

# Cover Letter - AI/ML Engineer Position

Dear Hiring Manager,

I am writing to express my strong interest in the AI/ML Engineer position. With over 6 years of experience building production-ready machine learning systems and data platforms at Pharmaceutical Digital Manufacturing, I am excited to bring my expertise in RAG systems, knowledge graphs, and predictive analytics to your team.

## Delivering AI/ML Solutions That Drive Business Value

At Pharmaceutical, I have successfully bridged the gap between data engineering and AI/ML engineering, developing systems that directly impact manufacturing operations:

**Production ML Models:** I designed and deployed 12+ machine learning models predicting pharmaceutical batch delivery times, QA durations, and testing schedules with 70%+ accuracy. These models process 100K+ daily records, enabling proactive planning and reducing manufacturing delays. I implemented the complete ML lifecycle including automated retraining pipelines, drift detection, and A/B testing frameworks.

**Enterprise Knowledge Graph:** I architected Pharmaceutical's first pharmaceutical manufacturing knowledge graph on Neo4j, integrating 10+ data sources and managing 1M+ nodes. This platform enables semantic search and graph-based analytics across complex manufacturing relationships that traditional databases cannot capture.

**RAG Systems & LangChain:** I built production-ready RAG applications using LangChain, enabling natural language Q&A over 10,000+ technical manufacturing documents. My work demonstrates advanced techniques including contextual compression, metadata filtering, and multi-document processing. These systems have improved knowledge accessibility for 200+ engineers.

## Technical Excellence in AI/ML Engineering

My technical stack spans the full AI/ML pipeline:

**ML Frameworks:** Scikit-learn, XGBoost, TensorFlow, with expertise in regression, classification, and time-series forecasting **LLM & RAG:** LangChain, OpenAI API, vector databases (Chroma, Pinecone, pgvector), embeddings, prompt engineering **Data Platform:** Real-time ETL with Snowflake/PostgreSQL processing 500K+ daily transactions, Apache Airflow orchestration, dbt transformations **Cloud & MLOps:** AWS (S3, ECS, Lambda), Docker, CI/CD pipelines, model monitoring and versioning

What differentiates me is my strong data engineering foundation. I understand that 80% of ML success depends on data quality, pipeline reliability, and infrastructure robustness. I've built automated data quality frameworks reducing data issues by 40%, implemented

real-time data pipelines with <5 minute latency, and optimized systems for cost efficiency (30% reduction in cloud costs).

## Innovation & Impact

My work has delivered measurable business impact:

- **70%+ accuracy** in manufacturing prediction models
- **50% reduction** in data debugging time through graph-based lineage
- **40% reduction** in data quality incidents through automated monitoring
- **100+ hours monthly** saved through pipeline automation
- **200+ stakeholders** enabled with real-time data access

I am also committed to knowledge sharing and team development. I mentored 5+ junior engineers (leading to 2 promotions) and created comprehensive educational frameworks bridging traditional data engineering to AI/ML engineering.

## Next Steps

I would welcome the opportunity to discuss how my experience in production ML systems, knowledge graphs, and RAG applications can contribute to AI/ML initiatives. I am happy to discuss specific projects and technical implementations in more detail.

Thank you for considering my application. I look forward to the possibility of joining your team and contributing to the company's success in AI/ML innovation.

Sincerely,

Serkan Coskun