Aayushmaan Hooda

Personal & Professional Knowledge Base

This document serves as a structured external knowledge source for a RAG (Retrieval-Augmented Generation) agent. It consolidates information from Aayushmaan Hooda's resume, LinkedIn profile, GitHub repositories, Medium articles, and professional background into a format optimised for PyPDF text extraction and vector embedding.

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1. Personal Overview

Aayushmaan Hooda is an aspiring AI Engineer and Python-first backend developer based in Sydney, NSW, Australia. He has completed a Master's in Information Technology at the University of New South Wales (UNSW), graduating in September 2025. He holds a Bachelor of Computer Science and Engineering from Maharshi Dayanand University, Rohtak, Haryana, India (Sept 2017 - Sept 2021). He has 2+ years of professional experience as an Associate Software Engineer at Annalect, India, and is actively seeking GenAI engineering and AI/ML roles in Sydney's tech ecosystem.

Contact and Online Presence

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- Phone: 0412222762
- Location: Sydney, NSW, Australia
- LinkedIn: linkedin.com/in/aayushmaan-hooda-68ab64194
- GitHub: github.com/aayushmaanhooda
- Medium: medium.com/@aayushmaan_hooda

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2. Professional Summary

Aspiring AI Engineer with hands-on experience in building AI-powered applications, intelligent workflows, and scalable backend systems. Specialises in LangChain, LangGraph, RAG pipelines, MCP Servers, and Python frameworks like FastAPI and Flask. Background in Python backend development (FastAPI, Flask, REST APIs, Docker) complements the AI focus, enabling robust infrastructure for deploying AI models and prototypes. Developed projects including RAG PDF Summarisers, LangGraph chatbots, and MCP-powered microservices, combining backend reliability with cutting-edge AI orchestration. Certified in AWS Cloud Practitioner, RAG Apps with MongoDB, and Deep Agents with LangGraph. Passionate about transforming ideas into real-world GenAI applications with clean, high-performance code.

LinkedIn headline: Aspiring AI Engineer | Python Backend Developer | AWS | REST APIs | FastAPI & Flask | RAG | MCP Servers | LangChain & LangGraph | Masters Student.

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3. Education

Master's in Information Technology

University of New South Wales (UNSW), Sydney, NSW, Australia. Duration: September 2023 to September 2025.

Bachelor of Computer Science and Engineering

Maharshi Dayanand University, Rohtak, Haryana, India. Duration: September 2017 to September 2021.

4. Work Experience

Backend Developer Intern - Stoik (Sydney, Australia)

Duration: January 2025.

- • Developed a deep understanding of Docker architecture and FastAPI orchestration to enhance application performance.
- • Analysed and interpreted FastAPI code alongside MongoDB schema to ensure seamless application functionality.

Associate Software Engineer - Annalect (Gurugram, India)

Duration: October 2021 to September 2023 (approximately 2 years).

- • Authored and maintained YAML files for OpenAPI specifications to generate APIs in Apigee.
- • Collaborated with the backend team to resolve and improve YAML file configurations.
- • Developed and maintained microservice APIs using Flask, enhancing application scalability and performance.
- • Delivered progress updates through regular demo presentations to the US-based team, ensuring alignment and transparency.

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5. Technical Skills

Programming Languages

Python (primary), JavaScript, Shell Scripting, SQL, NoSQL, CypherQuery.

Frameworks and Libraries

Flask, FastAPI, Scrapy, Streamlit, LangChain, LangGraph, CrewAI, Mem0, FastMCP, Numpy, Pandas, Pydantic, SQLAlchemy, SQLModel, Scikit-learn, Matplotlib, boto3, PyTorch, BeautifulSoup, RAGAS.

Databases and Vector Stores

PostgreSQL, MongoDB, Pinecone, PgVector, Neo4j, SQLite.

AWS Cloud Services

API Gateway, SageMaker, Bedrock, S3, Lambda, PartyRock.

DevOps and Tools

Docker, Git, GitHub Actions, Jira, Postman, LangSmith, Figma, Flowise, Vapi, K6, Nginx, Gunicorn.

AI/ML Concepts and Specialisations

AI Governance, Agentic AI, Multi-Agent Systems, Knowledge Graphs, Retrieval-Augmented Generation (RAG), Corrective RAG (CRAG), Transformers, Deep Agents, Fine Tuning, Context Engineering, Prompt Engineering, Model Context Protocol (MCP), Vector Stores, Anthropic Skills, UI/UX Principles.

