



*"Your own Financial Friend"*





# Introduction

The financial industry is increasingly reliant on sophisticated tools to track, analyze, and forecast financial data. Traditional finance dashboards, while effective for real-time data visualization, often fall short in providing users with predictive insights that could guide strategic financial decisions. As financial markets and data become more complex, there is a growing demand for a comprehensive solution that not only visualizes financial data but also leverages advanced machine learning algorithms to predict future trends. This project seeks to address this gap by developing a Finance Dashboard that integrates predictive analytics, enabling users to make data-driven decisions with confidence.



# “Problem Statement”

Development of a Finance Dashboard with Integrated  
Predictive Analytics Using Machine Learning and MERN  
Stack



# “ Solution

The primary solution of this project is to develop a cutting-edge Finance Dashboard application that combines real-time financial data visualization with predictive analytics. Built using the MERN (MongoDB, Express.js, React.js, Node.js) stack, this application will provide users with an intuitive interface to manage and forecast financial trends. The project will also utilize Vite as a modern frontend development environment, Redux Toolkit for efficient state management, Material UI for a polished user interface, and Recharts for dynamic data visualization. The backend will be developed using Node.js and Express.js, with MongoDB serving as the database to store and manage large volumes of financial data.



# Technical Approach

## Frontend

Use Vite, React.js, Material UI, and Redux Toolkit for UI and state management.

Visualize data with Recharts.



## Backend

Build with Node.js and Express.js.

Store data in MongoDB.



## Machine Learning

Train models on historical data and deploy using TensorFlow.js or via APIs

## “Our USP”

## Interactive Data Visualisation

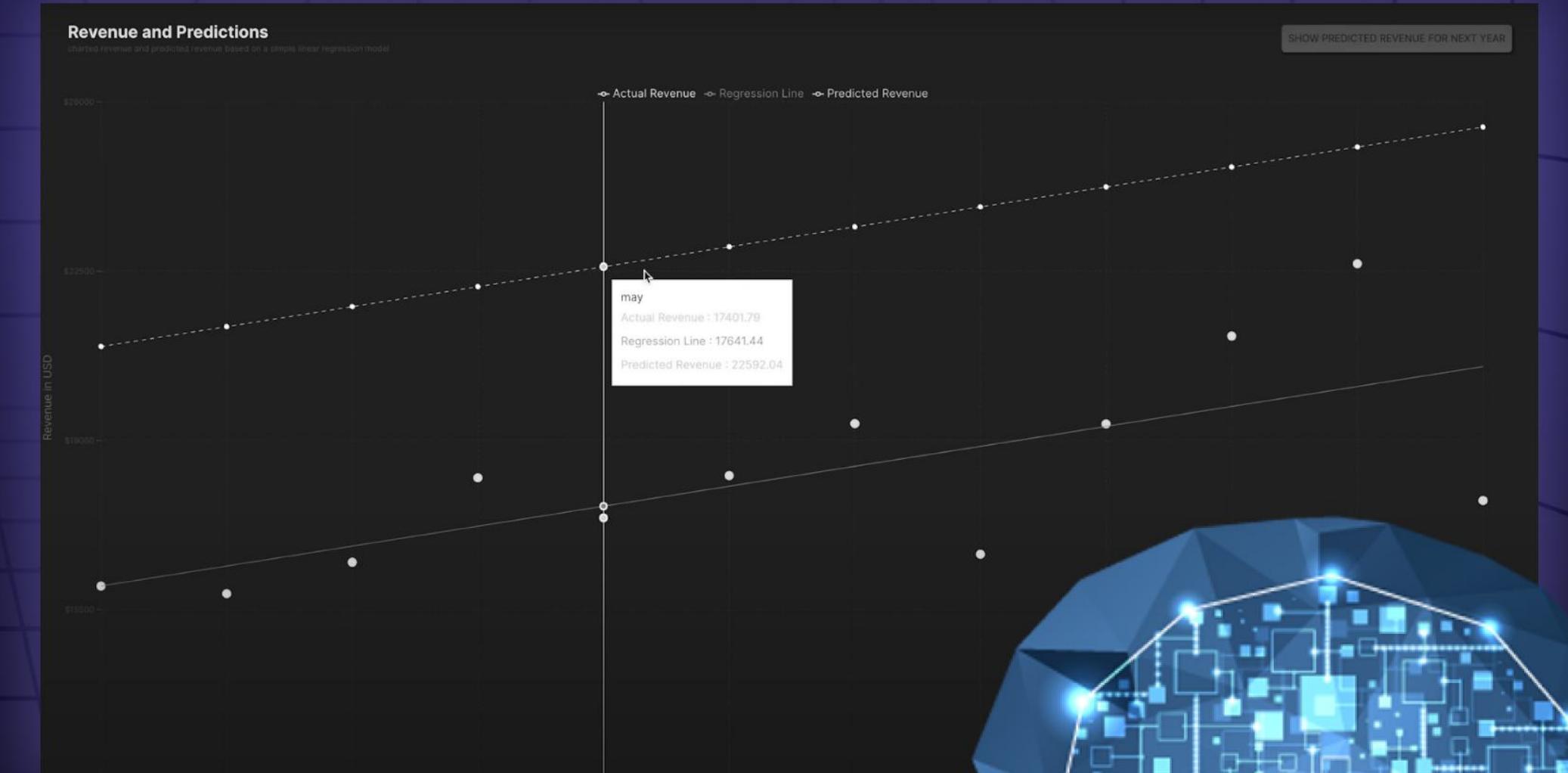
The dashboard will offer dynamic and interactive charts using Recharts, allowing users to visualize financial data, trends, and patterns in real-time. Users will be able to customize the charts to suit their specific needs, such as filtering by date range, financial metrics, and more.



