Aegis AI

Pioneering Blockchain Security with
AI-Enabled Audit Solutions.

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2023

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About **Aegis AI**

Aegis AI is a revolutionary tool designed to bring accessibility, transparency, and trust to the world of blockchain technology. With the increasing use of smart contracts in various industries, the need for efficient and user-friendly auditing tools has never been more critical. Aegis AI is the solution that bridges the gap between complex smart contract code and non-technical users, making it easy for anyone to ensure the security and reliability of their digital assets and transactions.

- Run quick audits from dApp using AI
- Generate detailed audit reports
- Monitor of smart contracts and protocols in real time.
- Automated Penetration Testing.

Introduction

Aegis AI offers an advanced AI-driven solution for smart contract auditing, designed to enhance the security of blockchain contracts with ease. Our platform caters to users of all skill levels, enabling thorough vulnerability assessments without requiring extensive coding knowledge. This user-friendly tool simplifies the auditing process, efficiently detecting potential security risks and malicious code within smart contracts.

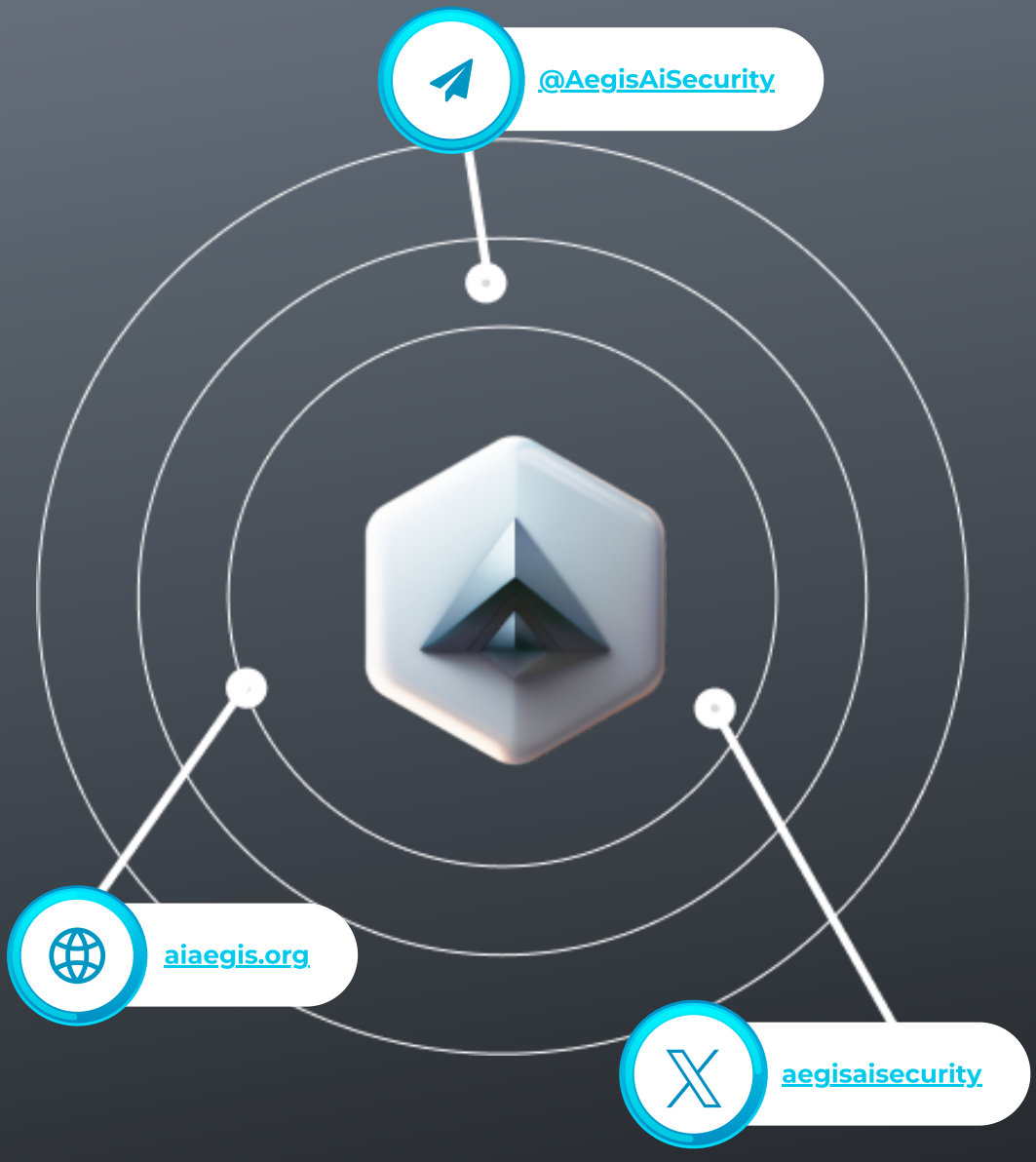
By addressing critical security concerns, Aegis AI plays a vital role in fostering trust and growth in blockchain technology. Our solution is integral to promoting wider adoption of smart contracts, ensuring their reliability and integrity across various blockchain applications.

