

# Black Swan Labs: Month-End Close Exception Finder

AI-powered anomaly detection for financial close processes



# Hybrid Detection Engine



## Statistical Baseline

Z-Score analysis flags extreme outliers ( $3.0\sigma$ ) and moderate drift ( $1.5\sigma$ )



## Business Rules

Catches new vendors and first-time GL codes instantly



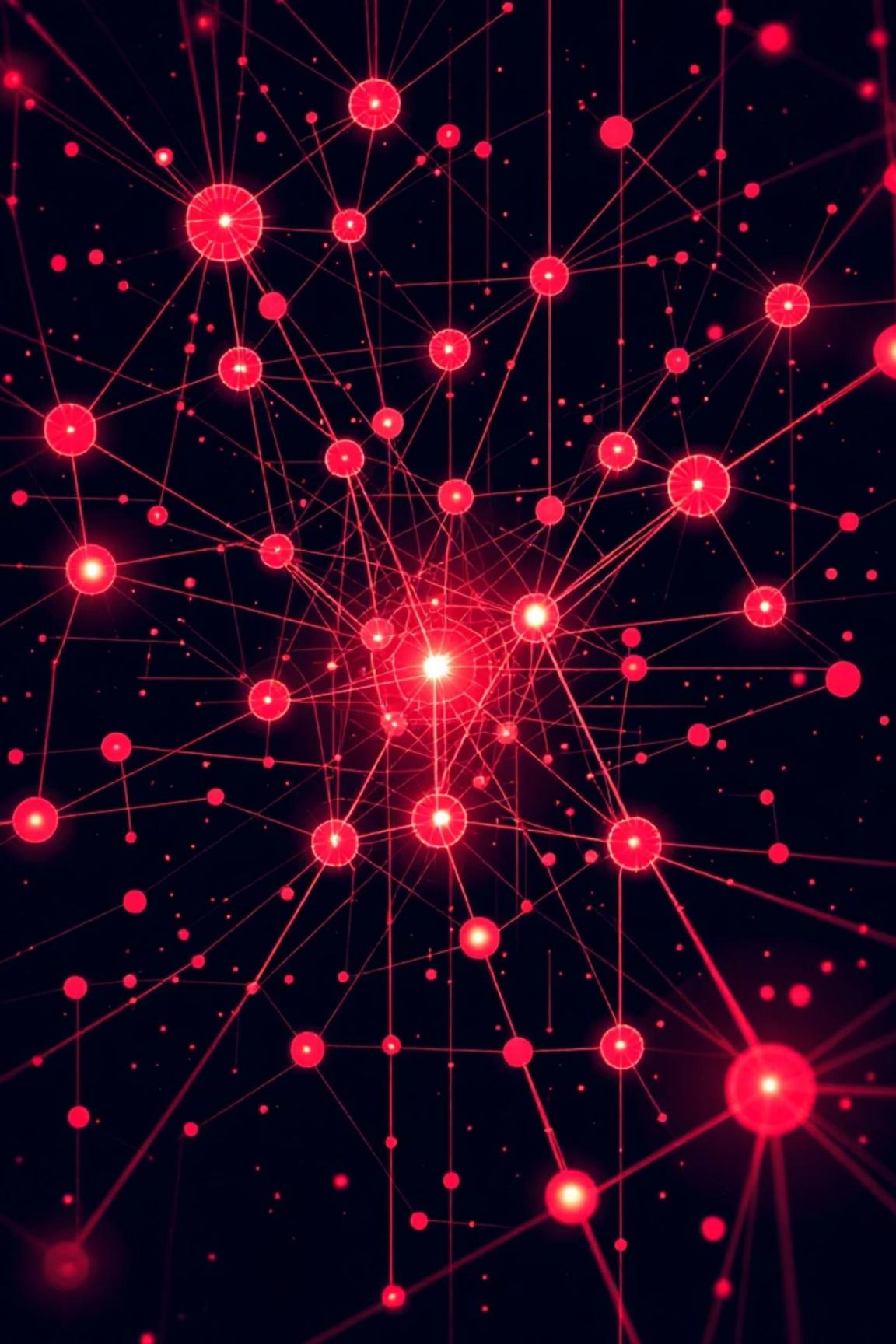
## Isolation Forest ML

Unsupervised learning finds hidden patterns in high-dimensional data



## Generative AI

Gemini/Gemma translates alerts into plain English explanations





★ KEY  
FEATURES

# Professional Audit Platform

## AI Copilot

- Plain English audit notes
- Self-healing API fallback chain
- Executive summaries & action plans

## Smart Reporting

- One-click PDF audit reports
- Key metrics dashboard
- Color-coded severity indicators

## Flexible Input

- Synthetic demo mode with fraud scenarios
- CSV upload (SAP, Oracle, QuickBooks)

## Streamlit Dashboard

- Priority exception queue
- Visual diagnostics with badges
- Full transaction drill-down



## ARCHITECTURE

# System Workflow



## Data Ingestion

CSV upload or synthetic generator with Pandas standardization

## Detection Core

Z-Score + Isolation Forest + Rule Engine

## AI Enrichment

Gemini 2.5 Flash with fallback chain generates explanations

## Reporting

Streamlit UI + ReportLab PDF generation

- ❑ **Tech Stack:** FastAPI • Streamlit • Google GenAI SDK • Scikit-Learn • Pandas • ReportLab

# Business Impact & Future Roadmap

100%

## Anomaly Detection

Catches material anomalies and hidden fraud patterns

90%

## Faster Close

Automates hours of manual review into seconds

Explainable AI empowers junior auditors with white-box transparency

### Next Steps

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#### 1 ERP Integration

Direct API connectors for SAP, Oracle, QuickBooks

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#### 2 Custom Rule Builder

Controllers define specific logic patterns

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#### 3 Feedback Loop

Retrain models based on false positive marking

