CASE STUDY

Implemented Machine Learning-based Predictive Analytics for a Digital Wallet Company

CONTATA

OVERVIEW

The client is a digital wallet provider, offering services for money transfers, bill payments, and merchant transactions. With millions of users performing transactions daily, the company aimed to enhance its business strategy through predictive analytics, focusing on customer retention, fraud detection, and transaction pattern analysis.

CHALLENGES

The client was facing the following challenges:

- **High Customer Churn**: Users were frequently abandoning the service, leading to a drop in revenue. Most of the users did a few transactions, and then went silent completely.
- **Fraudulent Transactions**: Not able to identify and prevent fraudulent activities in real-time to safeguard customers and maintain trust.
- **Understanding User Behaviour**: Lacked insights into user behaviour to optimize marketing campaigns, personalize services, and drive user engagement

INDUSTRY
- Financial Technology

SERVICES
- Predictive Analytics
- Machine Learning
- Fraud Detection
- Data Processing
- Data Visualization

TECHNOLOGY
- AWS S3
- Hadoop
- Python
- XG Boost
- Apache Spark
- Kafka
- Tableau

The company was looking for a solution where machine learning (ML)-based analytics could be used to predict customer churn, detect potential fraud, and understand transaction patterns to improve customer experience.

SOLUTION

To address the above-mentioned challenges, Contata started by outlining a comprehensive approach to analyze the client's extensive dataset. This required a methodical organization of data, considering factors such as timeframes and geographical regions. First of all, we leveraged the data collected by the client to load all historical data related to user profiles, transactions, app usage patterns/activities, login frequency, session duration, etc into cloud storage account (partitioned by month and geography). This was huge data (~ 17TB) which spanned 5-6 years.

Secondly, the data was cleaned, imputed after removing outliers and the transaction data was normalized. This was followed by additional features like transaction frequency, total spend per month, and deviation in transaction patterns (used for fraud detection).

Finally, for churn prediction, users were labelled as "churned" or "active" based on their inactivity for more than 30 days. Fraud detection labels were assigned using a history of known fraud incidents.

ML Models Used

Model #1 - Random forest and XGBoost classifiers
For - Customer churn prediction
Features - User demographics, transaction frequency, engagement metrics (app usage, transaction recency).
Training - The model was trained on historical data to predict whether a user would stop using the wallet within the next 30 days. Features like declining transaction frequency and session durations were key indicators of churn.

Model #2 - Anomaly detection algorithms and supervised learning (Logistic regression, neural networks)
For - Fraud detection
Features - Transaction amount, location, time of transaction, type of transaction, device used.
Training - A supervised learning model was trained using labelled fraudulent and non-fraudulent transactions. Anomaly detection was used to catch new fraud patterns by identifying deviations in user transaction behaviour.

Model #3 - Clustering (K-Means) and collaborative filtering for recommendation systems.
For - User behaviour analysis for personalization
Features: Transaction history, user demographics, browsing patterns within the app.
Training: K-Means clustering helped segment users into different groups based on their behaviour (e.g., high-spenders, low-activity users). This segmentation was used to tailor personalized offers and promotions. Collaborative filtering was used to recommend relevant merchants or services.

BENEFITS

- Achieved 85% accuracy in churn prediction.
- Reduced churn by 23% within 6 months.
- Flagged almost 83% of fraudulent transactions in real-time.
- Reduced false positives by 40%.
- Reduced chargeback losses by 25%.
- Increased Customer engagement by 43%.

About Contata

Contata Solutions is a trusted leader in technology and digital innovation. Through our work in data engineering, data analytics, machine learning, marketing automation and app development, we deliver solutions that address complex problems in ways that are simple, insightful and impactful.

Our promise and value proposition to our customers is simple: we leverage our deep technical expertise and global presence to bring software products and data-driven decision capabilities to life.

Founded in 2000, Contata is a privately-held company headquartered in Minneapolis that serves clients globally from offices in the United States and India.