ollama.
- Implemented a provider-independent LLM factory using LangChain, enabling model selection through centralized, environment-based configuration.
- Built tool-calling agent workflows using LangGraph StateGraph, conditional routing, and ToolNode to orchestrate LLM interactions and Python tool execution.
- Integrated Gemma 4 E2B through Ollama and implemented end-to-end tool-calling workflows, including structured tool requests, execution, result handling, and response generation.
- Designed validated domain models using Pydantic, incorporating business rules and timezone-aware meeting data structures.
- Established automated testing with pytest, including configuration validation, provider factory tests, and deterministic mock-based testing of agent orchestration.

PROFESSIONAL EXPERIENCE

Cognizant Technology Solutions – Chennai, India
Manager (Tech Lead) | May 2012 – July 2024

Travelers ICS – Senior Kofax Developer / Infrastructure Engineer Jan 2020 – July 2024

- Designed and developed intelligent document processing (IDP) pipelines in Kofax TotalAgility for document classification, data extraction, validation/indexing, exporting to FileNet and other downstream systems for a major US insurer serving millions of customers.
- Trained and tuned classifiers and field-extraction logic in Kofax Transformation Designer to improve classification and extraction accuracy.
- Architected and built the TotalAgility platform from scratch for new lines of business: server sizing, provisioning, installation, and configuration.
- Led platform upgrades (7.5 to 7.8 and 7.8 to 7.10), both in-place and new-environment builds.
- Built monitoring and alerting utilities for key system-health metrics, plus custom Kofax Insights dashboards for production observability.

National Recovery Center, Student Loan – Senior Developer Jan 2019 – Dec 2019

- Implemented auto-classification, data extraction, and case management for a major US financial-services client, enabling the team to meet daily document-processing SLAs.
- Customized locators within Kofax TotalAgility to improve extraction accuracy; built business-process rules, validation rules, and review forms for human validation of extracted data in TotalAgility.
- Evaluated extraction results against test data and remediated accuracy issues.

Claims Intake Automation – Developer Oct 2018 – Dec 2018

- Built a proof of concept for automated intake, document splitting, classification, indexing, and extraction of claims documents for a US health insurer (Captiva 7.6).
- Used regular expressions based scripts for free-form extraction along with custom .NET export code.

EDM Solution – Developer Apr 2018 – Sep 2018

- Automated document digitization across multiple lines of business for a Fortune 500 insurer receiving about 10 million documents per year, replacing manual data entry.
- Customized the table locator for table extraction, ran end-to-end testing, and applied virtual-rescan image pre-processing in Kofax Express to improve poor-quality scans.
- Produced processed-job reports with Kofax Insights (KAFTA).

AtlasCampusDoor – Developer, Quality Analyst May 2012 – Mar 2018

- Developed and enhanced an ASP.NET loan-origination platform for a leading US private education lender; authored design documents and unit tests.
- Reviewed code for peers and the offshore team against client quality norms.
- Provided production support: SQL remediation scripts, SoapUI web-service fixes, job monitoring in Atomic, and root-cause analysis in Dynatrace.

EDUCATION

B.Tech, Electrical & Electronics Engineering – Amrita School of Engineering, Coimbatore | 2012

CERTIFICATIONS

- Kofax TotalAgility 7.8 Analytics (2021)
- Kofax TotalAgility 7.5 Essentials (2020)