



Neural AI

# Smart Contract Audit Report

# TABLE OF CONTENTS

## Audited Details

- Audited Project
- Blockchain
- Addresses
- Project Website
- Codebase

## Summary

- Contract Summary
- Audit Findings Summary
- Vulnerabilities Summary

## Conclusion

## Audit Results

## Smart Contract Analysis

- Detected Vulnerabilities

## Disclaimer

## About Us

# AUDITED DETAILS

## Audited Project

Project name	Token ticker	Blockchain
Neural AI	NEURALAI	Binance Smart Chain

## Addresses

Contract address	0xB9C255C115636D8CBe107FC953364b243cACdbCE
Contract deployer address	0xd89fEfa535983dF66442FF6aEe848cac4dE8Ad96

## Project Website

<https://neuralaico.in.com/>

## Codebase

<https://bscscan.com/address/0xB9C255C115636D8CBe107FC953364b243cACdbCE#code>

# SUMMARY

Neural AI, a cutting-edge cryptocurrency initiative that aims to revolutionize the financial sector through the use of AI. With features & utility live before launch. Asset intelligence DAPP LIVE, Staking, Telegram Chat AI bot LIVE, NFT Marketplace with revenue sharing, Copy trading protocol. A big marketing firm has been onboarded, with a multi-million dollar project under their belt

## Contract Summary

### Documentation Quality

Neural AI provides a very good documentation with standard of solidity base code.

- The technical description is provided clearly and structured and also dont have any high risk issue.

### Code Quality

The Overall quality of the basecode is standard.

- Standard solidity basecode and rules are already followed by Neural AI with the discovery of several low issues.

### Test Coverage

Test coverage of the project is 100% ( Through Codebase )

## Audit Findings Summary

- SWC-101 | It is recommended to use vetted safe math libraries for arithmetic operations consistently on lines 194, 216, 241, 270, 271, 378, 378, 408, 418, 429 and 464.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 7.
- SWC-110 SWC-123 | It is recommended to use of revert(), assert(), and require() in Solidity, and the new REVERT opcode in the EVM on lines 465.

## CONCLUSION

We have audited the Neural AI project released on January 2023 to discover issues and identify potential security vulnerabilities in Neural AI Project. This process is used to find technical issues and security loopholes which might be found in the smart contract.

The security audit report provides a satisfactory result with some low-risk issues.

The issues found in the Neural AI smart contract code do not pose a considerable risk. The writing of the contract is close to the standard of writing contracts in general. The low-risk issues found are some arithmetic operation issues, a floating pragma is set and out of bounds array access which the index access expression can cause an exception in case of the use of an invalid array index value.

# AUDIT RESULT

Article	Category	Description	Result
Default Visibility	SWC-100 SWC-108	Functions and state variables visibility should be set explicitly. Visibility levels should be specified consciously.	PASS
Integer Overflow and Underflow	SWC-101	If unchecked math is used, all math operations should be safe from overflows and underflows.	ISSUE FOUND
Outdated Compiler Version	SWC-102	It is recommended to use a recent version of the Solidity compiler.	PASS
Floating Pragma	SWC-103	Contracts should be deployed with the same compiler version and flags that they have been tested thoroughly.	ISSUE FOUND
Unchecked Call Return Value	SWC-104	The return value of a message call should be checked.	PASS
Unprotected Ether Withdrawal	SWC-105	Due to missing or insufficient access controls, malicious parties can withdraw from the contract.	PASS
SELFDESTRUCT Instruction	SWC-106	The contract should not be self-destructible while it has funds belonging to users.	PASS
Reentrancy	SWC-107	Check effect interaction pattern should be followed if the code performs recursive call.	PASS
Uninitialized Storage Pointer	SWC-109	Uninitialized local storage variables can point to unexpected storage locations in the contract.	PASS
Assert Violation	SWC-110 SWC-123	Properly functioning code should never reach a failing assert statement.	ISSUE FOUND
Deprecated Solidity Functions	SWC-111	Deprecated built-in functions should never be used.	PASS
Delegate call to Untrusted Callee	SWC-112	Delegatecalls should only be allowed to trusted addresses.	PASS

DoS (Denial of Service)	SWC-113 SWC-128	Execution of the code should never be blocked by a specific contract state unless required.	PASS
Race Conditions	SWC-114	Race Conditions and Transactions Order Dependency should not be possible.	PASS
Authorization through tx.origin	SWC-115	tx.origin should not be used for authorization.	PASS
Block values as a proxy for time	SWC-116	Block numbers should not be used for time calculations.	PASS
Signature Unique ID	SWC-117 SWC-121 SWC-122	Signed messages should always have a unique id. A transaction hash should not be used as a unique id.	PASS
Incorrect Constructor Name	SWC-118	Constructors are special functions that are called only once during the contract creation.	PASS
Shadowing State Variable	SWC-119	State variables should not be shadowed.	PASS
Weak Sources of Randomness	SWC-120	Random values should never be generated from Chain Attributes or be predictable.	PASS
Write to Arbitrary Storage Location	SWC-124	The contract is responsible for ensuring that only authorized user or contract accounts may write to sensitive storage locations.	PASS
Incorrect Inheritance Order	SWC-125	When inheriting multiple contracts, especially if they have identical functions, a developer should carefully specify inheritance in the correct order. The rule of thumb is to inherit contracts from more /general/ to more /specific/.	PASS
Insufficient Gas Griefing	SWC-126	Insufficient gas griefing attacks can be performed on contracts which accept data and use it in a sub-call on another contract.	PASS
Arbitrary Jump Function	SWC-127	As Solidity doesnt support pointer arithmetics, it is impossible to change such variable to an arbitrary value.	PASS

