

Cover Letter - AI Engineer

Dear Hiring Manager,

I am writing to express my strong interest in the "AI Engineer" position at your esteemed organization. With over 4 years of experience in Backend Development, DevOps and AI/ML, I bring extensive expertise in building, deploying, and maintaining production-ready software systems across multiple industries.

Currently, I am developing a Web App that leverages Graph RAG to guide users through religious texts, utilizing Azure (Azure app service, Azure functions), Python, LangChain, and Graph Database technologies [Custom Graph vector Database]. This project has led me to develop a working prototype that compares three RAG architectures: Traditional RAG, Agentic RAG, and Graph RAG [This prototype can be accessed [here](#)].

The web app is not yet in a production ready environment and as of now I have only pushed the frontend code to the web but can be accessed at ip : - <http://34.45.186.185/> [This is completely provisioned on Azure]

Because this is a highly sensitive topic, I have planned an architecture to test the efficiency of the RAG and You can read my blog regarding that [here](#). [Basic Idea: - Using cosine similarity algorithm to calculate accuracy scores for Rag outputs against test data.]

Throughout my career, I've worked in agile environments where I collaborated closely with cross-functional teams including data scientists, product managers, and software engineers to deliver Software solutions that drive business value. My experience spans the entire Full Stack lifecycle from concept to production deployment and ongoing maintenance.

Software Engineering & DevOps:

- Extensive experience with Azure Devops [Pipelines, Repos, Boards, Test Plans], Azure Cloud [Functions, Machine Learning, Cognitive Services, Bot Services] and containerization technologies like Docker and Kubernetes
- Implemented CI/CD via GitHub Workflows for resources hosted at Azure web App.
- Containerized similarity algorithm and orchestrated it on AKS with Azure Monitor integration to ensure high availability and easy rolling updates in the future.

AI/ML Model Developments:

- Developed custom LSTM-RNN models using PyTorch for sequence prediction and time-series analysis
- Fine-tuned pre-trained models (BERT, RoBERTa) for question-answering applications using transfer learning techniques

Data Engineering:

- Created robust ETL processes using AWS Glue for Automating RAG for AI/Hub to automatically detect and process data whenever a new page is added to the website.

I am particularly excited about applying my knowledge of Microservices deployment, monitoring solutions, and A/B testing methodologies to drive innovation at your company. My background in security, compliance, and ethical AI/ML practices would also ensure that Software systems are developed responsibly.

I would welcome the opportunity to discuss how my skills and experience align with your needs for this position. Thank you for considering my application.

Sincerely,

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PROFESSIONAL SUMMARY

Software Developer with 4 years of experience specializing in AI/ML implementations and full-stack development. Experienced in RAG architectures, LLMs, and cloud platforms (AWS, Azure). Proven track record in developing scalable AI solutions and implementing end-to end machine learning pipelines.

TECHNICAL SKILLS

- AI/ML: LLMs (GEMINI, Claude, Mistral, GPT-4, Llama), RAG (Traditional, Agentic, Graph), BERT, NLP, Fine-Tune, Transfer Learning.
- Cloud: AWS, Azure
- Tools: Docker, Kubernetes
- Languages: Python (including Pytorch), JavaScript,C#
- Full Stack: MERN Stack, Django, FastAPi
- Databases: MongoDB, DynamoDB, Redis, S3, Azure Blob, Vector databases like Pinecone, Fiass and ChromaDB
- Testing & CI/CD: Azure Pipelines, Github Workflows, Full Automated Pipelines to deploy workflow directly from Github Main branch to webapps
- Methodologies: Agile, Scrum

EDUCATION

- Post Graduation Diploma in Artificial Intelligence - Durham College (2023)
- Post Graduation Diploma in Data Analytics - Durham College (2022)
- BSc Computer Science - Delhi University (2018-2021)

CERTIFICATIONS

- AWS Machine Learning Specialty (2024)
- Azure AI Engineer Associate (2024)

PROFESSIONAL EXPERIENCE

Civonus | Software Developer (Sept 2024 - Present)

- Designed and deployed similarity algorithm on Azure using docker [Azure Container Registry] and k8's for handling user traffic and rolling updates.
- Utilizing React with Typescript for frontend development to show similar, and summarized user posts.
- Built automated mind maps and PDF report generation, saving 10 hours per project. [React-flow]
- Engineered Backend deployment workflow with CI/CD using Gitlab CI.
- Utilized Gpt-4o-mini for summarizing similar posts and Unique posts.
- Efficiently storing data in MongoDB and Checking for profanity before sending request to Gpt, therefore ensuring data integrity.
- Collaborated with cross-functional teams in an agile environment to build API's for backend data manipulation for creating mindMaps.

