Decentralized Voting System

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What Is This Project?

- A blockchain-based voting application

- Enables secure, transparent elections without a central authority

- Uses Ethereum test networks for deployment

- Integrates with MetaMask for user interaction

Why Decentralize d Voting?

Problems with traditional voting

- Centralized systems can be tampered with
- Lack of transparency
- Blockchain advantages
- Immutable ledger
- Transparent and traceable results
- No single point of failure

Key Features

- Create Elections
- Vote Securely
- MetaMask Integration
- ERC-20 Participation Rewards
- Uses Solidity + Hardhat for smart contracts

Tech Stack

| Component	Technology
Smart Contracts	Solidity
Blockchain Dev	Hardhat
Frontend	JavaScript / Web3
Wallet Integration	MetaMask
Package Management	npm

How It Works

1. Deploy smart contract using Hardhat
2. Frontend connects via Web3 and MetaMask
3. Create election — set title, candidates, duration
4. Voters connect wallet & vote
5. Votes recorded on blockchain
6. Participants receive tokens (ERC-20)
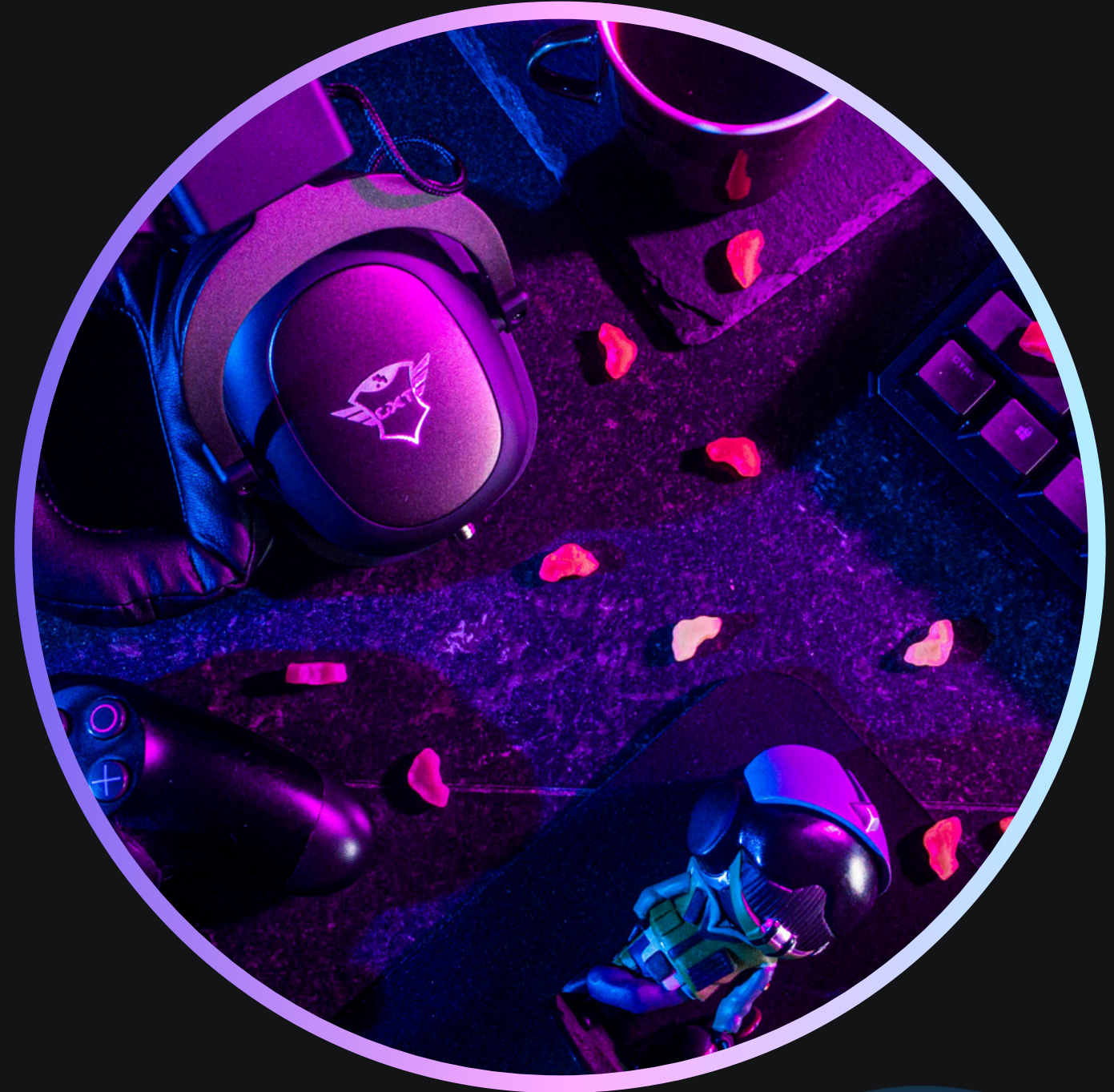
Benefits