Project Overview

Aegis AI

Project Name	SentimentAI
Symbol	SENT
Address	0x8DBD1331B1DE57835b24657ed21D0691e2E7362A
Type	ERC-20
Decimals	18
Total Supply	1,000,000,000
Market Cap	9,197,000.00
Exchange Rate	0.009197
Holders	1,729

Social Media

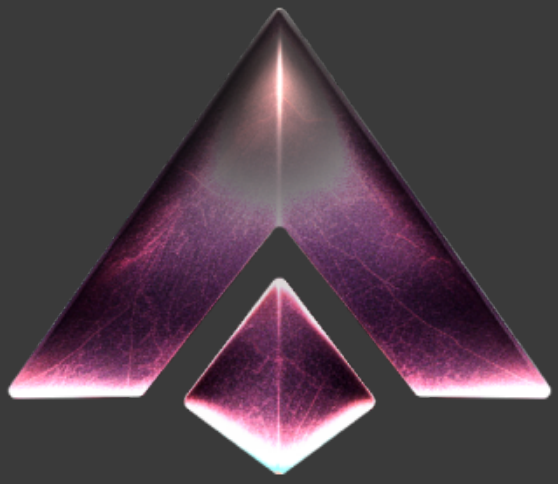


Audit Summary

Version	Delivery Date	Changelog
1.0	December 28, 2023	Layout project Automated / Manual Security Testing Summary

Note

This Audit report consists of a security analysis of the SentimentAI smart contract.



Vulnerability and Risk Level

Risk assessment gauges the likelihood and impact of potential threats exploiting vulnerabilities. It is quantified using **CVSS version 3.0** standards, providing a clear metric for organizational or system security evaluation.

Severity Level	CVSS Score	Description	Recommended Action
Critical	9-10	Severe threat with potential for major losses or complete failure.	Immediate action required to mitigate and resolve.
High	7-8.9	Can seriously compromise functionality and security, allowing potential exploitation.	Address promptly to prevent exploitation.
Medium	4-6.9	Impact certain aspects, potentially leading to unintended behaviors.	Correct within a reasonable timeframe to maintain integrity.
Low	2-3.9	Less likely to significantly impact performance but should be addressed.	Consider remediation, may accept risk based on context.
Information	0-1.9	Highlights areas for improvement or optimization, no security risk.	Review for potential enhancements, no immediate action.

Auditing Strategy and Techniques

In our review process, we leverage advanced, finetuned Large Language Models (LLMs) alongside sophisticated LLM agent mechanisms. This approach ensures comprehensive examination of the smart contract repository, targeting security vulnerabilities, code integrity, and adherence to the latest standards and best practices.

Our review blends the precision of machine learning models with human oversight. The finetuned LLMs efficiently parse and analyze every file, providing in-depth insights and faster results, which are then meticulously validated by our team of experts for accuracy and relevance.

