DeFi Watchdog - Smart Contract Security Guardian

Overview

DeFi Watchdog is an autonomous security solution that protects blockchain ecosystems through continuous smart contract monitoring and analysis. Powered by the ZerePy framework, our AI agent performs both on-chain and social actions to identify vulnerabilities, prevent exploits, and alert communities about potential risks.

Unlike traditional audits that provide only point-in-time security, DeFi Watchdog delivers 24/7 protection that evolves alongside emerging threats. Our platform leverages high-performance blockchain capabilities to enable real-time contract analysis, blockchain-specific optimizations, and immediate protective actions when vulnerabilities are detected.

Linea Integration

DeFi Watchdog now secures the Linea network, bringing autonomous smart contract security to one of the most promising Ethereum Layer 2 scaling solutions. By integrating with Linea's infrastructure, our AI-powered guardian provides specialized protection tailored to Linea's unique zkEVM architecture and growing DeFi ecosystem.

Linea Contract Address

The DeFi Watchdog monitoring contract is deployed on Linea at:
0x497ACc3197984E3a47139327ef665DA3357187c9

https://lineascan.build/address/0x497ACc3197984E3a47139327ef665DA3357187c9

Key Features

- **Real-time Contract Analysis**: Analyzes smart contracts as they're deployed and continuously monitors for emerging threats
- **Blockchain-Specific Optimizations**: Provides tailored optimization suggestions for different blockchain architectures
- **Autonomous Monitoring**: Uses the ZerePy framework to monitor ecosystems without user intervention
- **Community Protection**: Immediately alerts communities and developers when vulnerabilities are detected
- **Dual-Action System**: Performs both on-chain actions (flagging, prevention) and social actions (alerts, guidance)

Linea-Specific Features

Our integration with Linea includes specialized capabilities:

- **Linea-Optimized Analysis**: Security scanning calibrated for Linea's zkEVM environment

- **Gas Efficiency Recommendations**: Tailored optimization suggestions that account for Linea's fee structure
- **Ecosystem Monitoring**: Continuous surveillance of Linea's growing DeFi landscape
- **Rapid Response**: Leveraging Linea's fast finality for immediate protective actions

Project Structure

```
defi-watchdog/
├── src/
│   ├── pages/
│   │   ├── audit.js                  # Main contract audit page
│   │   ├── dashboard.js              # Dashboard with agent status
│   │   ├── api/
│   │   │   ├── analyze.js            # Standard analysis endpoint
│   │   │   ├── zerebro/
│   │   │   │   ├── analyze.js        # Blockchain-specific analysis
│   │   │   │   ├── status.js         # ZerePy agent status
│   │   │   │   ├── generate-patch.js # Optimized fixes
│   │   │   │   └── monitor/
│   │   │   │       └── toggle.js     # Toggle monitoring
│   │   │   └── linea/
│   │   │       └── gas-optimizations.js # Linea optimizations
│   ├── components/
│   │   └── layout/
│   │       └── Header.js             # Updated header with wallet
│   ├── hooks/
│   │   ├── useWallet.js              # Wallet integration hook
│   │   └── useContract.js            # Contract interaction
│   ├── context/
│   │   └── WalletContext.js          # Wallet provider
│   └── lib/
│       └── zerebro/
│           └── agent.js              # ZerePy agent utilities
└── contracts/
    └── DeFiWatchdog.sol              # Main contract deployed on Linea
```

Setup Instructions

1. **Install Dependencies**

```
npm install
```

2. **Start the Development Server**

```
npm run dev
```

Open http://localhost:3000 with your browser to see the result.

API Endpoints

Standard Analysis Endpoint

- **Path:** `/api/analyze`
- **Method:** POST
- **Description:** Analyzes contracts on Ethereum, with forwarding to ZerePy for Linea contracts

ZerePy Analysis Endpoint

- **Path:** `/api/zerebro/analyze`
- **Method:** POST
- **Description:** Provides blockchain-specific contract analysis

ZerePy Status Endpoint

- **Path:** `/api/zerebro/status`
- **Method:** GET
- **Description:** Returns ZerePy agent status and capabilities

Linea Gas Optimizations Endpoint

- **Path:** `/api/linea/gas-optimizations`
- **Method:** GET
- **Description:** Retrieves Linea-specific gas optimization suggestions

Security Features

- **Vulnerability Detection**: Identifies common security issues including reentrancy, overflow/underflow, and access control problems
- **Gas Optimization**: Provides suggestions for reducing gas costs specific to each blockchain
- **Risk Scoring**: Assigns a comprehensive risk score to contracts based on multiple security factors
- **Historical Analysis**: Tracks changes in contract security over time
- **Custom Rules Engine**: Allows for the creation of custom security rules and checks

About the Team

DeFi Watchdog is built by a team of blockchain security experts and AI specialists led by Mohamed, a fullstack developer and project manager passionate about blockchain security. The team is focused on creating tools that make blockchain ecosystems safer and more accessible.

Contact & Support

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