Benchmarking anomaly detection techniques in the fraud detection domain*

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I. INTRODUCTION

In the realm of digital transactions, the significance of detecting fraud at its earliest is paramount. Supervised learning models are often the preferred choice, renowned for their accuracy, but they hinge on the availability of labeled data. This dependency can introduce operational delays, leaving a window where transactions might be exposed to unchecked fraudulent activities.

To address this gap, there's a growing interest in leveraging unsupervised learning. Without the need for labeled data, unsupervised anomaly detection techniques offer a promising avenue, especially when one considers that fraud typically surfaces as statistical anomalies amidst legitimate transactions.

Drawing from open-source datasets, this report sets out to critically evaluate a range of unsupervised anomaly detection methods in the context of fraud detection. Our approach is methodical: starting with a detailed data exploration, we then benchmark against a supervised baseline, and finally, analyze the performance of both classical and deep learning unsupervised models. The overarching aim is to ascertain the potential of unsupervised techniques in offering interim protection against fraud during periods when supervised models are not yet feasible.

II. DATA EXPLORATION

REFERENCES

Please number citations consecutively within brackets [1].

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Fig. 1. Example of a figure caption.

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