1. Security: Immutable vote records
2. Transparency: Everyone can verify results
3. User-Friendly: MetaMask makes it easy to interact
4. Incentivized Participation: Token rewards

Limitations & Future Work

✗ Needs testnet ETH for transactions
✗ Currently on testnet only
✗ Could expand features like:

- Role-based access (admins)
- Real-time result dashboard
- Multi-chain support
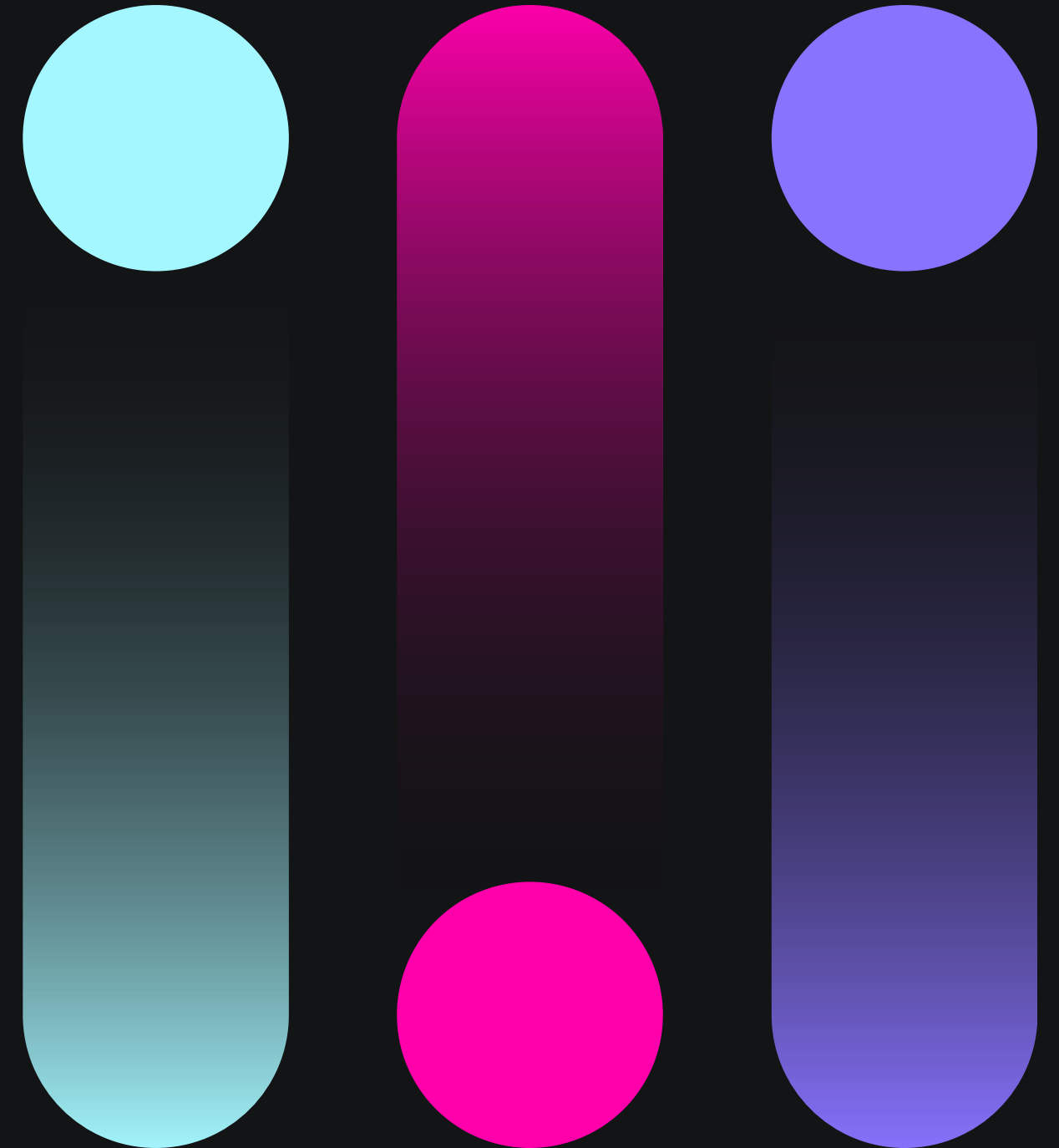
Conclusion

- A full decentralized voting prototype
- Excellent hands-on use of blockchain tech
- Practical for demos and learning about smart contracts