Capstone Projects

EXL

Capstone Project 1 - Portfolio Rebalancing Advisor

CONTEXT

Objective

- Create an agent that suggests portfolio rebalancing strategies based on market trends and investor risk profiles.

Expectations

- Users get personalized recommendations with scenario simulations and optimized asset allocations.

ORCHESTRATION

- Ingest portfolio and market data via APIs
- Apply Plan-and-Execute reasoning for asset reallocation
- Deploy computation on AWS Lambda/Fargate
- Store portfolio history in AWS RDS
- Generate dashboards via QuickSight/S3

OUTCOMES

Metrics impacted

- Dynamic, personalized rebalancing suggestions, cloud-hosted analytics, improved investment outcomes.

EXL

Capstone Project 2 - Automated Trade Monitoring Agent

CONTEXT

Objective

- Build an agent that monitors market transactions in real-time to detect anomalies, insider trading, or unusual patterns.

Expectations

- Users expect instant alerts for suspicious trades and actionable insights for compliance teams.

ORCHESTRATION

- Retrieve trading data via APIs
- Analyze for anomalies using statistical and ML methods
- Deploy agent on AWS Lambda/Fargate
- Store transaction logs in AWS RDS/DynamoDB
- Dashboard updates via AWS QuickSight.

OUTCOMES

Metrics impacted

- Real-time trade monitoring, reduced risk exposure, compliance reporting, cloud-based scalable processing.

EXL

Capstone Project 3 - Policy Recommendation Advisor

CONTEXT

Objective

- Generate personalized insurance policy recommendations for clients based on their profile, coverage needs, and risk exposure.

Expectations

- Users expect actionable suggestions with reasoning and regulatory compliance.

ORCHESTRATION

- Retrieve client profiles from CRM and policy databases
- Apply deterministic prompting and RAG for recommendations
- Deploy agent pipelines on AWS Lambda/Fargate
- Store logs and recommendations in RDS/S3
- Visualize dashboards for agents and clients

OUTCOMES

Metrics impacted

- Scalable policy advisory, personalized coverage suggestions, improved client satisfaction, cloud-based.

EXL

Capstone Project 4 - Customer Sentiment & Retention Agent

CONTEXT

Objective

- Monitor customer feedback, social media, and call center transcripts to assess satisfaction and retention risk.

Expectations

- Users expect actionable insights for proactive engagement.

ORCHESTRATION

- Collect data from CRM, social media, and support systems
- Apply sentiment classification via LLM + embeddings
- Deploy on AWS Lambda with logs in DynamoDB/S3
- Trigger alerts for at-risk customers via SNS
- Present dashboards in QuickSight

OUTCOMES

Metrics impacted

- Proactive retention strategies, cloud-hosted analysis, data-driven customer engagement.

EXL

Capstone Project 5 - Market Sentiment Analyzer

CONTEXT

Objective

- Build an agent that continuously monitors financial news, social media, and analyst reports to gauge market sentiment.

Expectations

- Users get real-time sentiment scores for sectors, companies, and markets.

ORCHESTRATION

- Ingest unstructured data from news and social media APIs
- Embed and store in FAISS/ChromaDB on AWS EC2
- Analyze sentiment using RAG + LLM pipelines
- Deploy agents on AWS Lambda
- Visualize sentiment dashboards via QuickSight/S3

OUTCOMES

Metrics impacted

- Real-time sentiment insights, enhanced decision-making for traders and analysts, cloud-based scalable analysis.

EXL

Capstone Project 6 - Claims Documentation Summarizer

CONTEXT

Objective

- Automate summarization of large insurance claim documents for claims handlers.

Expectations

- Users expect concise summaries highlighting key points, risks, and claim history.

ORCHESTRATION

- Parse PDFs via PDF parsers
- Embed and store content in FAISS/ChromaDB on AWS EC2
- Deploy summarization pipeline on AWS Lambda
- Generate structured summaries in S3
- Deliver notifications via SNS

OUTCOMES

Metrics impacted

- Reduced manual reading time, cloud-accessible summaries, improved claims workflow efficiency.