Methodology

The audit of the smart contract SentimentAI was conducted using a systematic and risk-based approach. Emphasis was placed on essential aspects such as security, code quality, compliance, gas efficiency, and overall functionality.

Security Assessment

Our approach integrates advanced AI-driven techniques, primarily leveraging Large Language Models (LLMs) and GPT agents. This blend of AI tools provides an in-depth analysis, identifying and evaluating potential security vulnerabilities. Alongside this, we conduct targeted manual reviews to validate and contextualize the AI-generated insights, ensuring comprehensive and accurate security assessments.

Code Quality Evaluation:

LLMs played a key role in examining the code's quality, focusing on readability and maintainability. The AI analysis, combined with our expert review, ensured compliance with smart contract development standards.

Compliance Review:

Our audit included an LLM-assisted compliance check against industry standards like ERC-20 and ERC-721. This process pinpointed deviations, providing a basis for our detailed compliance recommendations.

Gas Efficiency Analysis:

AI tools evaluated the contract's gas consumption, offering insights into its execution efficiency. These findings were enhanced by expert analysis to suggest practical optimization strategies.

Functionality and Logic Verification:

The audit applied LLMs to validate the contract's functionality and logic, ensuring its operations matched the intended design. This automated check was complemented by thorough manual testing.

Overall Security

Honeypot

Honeypots are smart contracts that appear to have an obvious flaw in their design, which allows an arbitrary user to drain ether (Ethereum's cryptocurrency) from the contract, given that the user transfers a priori a certain amount of ether to the contract.

Is it a honeypot?	✅ The contract is not a Honey Pot
Description	Owner cannot drain your wallet through honeypot

Antiwhale

Certain features adopted to prevent large holders (aka whales) from exerting excessive influence or engaging in manipulative behaviors within the token ecosystem. Some examples are setting maximum transaction limits, imposing penalties for transactions exceeding some specific threshhold, imposing a more equitable distribution of tokens

Can whales dump?	✅ The contract is Anti Whale
Description	Whales can't dump

Listing

Listings on multiple decentralized exchanges (DEX) with good amount of liquidity is a good sign

Is it on a dex?	✅ The contract is listed
Description	You can swap tokens on dex

Opensource

Open source contract is contract with source code that anyone can inspect, modify, and enhance.

Is code available?	✅ The contract is Open Source
Description	Contract code can be reviewed and audited by anyone

Proxy

Proxy contract is a contract that delegates calls to another contract. It is a contract that has a fallback function that calls another contract.If the proxy contract is well-designed, secure, and serves a legitimate purpose (such as upgradability or modularity), it may not raise concerns. However, if the proxy introduces vulnerabilities, lacks transparency, or is used in a way that compromises the security of the token, it could be flagged during a thorough audit.

Is it a proxy?	✅ The contract is not a Proxy contract
Description	This is a full contract

Ownership

Is ownership is renounced?	❌ Contract has an owner
Description	The owner has not renounced the ownership that means that the owner retains control over the contract's operations, including the ability to execute functions that may impact the contract's users or stakeholders. This can lead to potential issues.
Comments	**Centralization** The owner has significant control over contract's operations.

Note

If the contract is not deployed then we would consider the ownership to be not renounced. Moreover, if there are no ownership functionalities, ownership is automatically considered renounced.

Ownership Privileges

These functions can be dangerous. Please note that abuse can lead to financial loss. We have a guide where you can learn more about these Functions.

Minting Privileges

Minting is the process of creating new tokens. This is usually done by the contract owner, and the newly minted tokens are added to the owner's balance. Minting is usually done to increase the total supply of a cryptocurrency or token.

Can mint new tokens?	✅ The owner cannot mint new tokens
Description	The owner cannot mint new tokens

Burning Tokens

Burning tokens is the process of permanently destroying a certain number of tokens, reducing the total supply of a cryptocurrency or token. This is usually done to increase the value of the remaining tokens, as the reduced supply can create scarcity and potentially drive up demand.

