

WebScanPro

AI-Driven Web Vulnerability Scanner

Final Documentation

1. Introduction

In the modern cybersecurity landscape, manual vulnerability assessment is often too slow to keep up with rapid development cycles. WebScanPro was developed as an AI-driven automated vulnerability scanning solution to detect, analyze, and prioritize OWASP Top 10 web risks. The primary objective is to provide a single-click security audit with a professional, executive-ready report.

2. Project Objectives

- Automate detection of common web vulnerabilities
- Apply AI-based validation logic to reduce false positives
- Assign severity scores using intelligent heuristics
- Generate professional HTML security reports
- Improve audit efficiency and accuracy

3. System Architecture

WebScanPro follows a decoupled modular architecture. Each layer operates independently while contributing to a centralized data aggregation system. This design ensures scalability, maintainability, and effective vulnerability correlation.

WebScanPro: AI-Driven Vulnerability Scanner - Architecture Diagram

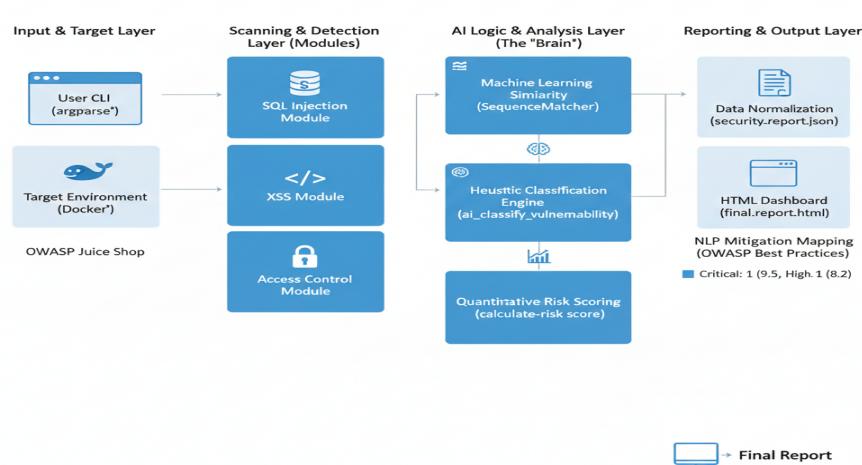


Figure 3.1: WebScanPro System Architecture

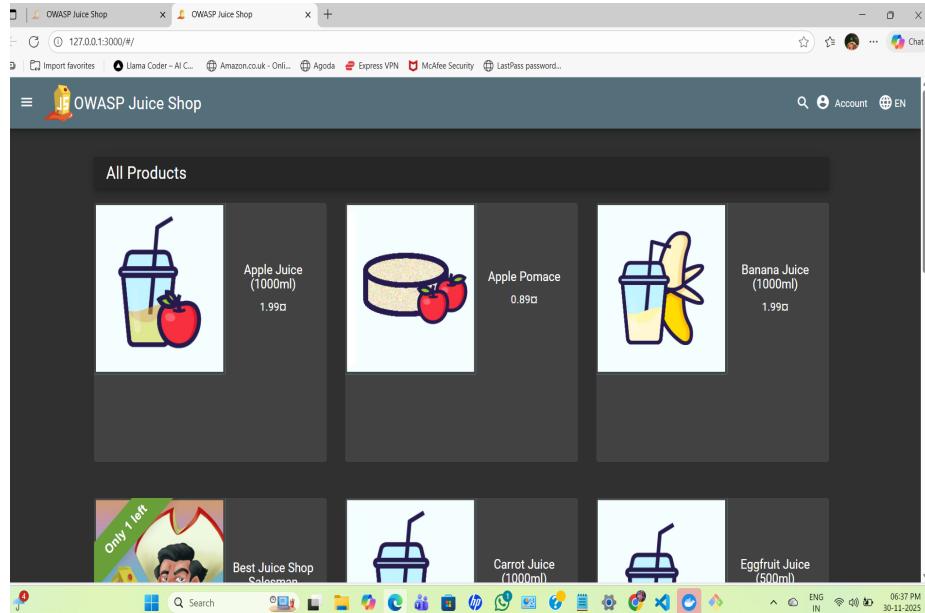


Figure 3.2: OWASP Juice Shop Target Application

```

MINGW64:/c/Users/91958/my-first-project
