TEMPORAL INTELLIGENCE: TRACKING WHEN CUSTOMERS BANK

Analyzing customer behavior through time-based data

THE INTERNAL CLOCK: UNDERSTANDING TEMPORAL PATTERNS

Internal Banking Clock Concept

Customers exhibit predictable transaction timing patterns that form their internal banking clock used for fraud detection.

Temporal Buckets for Analysis

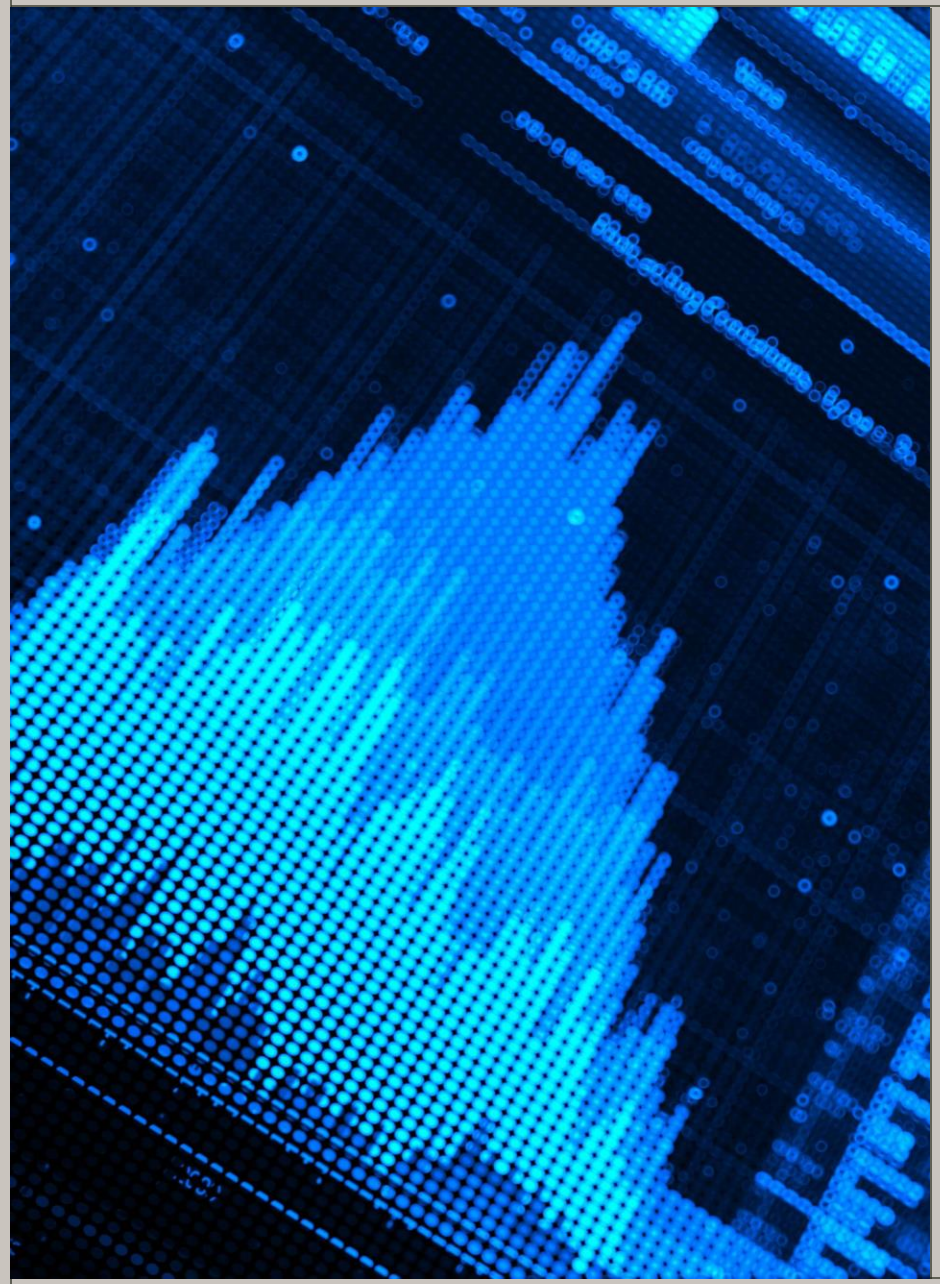
Transactions are categorized into Morning, Afternoon, Evening, and Night to differentiate normal from abnormal activity.

