Leveraging Financial Mobile App Interaction Data for Credit Risk and First-Party Fraud Detection

Abstract

Traditional credit risk evaluation often relies on historical credit data and financial records, which may not fully capture real-time user behavior and emerging risk patterns. This study proposes a novel approach that leverages user interaction data from mobile and web applications to enhance both credit risk assessment and the detection of first-party fraud, specifically No Intent to Pay (NITP) fraud. By analyzing user interactions up to 45 days before credit applications, we engineer a comprehensive set of behavioral features that reveal patterns linking user app behavior to financial risk.

Key behavioral indicators include session dynamics, device attributes, interaction frequency, sudden activity spikes, user engagement velocity trends and application abandonment trends. Spike metrics capture abrupt increase in user engagement, which may indicate impulsive behavior or heightened interest. Velocity metrics analyze the speed and clustering of user actions, helping to distinguish between organic engagement and suspicious activity. Cancellation metrics track abandoned applications, which can signal indecisiveness or potential risk tendencies.

To validate this approach, we trained both Logistic Regression and LightGBM models, demonstrating improved predictive accuracy in identifying high-risk borrowers and NITP fraud cases. Our methodology is adaptable, supporting various machine learning models, including interpretable approaches that ensure regulatory compliance.

By integrating these behavioral insights, lenders can refine risk assessment processes, reduce fraud losses, and enhance decision-making efficiency. This study underscores the value of digital interaction data in complementing traditional financial data for a more holistic evaluation of creditworthiness and fraud detection.

Authors & Affiliations

Mr Jyoti Prakash Bal[1]
[1]Revolut Group Holdings Ltd, Madrid, Spain