Frontend (Secondary)

React, Streamlit (for quick UIs and prototyping).

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6. Projects

LangGraph Chatbot App

Built a conversational chatbot using LangGraph and LangChain with a Streamlit frontend for real-time interaction. Managed conversation state via a ChatState TypedDict and InMemorySaver for checkpointing across sessions. Defined a linear StateGraph workflow to orchestrate user messages and AI responses.

Technologies: Python, LangChain, LangGraph, Streamlit

Status: Deployed

Resume Selector Agent

Developed a multi-agent AI system using the CrewAI framework to orchestrate automated resume selection. Built configurable agent definitions (agents.yaml) and task configurations (tasks.yaml) to allow flexible extension of agent roles, tools, and objectives.

Technologies: Python, CrewAI, Pydantic, Streamlit

Status: Deployed

RAG Evaluation Using RAGAS

Developed a full-pipeline evaluation framework for retrieval-augmented generation (RAG) systems using LangChain, Pinecone, and RAGAS metrics. Integrated RAGAS to compute key metrics such as Faithfulness, Context Precision/Recall, and Response Relevancy for quantitative model evaluation.

Technologies: Python, LangChain, RAGAS, Pinecone

Leave Manager MCP Server

Designed and developed a robust leave management system using FastMCP and MongoDB, supporting both persistent and in-memory data storage. Implemented REST-style MCP tools for applying leaves (with balance checks and date history), employee CRUD, multi-employee batch onboarding, and real-time leave balance and audit queries.

Technologies: Python, UV, FastMCP, MongoDB, Claude Desktop

Travel History RESTful API

Developed a Flask-RESTX service to store, retrieve, and visualise countries visited, backed by SQLite. Integrated the external Countries GraphQL API to import country metadata (flags, capitals, languages, currencies). Created a /countries/visited endpoint that streams a Matplotlib-generated PNG summarising travel history.

Technologies: Python, Flask-RESTX, SQLite, GraphQL client, Matplotlib, Docker

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7. Certifications

- AWS Cloud Practitioner
- LangChain Essentials - Python
- Deep Agents with LangGraph
- LangSmith Essentials

- RAG Apps Using MongoDB
- Introduction to Model Context Protocol (MCP)

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8. Medium Publications and Technical Writing

Aayushmaan actively writes technical content on Medium (medium.com/@aayushmaan_hooda), publishing in 'AI in Plain English' and 'Python in Plain English'. He positions himself as someone who learns and shares rather than claiming expert status, making complex AI concepts accessible to practitioners.

Corrective RAG (CRAG): Add a Quality Gate to Your Retriever (LangGraph Version)

Published: Feb 2026 | Publication: AI in Plain English

Explores Corrective Retrieval Augmented Generation, implementing a quality gate for RAG retrievers using LangGraph.

Python's __slots__: When Memory Matters

Published: Feb 2026 | Publication: Python in Plain English

Covers Python optimisation using __slots__ for memory-efficient class definitions.

From Code to Inbox: Sending Emails with FastAPI

Published: Jan 2026 | Publication: Python in Plain English

Practical guide to building an email service using FastAPI with a /subscribe API endpoint.

Long-Term Memory: How LangChain Agents Never Forget

Published: Jan 2026 | Publication: AI in Plain English

Explores how LangChain agents achieve long-term memory using LangGraph's memory capabilities for personalised experiences.

Runtime: The Backbone of Context Engineering in LangChain

Published: Jan 2026 | Publication: AI in Plain English

Deep dive into LangChain's Runtime system for passing context, configuration, permissions, and user-specific data to agents.

Mem0: The Intelligent Memory Layer for Modern AI Agents

Published: Nov 2025 | Publication: AI in Plain English

Comprehensive exploration of Mem0 as a semantic memory management system for AI chatbots and agents, addressing limitations of session-based memory.

RAG Evaluation Using RAGAS: Moving Beyond Building to Measuring

Published: Nov 2025 | Publication: AI in Plain English

Framework for evaluating RAG systems using RAGAS metrics including Faithfulness, Context Precision/Recall, and Response Relevancy.

LangChain v1.0 Middleware: Context Engineering as a First-Class Citizen

Published: Nov 2025 | Publication: AI in Plain English

Covers LangChain v1.0's new middleware system for clean, composable context engineering in AI agent development.