Weekend Transaction Ratio

This metric identifies whether customers typically bank on weekdays or weekends to spot unusual behaviors.

Mode Transaction Hour Metric

Identifies the hour of highest transaction frequency, helping detect deviations from regular customer behavior.



DETECTING VELOCITY ATTACKS AND BEHAVIORAL CONSISTENCY

Velocity Attack Detection

Rapid multiple transactions signal velocity attacks, identified by analyzing time gaps between transactions.

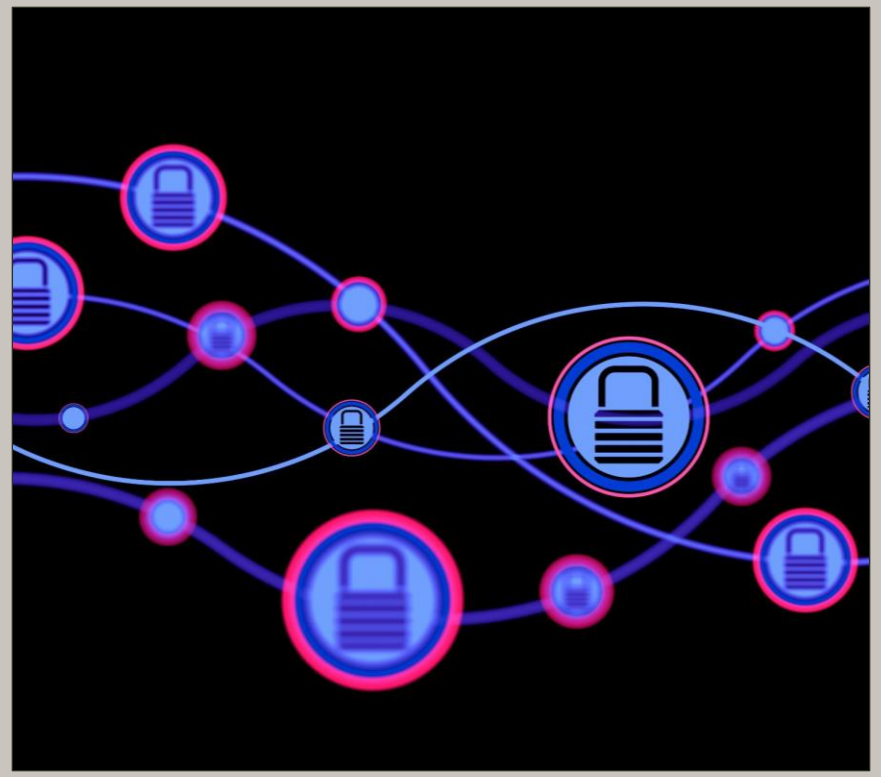
Temporal Consistency Score

Measures transaction timing regularity using standard deviation; low variability indicates consistent behavior.

Integrated Fraud Detection

Combines velocity and timing metrics with other indicators to enhance fraud risk assessment.

THE FOUR PILLARS OF BEHAVIORAL DEFENSE



Entropy in Channel Usage

Entropy measures unpredictability in customer channel choices, identifying chaotic versus stable usage patterns.

Behavioral Signatures Analysis

Analyzes spending habits and transaction volume to detect unusual spikes or deviations from norms.

Geographic Intelligence

Evaluates spatial transaction patterns to detect distant or impossible travel activities.

Temporal Intelligence

Examines timing and speed of transactions to spot activity at odd hours or rapid sequences.

TECHNICAL IMPLEMENTATION OF TEMPORAL LOGIC

Transaction Time Categorization

Transactions are categorized into time-of-day buckets like Morning and Night to identify temporal patterns.

Velocity and Temporal Consistency

Time since last transaction and temporal consistency scores help detect anomalies and routine behaviors.

Feature Engineering for Patterns

Features like weekend ratios and mode transaction hour capture activity trends for machine learning input.

Robust Machine Learning Pipeline

Engineered temporal features integrate with other behavioral data in a scalable fraud detection model.