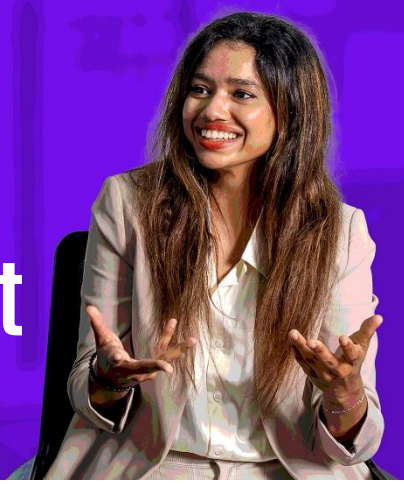
KPMG Unveils Next-Gen AI-Powered Fraud Analysis Agent

You can with AI



Elevating Fraud Detection with Generative AI – KPMG proof of Concept and Real Time Risk Intelligence

You can transform static fraud rules into dynamic, adaptive intelligence with Generative AI.

KPMG delivered a Proof of Concept Generative AI-driven Fraud Analysis Agent, designed to enhance real-time transaction monitoring and adaptive fraud detection capabilities.

The solution leveraged advanced machine learning algorithms and real-time data ingestion to assess incoming card transactions and generate dynamic fraud scores based on a comprehensive set of behavioural, contextual, and environmental indicators. These included continuous feeds from global news sources, high-risk geolocation datasets, and merchant risk profiling to support intelligent, data-driven decisioning. The AI Agent performed transaction-level fraud analysis at scale and integrated seamlessly with the client's legacy systems, with secure data persistence in an on-premises database environment. An embedded SMS-based feedback mechanism enabled continuous learning, allowing the model to refine its predictions based on end-user validation of flagged transactions — creating a closed-loop intelligence system for ongoing fraud model optimization. In addition to real-time detection, the solution generated targeted fraud detection recommendations to enhance the client's broader fraud management ruleset. Further machine learning was applied to historical fraud datasets to strengthen the model's pattern recognition, anomaly detection, and predictive capabilities — enabling more accurate risk scoring and proactive identification of emerging fraud typologies.

The Challenge

The client sought to address inefficiencies in the existing-as-is-process static fraud rule set used to identify fraud in card transactions, through the use of a fraud analysis ai agent to improve and enhance the fraud detection capabilities in their process.

The Opportunity

KPMG conducted a comprehensive analysis of the client's existing fraud detection processes and supporting systems, including a detailed assessment of integration points, data flow dependencies, and the required field-level outputs for the AI solution.

Based on this assessment, KPMG designed a robust solution architecture that leveraged the client's existing Microsoft Azure technology stack. The architecture incorporated seamless integration with legacy databases and static rule engines to ensure interoperability and minimal disruption to existing operations.

The AI Agent was implemented using Microsoft Azure AI Foundry and Azure Prompt Flow, delivering a Retrieval-Augmented Generation (RAG) solution capable of synthesizing insights from both structured enterprise data and dynamic, real-time news feeds. This enhanced the contextual understanding and adaptability of the fraud detection engine. Azure AI Search was deployed to build and maintain vector-based indexes on a scheduled pipeline, ensuring that the AI Agent continually operated on the most current data.

Integration with the broader fraud management ecosystem was achieved using Azure Service Bus and REST APIs, enabling real-time data exchange and the implementation of an SMS-based feedback loop to support continuous model learning and refinement. The solution also delivered actionable fraud detection recommendations back to human evaluators, highlighting potential gaps in the static rule-based system based on live transaction patterns and AI-derived insights.

Complementing the RAG-based agent, machine learning models were trained on historical fraud datasets using Random Forest algorithms and statistical probability techniques to further augment predictive accuracy and anomaly detection.

The Outcome

The client experienced a clear demonstration of how AI and automation could be seamlessly integrated into their existing legacy systems and enhance the fraud detection of card transactions.

Clear benefit was identified through the AI Agent recommendations which identified a gap in the existing fraud detection ruleset.

This AI solution showcased the technical feasibility of the usage of AI and Automation in their current processes.

You can strengthen regulatory compliance and operational integrity by embedding AI into your fraud detection framework ensuring transparent, auditable, and proactive risk management.

You can with AI. You can with KPMG.

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