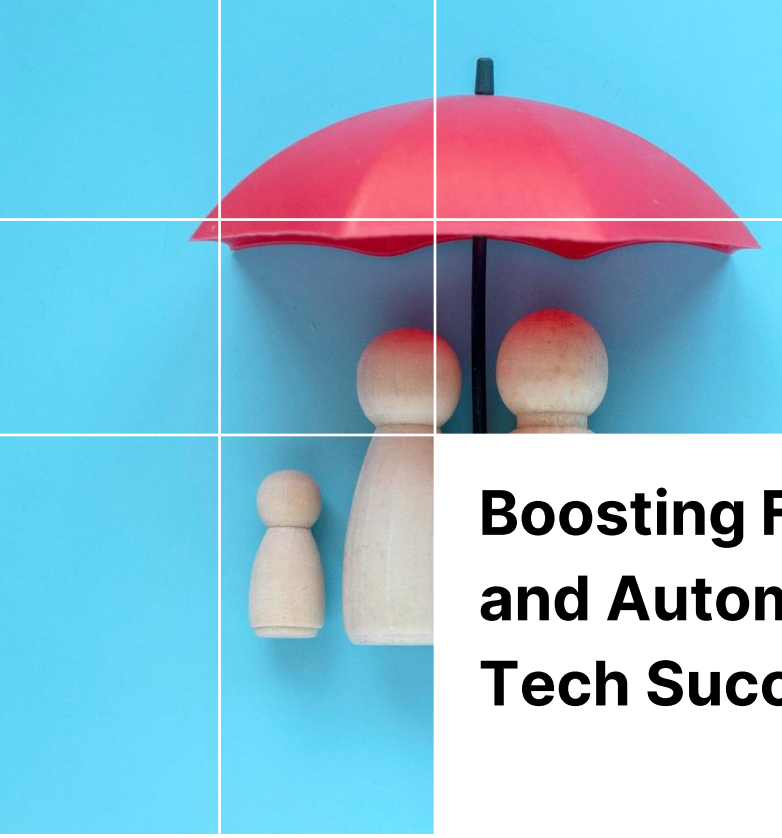

Boosting FWA Detection with ML and Automated Pipelines: A Health Tech Success Story

INDUSTRY

Health Tech, Insurance

CAPABILITY

Data Engineering, Outlier Detection, ML Model Development

FUNCTION

Claims Analytics & Servicing

TECH STACK

ADLS, Azure Synapse, Databricks, Power BI, PostgreSQL, Azure DevOps

Client Overview

A high-growth health tech subsidiary of a major APAC insurer, the client enables payers and providers with digital health solutions, data science capabilities, and tech-enabled transformation across claims and healthcare operations.

The Ask

To support scalable FWA detection, the client aimed to build a high-performance data store capable of ingesting and processing millions of records per day, automating workflows, reducing manual overhead, and significantly improving operational efficiency in claims servicing.

Challenges

Manual audits

Traditional FWA detection relied on human audits, increasing delays and reducing coverage.

Ingestion complexity

The absence of a unified system for managing multi-source file ingestion introduced operational bottlenecks.

Growing data volume

The exponential rise in healthcare claims necessitated a shift to scalable, automated detection frameworks.

Provider diversity

High data complexity across providers requires advanced algorithms for effective detection

Our Solution: Automated Data Ingestion and Pipeline Processing

Automated Data Ingestion

Automate daily ingestion of structured and nested JSON files from ADLS into Azure Synapse tables

Archive ingested files and generate daily ingestion summary reports for tracking.

Alerts and failure handling mechanism

Quality Checking and Monitoring

Perform data quality checks such as fill rates, table grain etc. on daily ingestion files

Automatically reject loading files not meeting data quality thresholds/standards

Create data quality summary report and share it with data leads over an email

Data Transformation

Apply business rules on the ingested data to create gold layer tables for downstream use (dashboarding/modelling etc.)

Clear documentation (such as Data flow diagrams, source to target mapping etc.) improved the reliability and usability of the transformed data.

Feature Engineering

Created an exhaustive feature store generating both batch as well as real-time features

Invoice pdf OCR data was used to create target variables (for ex: radiology cost, pathology cost, doctor cost etc.)

Model Development

The data was categorized into training, validation, and test sets

Various ML regression algorithms were tested to identify the most effective models across claim and line level

Scheduling and Monitoring

End to End automation, Scheduling was managed through Azure Synapse and DevOps

Alerts and notifications ensured reliable workflows with minimal intervention across ingestion, transformation, and modeling workflows.

Outlier Detection Models

Developed a series of models, primarily at the claim's header level, with additional models at the claims line level to capture detailed insights. Outlier classification was based on residual percentage thresholds computed from historical distributions.

Impact Delivered

~80% + reduction in turnaround time by replacing a weeklong manual process with an automated one-day pipeline

Optimized claims processing with low-latency pipelines, freeing up resources for higher-value activities

Enhanced data quality enabled the development of more robust FWA models and improved straight-through processing (STP)

Intelligent risk prioritization sharpened investigative focus and reduced associated costs

Boosted detection accuracy while strengthening compliance and data security standards

Transform How You Detect FWA, With Speed, Precision, and Scale?

START A CONVERSATION

About Us

Tiger Analytics is a global leader in AI and analytics, helping Fortune 1000 companies solve their toughest challenges. We offer full-stack AI and analytics services & solutions to help businesses achieve real outcomes and value at scale. We are on a mission to push the boundaries of what AI and analytics can do to help enterprises navigate uncertainty and move forward decisively. Our purpose is to provide certainty to shape a better tomorrow.

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