# “Our USP”

## 02 Predictive Analytics with Machine Learning

A key feature of the dashboard will be the integration of machine learning models that analyze historical financial data and predict future trends. These models will provide users with actionable insights, helping them make informed financial decisions. The predictions will be visualized alongside real-time data, offering a comprehensive view of financial performance.

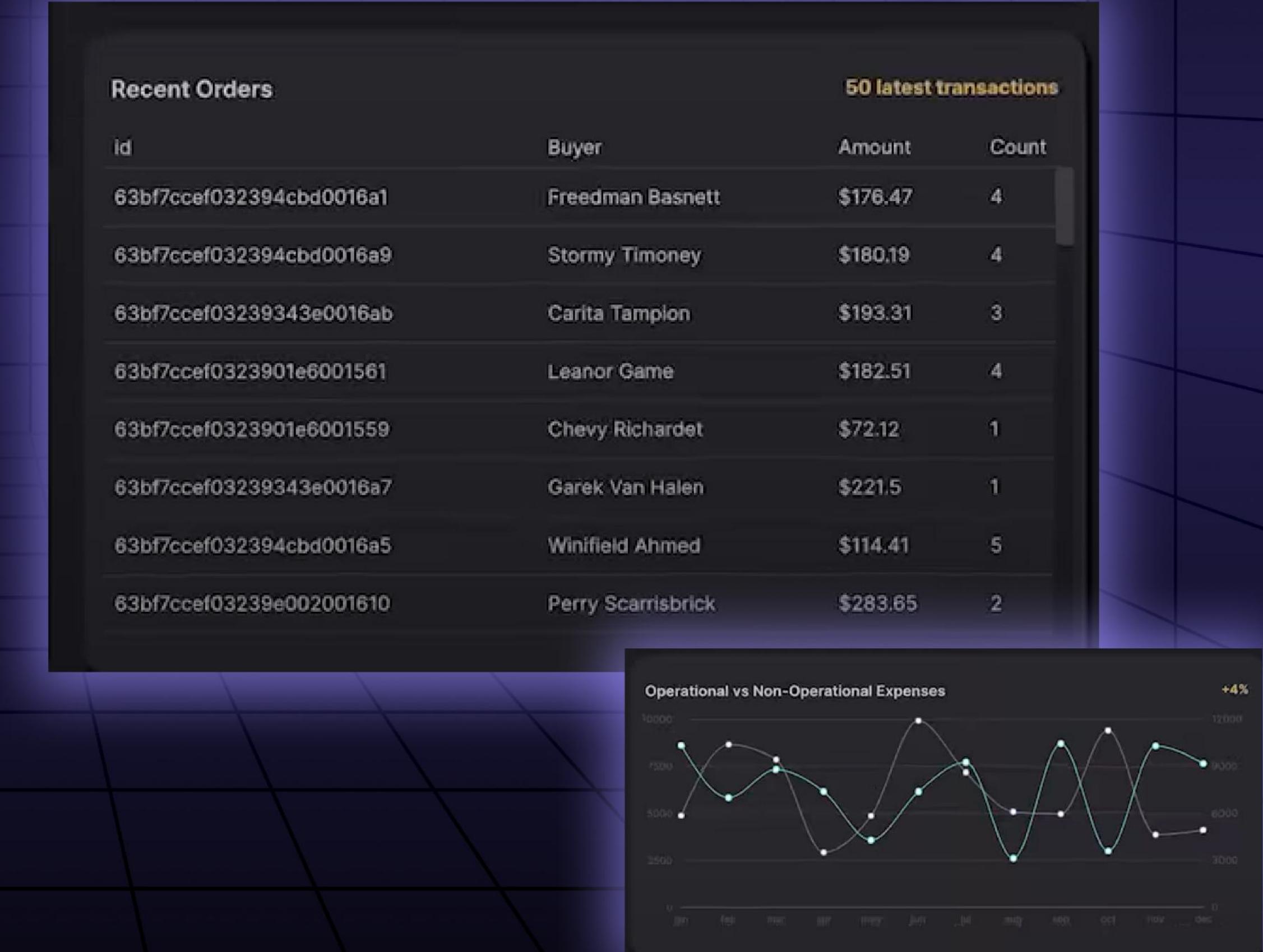


## “ Our USP ”

03

## Scalability

As the application grows, it must be able to handle increasing amounts of data and users without compromising performance. This requires careful consideration of the architecture and database design to ensure scalability.





# “Target Audience”

## Financial Professionals

(Financial analysts, advisors, and portfolio managers)

To track market trends, manage portfolios, and predict financial outcomes for clients.

## Business Owners

(Small to medium-sized business owners, CFOs, and executives)

To monitor business finances, forecast cash flow, and make informed strategic decisions.

## Educators and Students

(Professors and students in finance and economics)

To use as an educational tool for learning about financial data analysis and predictive modeling.



# Scalability

Architecture: Microservices and a robust API layer enable independent scaling of components.

Database: MongoDB's sharding supports horizontal scaling for larger datasets.

Frontend: React.js and Redux Toolkit allow for managing complex UIs as the user base grows.

ML Models: Scalable deployment on cloud platforms ensures handling of increasing prediction requests.

Optimization: Load balancing, caching, and strong security measures maintain performance and security as the application scales.

# Feasibility

MERN Stack: Well-suited for building dynamic web applications with the necessary features.

Vite & ML Integration: Streamlines development and allows for practical machine learning integration using existing libraries.

Development Resources: Readily available skills and tools make the project achievable within a reasonable timeframe.

Data Availability: Access to financial data is crucial and feasible through APIs and historical datasets.



# “ Impact ”

The development of this Finance Dashboard with integrated predictive analytics will empower users to make informed and strategic financial decisions. By combining real-time data visualization with predictive insights, the application will serve as a valuable tool for both individual users and businesses to track, analyze, and forecast their financial performance. This project has the potential to significantly enhance financial decision-making processes, providing users with a competitive edge in the fast-paced financial industry.

# “Team ThreeBugs”



**Hardik Agrawal**

RA2311003010340



**Ashmit Bhadaria**

RA2311003010286



**Atharv Garg**

RA2311003010437