SYMBIOSIS INSTITUTE OF TECHNOLOGY (SIT)
Constituent of SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

Project Title: BlockVote – A Secure & Transparent Blockchain-Based Voting System with Data Analytics

INTRODUCTION

- A blockchain-based voting system is a secure, decentralized, and tamper-proof platform for transparent elections. It ensures immutable records, cryptographic security, and decentralized vote verification, preventing fraud.
- By leveraging smart contracts, decentralized storage, and data analytics, it enhances trust, real-time auditing, and voter anonymity, making elections efficient and verifiable.
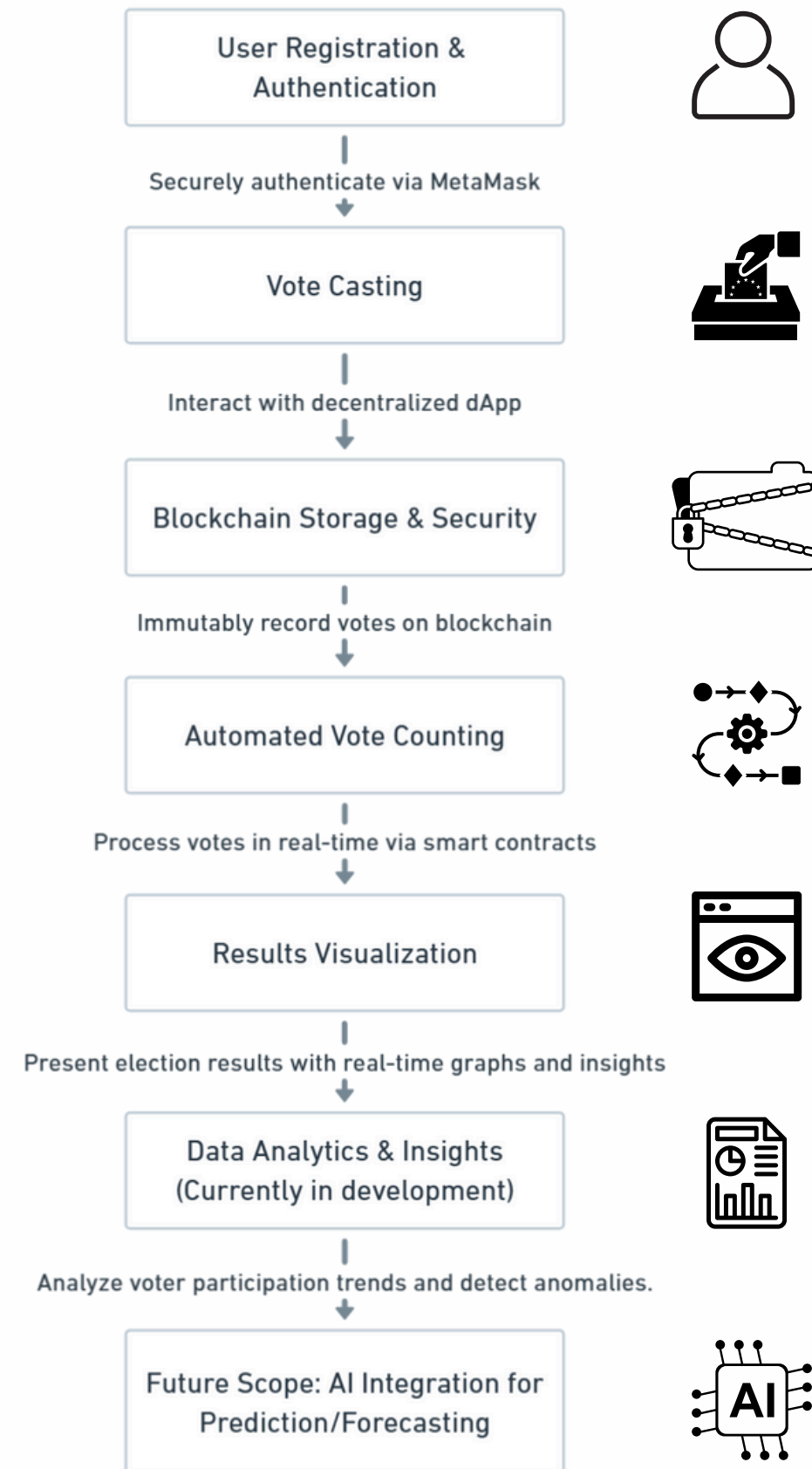
OBJECTIVE & AIM

- Secure & Transparent Elections: Blockchain's immutable ledger prevents vote tampering and unauthorized changes.
- Automated Vote Counting: Smart contracts enable instant tallying and real-time election insights.
- Enhanced Accessibility: Enable remote voting for individuals with OCI status and those outside their registered voting state, ensuring broader participation.
- Data-Driven Insights: Analytics dashboards track voter turnout, trends, and anomalies in real time.

Made by: Kewal Nanavati & Dhairya Mehra

METHODOLOGY

- **Project Framework Diagram**

User Registration & Authentication

Securely authenticate via MetaMask

Vote Casting

Interact with decentralized dApp

Blockchain Storage & Security

Immutably record votes on blockchain

Automated Vote Counting

Process votes in real-time via smart contracts

Results Visualization

Present election results with real-time graphs and insights

Data Analytics & Insights (Currently in development)

Analyze voter participation trends and detect anomalies.

Future Scope: AI Integration for Prediction/Forecasting

TECHSTACK :

- Blockchain: Ethereum / Polygon
- Smart Contracts: Solidity
- Authentication: MetaMask for secure voter identity verification, Zero-Knowledge Proof
- Frontend: React.js + Ethers.js for blockchain interaction
- Data Analytics & Visualization: Python (Pandas, Matplotlib)

Sustainable Impact of Our Voting System

- SDG 9 (Industry, Innovation, and Infrastructure): Leverages blockchain technology to build resilient, innovative, and sustainable voting infrastructure.
- SDG 11 (Sustainable Cities and Communities): Promotes inclusive and accessible systems, ensuring maximum participation in elections.
- SDG 12 (Responsible Consumption and Production): Eliminates paper-based voting, reducing waste and promoting eco-friendly digital solutions.
- SDG 13 (Climate Action): Reduces the carbon footprint of elections by minimizing resource-intensive processes like printing, transportation, and manual counting.
- SDG 16 (Peace, Justice, and Strong Institutions): Enhances transparency, trust, and accountability in democratic processes.

CONCLUSION & FUTURE SCOPE

- BlockVote ensures secure, transparent, and tamper-proof elections through blockchain.
- Currently, data analytics is under development, focusing on voter trends and participation patterns. In the future, we aim to integrate AI-powered anomaly detection and predictive analytics to enhance election security and forecasting.