Can burn tokens?	❌ The owner can burn tokens
Description	The owner is able to burn tokens without any allowance

Blacklist addresses

Blacklisting addresses in smart contracts is the process of adding a certain address to a blacklist, effectively preventing them from accessing or participating in certain functionalities or transactions within the contract. This can be useful in preventing fraudulent or malicious activities, such as hacking attempts or money laundering.

Can blacklist addresses?	✅ Owner cannot blacklist addresses
Description	The contract owner cannot blacklist addresses

Fees and tax

In some smart contracts, the owner or creator of the contract can set fees for certain actions or operations within the contract. These fees can be used to cover the cost of running the contract, such as paying for gas fees or compensating the contract's owner for their time and effort in developing and maintaining the contract.

Is there a tax?	⚠ Contract takes a tax
Description	There is a tax to the contract owner when you buy and sell the token **Tax on buy:** 5% **Tax on sell:** 6.710000000000001%

Self Destruct

In a smart contract, the selfdestruct feature refers to a specific function that, when executed, destroys the contract and removes it from the blockchain. This action renders the contract inoperative and ends all its functions. When a contract is self-destructed, any remaining balance in the contract is sent to a designated address, and the contract's code and storage are removed from the state of the blockchain.

Can self destruct?	✅ Contract cannot self destruct
Description	The smart contract does not include a self-destruct feature.

External / Public functions

External/public functions are functions that can be called from outside of a contract, i.e., they can be accessed by other contracts or external accounts on the blockchain. These functions are specified using the function declaration's external or public visibility modifier.

State variables

State variables are variables that are stored on the blockchain as part of the contract's state. They are declared at the contract level and can be accessed and modified by any function within the contract. State variables can be denied with a visibility modifier, such as public, private, or internal, which determines the access level of the variable.

Components

External	Internal	Private	Pure
14	2	2	0

Exposed Functions

This section lists functions that are explicitly declared public or payable. Please note that getter methods for public state variables are not included.

Public	Payable
14	0

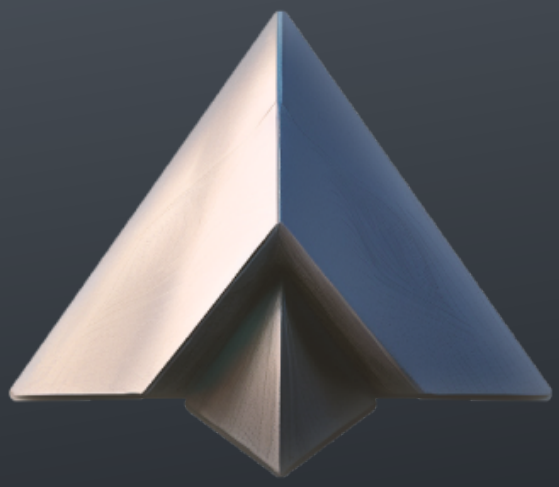
External	Internal	Private	Pure	View
14	2	2	0	6