EXL

Capstone Project 7 - Claims Triage Agent

CONTEXT

Objective

- Build an agent that automatically reviews incoming insurance claims, categorizes them, and prioritizes processing based on severity and risk.

Expectations

- Users expect reduced processing time and accurate claim routing.

ORCHESTRATION

- Ingest claim data via APIs or uploaded PDFs
- Use NLP models for categorization and entity extraction
- Deploy processing pipeline on AWS Lambda/Fargate
- Store claim metadata in AWS RDS/DynamoDB
- Notify claims teams with priority alerts via SNS

OUTCOMES

Metrics impacted

- Faster claims triage, reduced manual errors, cloud-scalable claim handling.

EXL

Capstone Project 8 - Fraud Detection Agent

CONTEXT

Objective

- Design a collaborative agent system to detect suspicious insurance claims and prevent fraud.

Expectations

- Users expect proactive fraud alerts with audit-ready reports.

ORCHESTRATION

- Use anomaly detection models to flag claims.
- Implement verifier and summarizer agents
- Deploy multi-agent pipeline on AWS Lambda/Fargate
- Store evidence logs in AWS S3/DynamoDB
- Generate dashboards in QuickSight

OUTCOMES

Metrics impacted

- Reduced fraud risk, cloud-hosted monitoring, improved compliance, actionable reporting.

EXL

Capstone Project 9 - Personalized Product Recommendation Agent

CONTEXT

Objective

- Build an agent that generates personalized product recommendations for e-commerce users based on browsing and purchase history.

Expectations

- Users expect dynamic, context-aware suggestions improving engagement and conversion.

ORCHESTRATION

- Collect user activity and purchase history
- Embed data and generate recommendations via RAG + LLM
- Deploy on AWS Lambda/Fargate
- Store logs in DynamoDB/S3
- Integrate recommendation engine with website/app

OUTCOMES

Metrics impacted

- Increased sales, personalized shopping experience, scalable cloud deployment.

EXL

Capstone Project 10 - Customer Support Chatbot

CONTEXT

Objective

- Deploy an agent to handle common customer support queries, returns, and complaints.

Expectations

- Users expect instant, accurate responses, reducing load on support teams.

ORCHESTRATION

- Integrate support channels (chat, email, helpdesk)
- Apply retrieval + LLM response generation
- Deploy on AWS Lambda
- Store conversation logs in DynamoDB/S3
- Monitor via CloudWatch

OUTCOMES

Metrics impacted

- Reduced response time, automated cloud-hosted support, improved customer satisfaction.

EXL

Capstone Project 11 - Inventory Forecasting Agent

CONTEXT

Objective

- Build an agent to predict product demand and optimize inventory levels across retail stores.

Expectations

- Users expect reduced stockouts and overstocks with accurate forecasts.

ORCHESTRATION

- Ingest sales and inventory data from ERP
- Apply forecasting models with RAG + LLM
- Deploy pipeline on AWS Lambda/Fargate
- Store predictions in RDS/S3
- Visualize inventory dashboards via QuickSight

OUTCOMES

Metrics impacted

- Optimized inventory, reduced waste, improved retail profitability, cloud-hosted solution.

EXL

Capstone Project 12 - Marketing Campaign Performance Agent

CONTEXT

Objective

- Analyze campaign data across channels and provide insights on ROI, engagement, and recommendations.

Expectations

- Users expect automated campaign reports, KPI tracking, and optimization suggestions.

ORCHESTRATION

- Collect campaign metrics from social media and ad platforms
- Embed data and generate insights using LLMs
- Deploy processing pipelines on AWS Lambda
- Store dashboards in S3
- Deliver alerts via SNS

OUTCOMES

Metrics impacted

- Cloud-hosted campaign analytics, actionable performance insights, improved marketing ROI.

EXL