Azionic | Software Developer (Sept 2023 - Aug 2024)

- Provisioned and optimized multiple LLMs on AWS Bedrock (Claude, Mistral, Llama)
- Implemented RAG architecture with session and history management.
- Developed AI agent for automated content generation for posting Blogs
- Created robust ETL processes for ML feature engineering
- Using Whisper and Azure Speech models to transcribe and analyze YouTube videos for AI-generated shorts [See an Example on my Linkedin Posts]

AI/HUB | Software Developer (March 2023 - Dec 2023)

- Developed a comprehensive AI chatbot application based on Retrieval Augmented Generation (RAG) architecture. For efficient vector storage, I employed Pinecone as the database and used Long Chain to simplify implementation. I wrote Python code to scrape over 4,000 pages effectively. The full-stack application was built using Django, HTML, CSS, and JavaScript, and deployed on Azure.
- Created robust ETL processes using AWS Glue for automating RAG for content management, designed to automatically detect and process data whenever a new page is added to the website
- Developed custom LSTM-RNN models using PyTorch for time-series prediction
- Fine-tuned pre-trained models (BERT, RoBERTa) for question-answering applications
- Implemented data pipelines with AWS services for large-scale data processing

Softel Solutions | Software Developer (May 2020 - May 2022)

- Fine- tuned Document Intelligence architecture on Azure for reading Goverment associated forms.
- Built pipelines for automatic document classification and information extraction.
- Using ASP.NET and Azure Bot Services created a chatbot to effectively solve user queries and guide them to relevant content on the website, it also allows users to connect with a human representative if their queries require further assistance, ensuring a seamless and supportive user experience.
- Worked with AWS Lambda and API Gateway for implementing additional checks and to create a distributed framework for accessing user data

PROJECTS & CONTRIBUTIONS

- Graph RAG Implementation: Developed and compared three RAG architectures (Traditional, Agentic, Graph) with custom evaluation metrics for measuring performance
 - Sentiment Analysis Engine: Created market sentiment analysis using custom PyTorch models and real-time data processing
- Portfolio: karandeepsingh.tech | Lablab.ai: [lablab.ai: lablab.ai/u/@karandeep_singh929](https://lablab.ai/u/@karandeep_singh929)

SOFT SKILLS

Passionate About Technology and Productivity

I demonstrate deep passion for exploring new technologies and leveraging them to enhance productivity and efficiency. I continuously seek ways to optimize processes and workflows to deliver better results. As an active member of lablab.ai, I pursue new AI challenges and have created applications like real-time Stock Sentiment Analysis and Interior designing tools. I stay updated with the latest technological innovations by regularly visiting resources like Aixploria, Meta, and OpenAI.

Autonomous, Bold, and Innovative

I am a self-driven developer who takes ownership of projects from conception to completion. I challenge the status quo with innovative solutions, such as my real-time Stock Sentiment Analysis app that uses a news API and GPT to highlight stock movements influenced by market sentiment. I've also developed an Interior Design application that utilizes AI to transform photos of bedrooms into redesigned spaces based on user prompts. My commitment to staying updated on technological advancements ensures that my work remains at the forefront of innovation.

Growth Mindset and Love of Learning

I believe every challenge is an opportunity to learn and increase knowledge that helps in work and day-to-day decision-making. I approach new challenges as opportunities to learn and grow with a positive attitude. Understanding that solving half the problem requires comprehending it fully, I break down complex problems into smaller parts to focus on completing them systematically. This mentality has enabled me to focus and deliver products before deadlines.

Critical Thinking and Analytical Problem-Solving

I utilize data-driven decision-making to inform my approaches, ensuring that my solutions are backed by analytics. For instance, in my real-time Stock Sentiment Analysis app, I analyzed market data and news sentiment to validate stock movements and inform user insights. At Azionic, I integrated various models into a single platform, applying systems thinking to understand component interconnectedness and anticipate change implications. I implemented comprehensive logging at each function level to quickly identify and address issues, excelling at finding root causes and developing strategic solutions to complex challenges.

Collaborative with Intent to Co-Create

As a team player, I value diverse perspectives and work collaboratively to achieve mutually successful outcomes. I engage with team members proactively, co-creating solutions that benefit all stakeholders while fostering an inclusive environment where innovative ideas can flourish.

Outcomes-Oriented

My decision-making process includes reviewing previous choices before moving forward. When receiving new tasks, I seek advice from seniors while exploring my own approaches, validating them before execution. This gives me control over expected outcomes and ensures effective results within the given timeframe.

Comfortable with Constructive Conflict

I am unafraid to face problem-related conflicts, understanding that constructive discussions lead to innovative solutions and better outcomes. By actively engaging with differing perspectives, I foster an environment where ideas can be refined and improved, enhancing our work quality. I view challenges and feedback not as setbacks but as essential opportunities for growth, allowing me to adapt and evolve my approaches to ensure solutions are not only effective but continuously improved. I believe embracing feedback drives personal and team development, helping us achieve greater success together.