State Variables

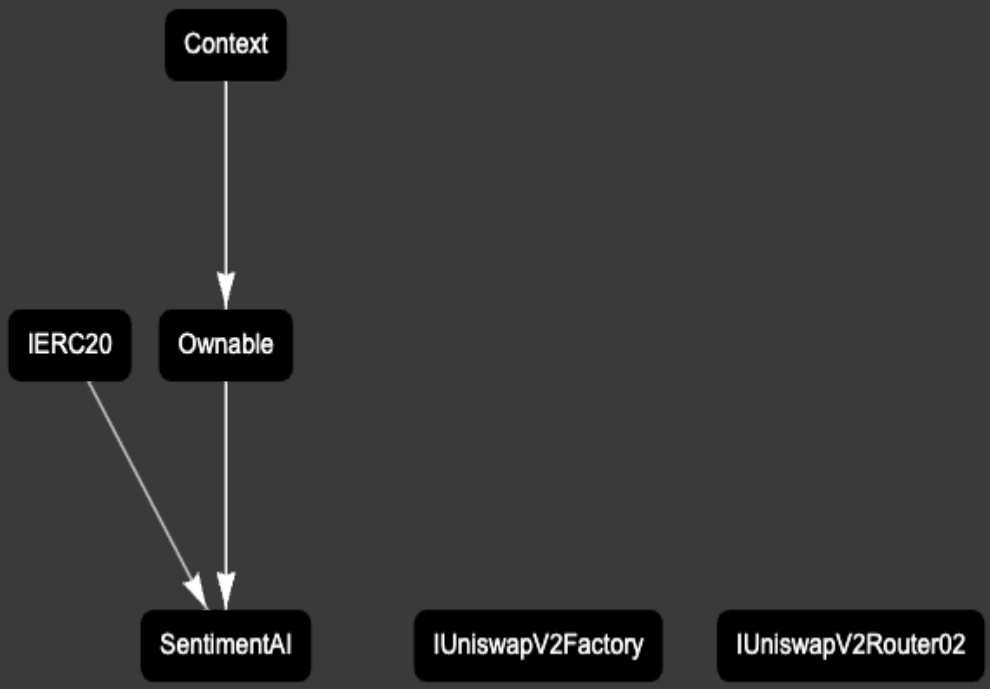
Total	Public
33	6

Capabilities

Aegis Version observed	Transfers ETH	Can Receive Funds	Uses Assembly	Delegate Call
>=0.6.0 < 0.9.0	Yes	Yes	Yes	Yes



Inheritance Graph



Centralization Privilege

Centralization can arise when one or more parties have privileged access or control over the contract's functionality, data, or decision-making. This can occur, for example, if the contract is controlled by a single entity or if certain participants have special permissions or abilities that others do not. In the project, there are authorities that have access to the following functions:

Contract	Privileges
Context	N/A
IERC20	transfer, approve, transferFrom
Ownable	transferOwnership, renounceOwnership
IUniswapV2Factory	createPair
IUniswapV2Router02	swapExactTokensForETHSupportingFeeOnTransferTokens
SentimentAI	transfer, approve, transferFrom, _approve, openTrading, addExcludedWallet, removeLimits, changeTax, _transfer

Audit Results

#AEG-1 Arbitrary Minting

FILE	Severity
SentimentAI.sol	INFO

Description - The _transfer function calls an external contract (uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens) without setting inSwapAndLiquify back to zero before making the call. This can lead to reentrancy attacks where an attacker can repeatedly call the function to drain funds.

#AEG-2 Unchecked Transfer

FILE	Severity
SentimentAI.sol	INFO

Description - The contract uses _msgSender(), which is vulnerable to phishing attacks because tx.origin is used instead of msg.sender. An attacker can trick the owner into signing a transaction that seems harmless but actually calls transferOwnership on the contract.

Audit Results

#AEG-3 Race condition (front-running)

FILE	Severity
SentimentAI.sol	INFO

Description - The _approve function is a critical function for ERC20 tokens but it does not return a boolean value as per the ERC20 standard. This could lead to incompatibility with contracts that expect a return value from the approve function.

Files Overview

The SentimentAI team provided us with the files that should be tested in the security assessment. This audit covered the following files listed below with an SHA-1 Hash.

File Name
SentimentAI.sol

Imported Packages

Used code from other Frameworks/Smart Contracts (direct imports).

No external libraries used.

Note for Investors:

We only audited a token contract for SentimentAI. However, If the project has other contracts (for example, a Presale, staking contract etc), and they were not provided to us in the audit scope, then we cannot comment on its security and are not responsible for it in any way.

