PROJECT PROPOSAL

TrustGuard ML: Enhancing Open Metaverse Finance with Machine Learning for Secure and Transparent Transactions"

**INTRODUCTION: -**

Open Metaverse, a rapidly expanding network of interconnected virtual worlds, offers unparalleled opportunities for financial transactions. Yet, as this emerging ecosystem evolves, it encounters significant hurdles in maintaining trust and transparency. Challenges such as fraudulent activities, financial risks, and the lack of clear user behavior patterns threaten to impede its progress and widespread acceptance. Addressing these concerns, our project seeks to harness the capabilities of machine learning, focusing on classification techniques, to develop a sophisticated system that scrutinizes blockchain financial transactions within the Open Metaverse.

Our proposed system aims to achieve three critical objectives: detecting fraudulent transactions by identifying suspicious patterns and anomalies, assessing transaction risks through the categorization of risk profiles, and analyzing user behavior to enhance security, personalize financial services, and improve user experiences. Through the meticulous classification of transactions for fraud detection, risk assessment, and user behavior analysis, this project aspires to bolster the security and transparency of Open Metaverse finance, setting the stage for a safer and more user-centric virtual financial landscape.

**DATASET: -** The dataset comprises 78,600 entries, each depicting a transaction within the metaverse. These entries are characterized by various attributes including the Timestamp, Hour of the Day, Sending and Receiving Addresses, Transaction Amount, Type, Location Region, and IP Prefix, along with user-centric data like Login Frequency, Session Duration, Purchase Patterns, Age Group, Risk Score, and potential Anomalies.

Source: <https://www.kaggle.com/datasets/faizaniftikharjanjua/metaverse-financial-transactions-dataset/data>

**SOFTWARE & TOOLS: -**

**Programming Language:** Python, **Data Processing Libraries:** Pandas & NumPy, **Machine Learning Library:** Scikit-learn, **Visualization Tools:** Matplotlib & Seaborn, **Development Environments:** Jupyter Notebook**.**

**TEAM CONTRIBUTIONS: -**

1. **Praveen Seelam & Rachana Mahapatra -** Data Exploration and Model Development
2. **Kalyan Teja Adapala & Venkata Prudhvi Marpina -** Data Preprocessing and Model Training
3. **Vekata Adithya Kella & Sucharitha Kakileti -** Model Evaluation and Project Documentation

**SCHEDULES & MILESTONES: -**

* Phase 1: Data Exploration and Preprocessing (1st Apr – 7th Apr)
* Phase 2: Model Development and Training (7th Apr – 21st Apr)
* Phase 3: Model Evaluation (22nd Apr – 28th Apr)
* Phase 4:Project Documentation and Reporting (28th Apr – 4th May)