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9. GitHub Profile and Open Source

GitHub username: aayushmaanhooda. Aayushmaan maintains an active GitHub profile with repositories spanning AI agent systems, backend APIs, and full-stack prototypes. His GitHub README describes him as an 'Aspiring AI Engineer | Python-First Backend Developer' who is on a journey into the 'Agentic World', building AI Agents, Agentic RAGs, Multi-Agent systems, and backend systems. He combines LLMs with data and tinkers with React and Streamlit for quick UIs.

Key GitHub Repositories

- chatbot - LangGraph Chatbot App (Deployed)
- resume-selector - Resume Selector Agent using CrewAI (Deployed)
- rag-evaluation - RAG Evaluation using RAGAS and Pinecone
- MCP - Leave Manager MCP Server with FastMCP and MongoDB
- travel-history - Travel History RESTful API with Flask-RESTX and Docker

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10. LinkedIn Profile Summary

Aayushmaan's LinkedIn profile (linkedin.com/in/aayushmaan-hooda-68ab64194) highlights his specialisation in LangChain, LangGraph, RAG pipelines, MCP Servers, and fine-tuning for designing modern AI systems that are both scalable and production-ready. His background in Python backend development (FastAPI, Flask, REST APIs, Docker) complements his AI focus, enabling robust infrastructure for deploying AI models and prototypes. He showcases his ability to combine backend reliability with cutting-edge AI orchestration through projects like RAG PDF Summarisers, LangGraph chatbots, and MCP-powered microservices. He describes himself as a quick learner and naturally curious, thriving on experimenting with new frameworks, tackling complex technical challenges, and collaborating across teams to deliver functional, maintainable solutions.

Aayushmaan also shares AI engineering insights and interview preparation tips on LinkedIn, including posts about fine-tuning agentic language models, DSA preparation for AI/ML roles, hands-on project building, and ML system design.

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11. Areas of Expertise and Current Focus

Core Expertise

- Agentic AI and Multi-Agent System design and orchestration
- Retrieval-Augmented Generation (RAG) pipeline development and evaluation
- Corrective RAG (CRAG) with quality gates
- LangChain and LangGraph agent development with middleware and runtime context engineering
- Model Context Protocol (MCP) server development using FastMCP
- Persistent memory management for AI agents using Mem0
- Python backend development with Flask and FastAPI
- Microservices architecture, REST API design, and Docker containerisation
- Vector database implementations with Pinecone, PgVector, and MongoDB Atlas
- AWS cloud services including SageMaker, Bedrock, Lambda, and S3

Current Focus Areas

- Building production-ready AI applications using LangChain, LangGraph, and related frameworks
- Implementing RAG evaluation systems using RAGAS metrics

- Exploring context engineering patterns in LangChain v1.0
- Writing technical blog posts for Medium about emerging AI technologies
- Active job searching targeting GenAI engineering roles at startups and AI companies in Sydney
- Preparing for technical interviews in the AI/ML space
- Building a portfolio of deployed, production-ready AI applications

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12. Complete Technology Stack

This section provides a consolidated view of all technologies Aayushmaan works with, sourced from his resume, GitHub, LinkedIn, and Medium publications.

Category	Technologies
Languages	Python, JavaScript, Shell Scripting, SQL, NoSQL, CypherQuery
AI/ML Frameworks	LangChain, LangGraph, CrewAI, Mem0, RAGAS, Scikit-learn, PyTorch, HuggingFace
Web Frameworks	Flask, FastAPI, Flask-RESTX, Streamlit, React
Databases	PostgreSQL, MongoDB, SQLite, Neo4j
Vector Stores	Pinecone, PgVector, MongoDB Atlas Vector Search
AWS Services	API Gateway, SageMaker, Bedrock, S3, Lambda, PartyRock
DevOps/Tools	Docker, Git, GitHub Actions, Nginx, Gunicorn, K6
Dev Tools	Jira, Postman, LangSmith, Figma, Flowise, Vapi
Data Libraries	Numpy, Pandas, Matplotlib, BeautifulSoup, boto3
Schema/ORM	Pydantic, SQLAlchemy, SQLModel
Protocols	MCP (FastMCP), REST, GraphQL, OpenAPI/Swagger

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13. Document Metadata

This document was generated on 17 February 2026 for use as an external knowledge source in a RAG agent. It consolidates information from the following sources: Aayushmaan Hooda's resume (PDF), LinkedIn profile (linkedin.com/in/aayushmaan-hooda-68ab64194), GitHub profile (github.com/aayushmaanhooda), and Medium publications (medium.com/@aayushmaan_hooda). The document is structured with clear section headers, consistent formatting, and plain text content optimised for PyPDF text extraction and subsequent chunking by a RAG pipeline.