Source

language: solidity
version: 0.8.18+commit.87f61d96
verified at: December 13, 2023 at 11:59:14 PM (UTC+0)

Conclusion

The audit for the SentimentAI (SENT) token concludes with noteworthy findings. The token has an elevated sell tax of just over 6.71%, and a buy tax of 5%. These rates are a bit higher than average. Yet, it should not detract potential investors, as higher taxes could facilitate more robust tokenomics and possibly promote longer term holding. The token does not appear to be a honeypot, a good sign for those interested in the project. This indicates the token is not set up to trap investors into buying without the feasibility of selling later. Moreover, strong anti-whale measures are in place, further ensuring the stability of the platform. These measures prevent large holders from manipulating market prices or executing large-scale sell-offs that can negatively impact general investors. The token scarcity is maintained as the token is not mintable, indicating a steady and finite supply. This could open the potentiality for token value increases with the law of demand and supply regulating it. Additionally, SentimentAI does not exercise blacklisting. This signifies a commitment to unrestricted trading that many in the crypto community find appealingly democratic. The token is listed on a decentralized exchange (dex), which is a standard practice. Decentralization opens up global access to the token without any central regulatory authority. Its reach is evident in its strong adoption rate: there are already over 1812 holders, indicating a healthy user base, backed by more than three liquidity providers. From a security standpoint, the audit reveals that there has been no identification of high, medium, or low severity issues. This is an excellent testament to the robustness and security of SentimentAI's codebase, reassuring users that there have been no significant risks identified. Overall, the audit suggests that SentimentAI possesses a stable, secure, and efficient operation with appealing features for potential investors.

Conclusion Overview

Overview	Notes	Result
Honeypot	The contract owner can drain the funds from the contract	✅ False
Anti whale check	Features preventing whales from manipulating the Token	✅ True
Opensource	The code of the contract is public	✅ True
Ownership renounced	Contract owner has renounced ownership	❌ False
Buy tax	Fees incurred when buying the token	✅
Sell tax	Fees incurred when selling the token	✅
High Severity Issues	Number of High severity issues	0
Medium Severity Issues	Number of Medium severity issues	0
Mintable	Can mint new tokens	✅ False
Blacklist	Owner can blacklist users	✅ False
Holders	Total wallets holding the token	1812
LP holder	Number of liquidity providers	3

Glossary

1. Honeypot:

A honeypot refers to a deceptive contract that lures investors by appearing lucrative or profitable. These contracts typically allow users to easily purchase tokens, but selling them is restricted or impossible. This tactic is used to trap funds, misleading investors who are unable to withdraw their investments.

2. Blacklist:

A blacklist refers to a mechanism that enables the contract owner to restrict certain addresses from buying or selling the token. This feature is often implemented to block suspected bots or malicious actors from manipulating the token's market. However, it can also be used to unfairly prevent legitimate users from selling their tokens, posing a risk to token holder rights.

3. Ownership Privileges:

Ownership privileges refer to the exclusive rights and controls a contract owner possesses. These can include altering critical contract parameters, managing listings on decentralized exchanges, and updating contract logic. While revoking ownership can enhance trust among users by making the contract immutable, maintaining ownership is crucial for larger projects that require ongoing management and adaptability to evolving blockchain ecosystems.

4. Automated Penetration Testing:

Automated Penetration Testing is a cybersecurity practice that employs automated tools and technologies to identify and exploit vulnerabilities in computer systems, networks, or applications. It aims to simulate potential cyberattacks to assess the security posture and discover weaknesses in order to enhance overall defense against malicious activities.

5. LLM:

A large language model (LLM) is a type of artificial intelligence (AI) algorithm that uses deep learning techniques and massively large data sets to understand, summarize, generate and predict new content.

6. CVSS:

CVSS stands for the Common Vulnerability Scoring System. It's a way to evaluate and rank reported vulnerabilities in a standardized and repeatable way.

7. EOA:

Externally Owned Accounts (EOAs) are the most common type of blockchain account that gives us direct control. These accounts are created using private keys. The associated key gives you a unique signature and access to the blockchain. You can use it to send and receive transactions and interact with applications.