Typographical Error	SWC-129	A typographical error can occur for example when the intent of a defined operation is to sum a number to a variable.	PASS
Override control character	SWC-130	Malicious actors can use the Right-To-Left-Override unicode character to force RTL text rendering and confuse users as to the real intent of a contract.	PASS
Unused variables	SWC-131 SWC-135	Unused variables are allowed in Solidity and they do not pose a direct security issue.	PASS
Unexpected Ether balance	SWC-132	Contracts can behave erroneously when they strictly assume a specific Ether balance.	PASS
Hash Collisions Variable	SWC-133	Using <code>abi.encodePacked()</code> with multiple variable length arguments can, in certain situations, lead to a hash collision.	PASS
Hardcoded gas amount	SWC-134	The <code>transfer()</code> and <code>send()</code> functions forward a fixed amount of 2300 gas.	PASS
Unencrypted Private Data	SWC-136	It is a common misconception that private type variables cannot be read.	PASS



# SMART CONTRACT ANALYSIS

Started	Tuesday Jan 31 2023 11:27:39 GMT+0000 (Coordinated Universal Time)
Finished	Wednesday Feb 01 2023 22:30:07 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	NEURALAI.sol

## Detected Issues

ID	Title	Severity	Status
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "+" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "+=" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "**" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "+" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "++" DISCOVERED	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 194

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- NEURALAI.sol

## Locations

```
193     require(currentAllowance >= amount, "BEP20: transfer amount exceeds allowance");
194     _approve(sender, _msgSender(), currentAllowance - amount);
195
196     return true;
197 }
198
```

## SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 216

### low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

### Source File

- NEURALAI.sol

### Locations

```
215  {
216  _approve(_msgSender(), spender, _allowances[_msgSender()][spender] + addedValue);
217  return true;
218  }
219
220
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 241

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- NEURALAI.sol

## Locations

```
240   require(currentAllowance >= subtractedValue, "BEP20: decreased allowance below
zero");
241   _approve(_msgSender(), spender, currentAllowance - subtractedValue);
242
243   return true;
244   }
245
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 270

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- NEURALAI.sol

## Locations

```
269   require(senderBalance >= amount, "BEP20: transfer amount exceeds balance");
270   _balances[sender] = senderBalance - amount;
271   _balances[recipient] += amount;
272
273   emit Transfer(sender, recipient, amount);
274
```

# SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 271

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- NEURALAI.sol

## Locations

```
270  _balances[sender] = senderBalance - amount;  
271  _balances[recipient] += amount;  
272  
273  emit Transfer(sender, recipient, amount);  
274  }  
275
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 378

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- NEURALAI.sol

## Locations

```
377     constructor() BEP20("Neural AI", "NEURALAI") {
378         _tokengeneration(msg.sender, 1e9 * 10**decimals());
379         whitelist[msg.sender] = true;
380
381         IRouter _router = IRouter(0x10ED43C718714eb63d5aA57B78B54704E256024E);
382     }
```

# SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 378

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- NEURALAI.sol

## Locations

```
377 constructor() BEP20("Neural AI", "NEURALAI") {
378   _tokengeneration(msg.sender, 1e9 * 10**decimals());
379   whitelist[msg.sender] = true;
380
381   IRouter _router = IRouter(0x10ED43C718714eb63d5aA57B78B54704E256024E);
382
```



# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 408

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- NEURALAI.sol

## Locations

```
407     require(currentAllowance >= amount, "BEP20: transfer amount exceeds allowance");
408     _approve(sender, _msgSender(), currentAllowance - amount);
409
410     return true;
411 }
412
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 418

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- NEURALAI.sol

## Locations

```
417 {  
418   _approve(_msgSender(), spender, _allowances[_msgSender()][spender] + addedValue);  
419   return true;  
420 }  
421  
422
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 429

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- NEURALAI.sol

## Locations

```
428     require(currentAllowance >= subtractedValue, "BEP20: decreased allowance below
zero");
429     _approve(_msgSender(), spender, currentAllowance - subtractedValue);
430
431     return true;
432 }
433
```

# SWC-101 | ARITHMETIC OPERATION "++" DISCOVERED

LINE 464

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- NEURALAI.sol

## Locations

```
463     function bulkWhitelist(address[] memory accounts, bool state) external onlyOwner {
464         for (uint256 i = 0; i < accounts.length; i++) {
465             whitelist[accounts[i]] = state;
466         }
467     }
468 }
```

## SWC-103 | A FLOATING PRAGMA IS SET.

LINE 7

### low SEVERITY

The current pragma Solidity directive is ""^0.8.17"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

### Source File

- NEURALAI.sol

### Locations

```
6
7  pragma solidity ^0.8.17;
8
9  abstract contract Context {
10     function _msgSender() internal view virtual returns (address) {
11
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 465

### low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

### Source File

- NEURALAI.sol

### Locations

```
464   for (uint256 i = 0; i < accounts.length; i++) {  
465     whitelist[accounts[i]] = state;  
466   }  
467 }  
468  
469
```

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Sysfixed is a blockchain security certification organization established in 2021 with the objective to provide smart contract security services and verify their correctness in blockchain-based protocols. Sysfixed automatically scans for security vulnerabilities in Ethereum and other EVM-based blockchain smart contracts. Sysfixed a comprehensive range of analysis techniques—including static analysis, dynamic analysis, and symbolic execution—can accurately detect security vulnerabilities to provide an in-depth analysis report. With a vibrant ecosystem of world-class integration partners that amplify developer productivity, Sysfixed can be utilized in all phases of your project's lifecycle. Our team of security experts is dedicated to the research and improvement of our tools and techniques used to fortify your code.