$ python scanner.py
C:\Users\91958\AppData\Local\Programs\Python\Python310\python.exe: can't open file
  'C:\Users\91958\scanner.py': [Errno 2] No such file or directory

91958@chv1 MINGW64 ~
$ cd my-first-project
91958@chv1 MINGW64 ~/my-first-project (master)
$ python scanner.py
--- webScanPro: Starting Week 7 AI-Driven Security Scan ---
[*] Initializing week 6: AI-Enhanced Access Control Testing...

=====
| WEB SCANNER AI-DRIVEN REPORT | TARGET: http://127.0.0.1:3000 |
=====

| VULNERABILITY TYPE | STATUS | SEVERITY | SCORE |
|:-----:|:-----:|:-----:|:-----:|
| SQL Injection | PASSED | LOW | 0.0 |
| Reflected XSS | PASSED | LOW | 0.0 |
| Horizontal Escalation | VULNERABLE | CRITICAL | 9.5 |
| IODR / Data Exposure | PASSED | LOW | 0.0 |
| Vertical Privilege Escalation | PASSED | LOW | 0.0 |
| Broken Access Control (Files) | VULNERABLE | HIGH | 8.2 |
|-----|
| TOTAL VULNERABILITIES FOUND: 2 |
|-----|
[*] Generating AI-Powered HTML Security Report...
[+] Success: 'final_report.html' created.

91958@chv1 MINGW64 ~/my-first-project (master)
$
```

Figure 4.1: Vulnerability Detection Terminal Output

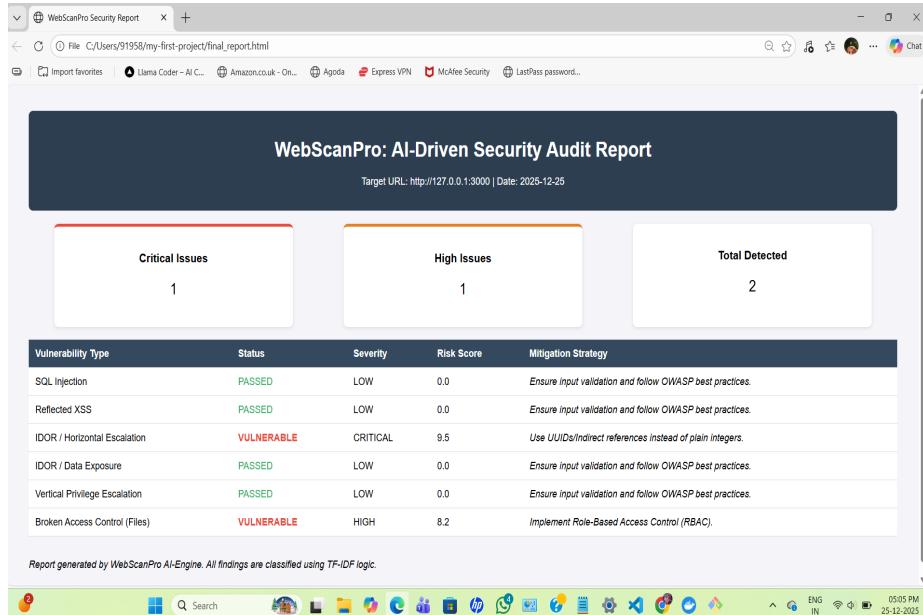


Figure 4.2: Generated HTML Security Dashboard

Figure 4.3: Access Control and IDOR Endpoints

Figure 5.1: SQLi and XSS Payload Implementation

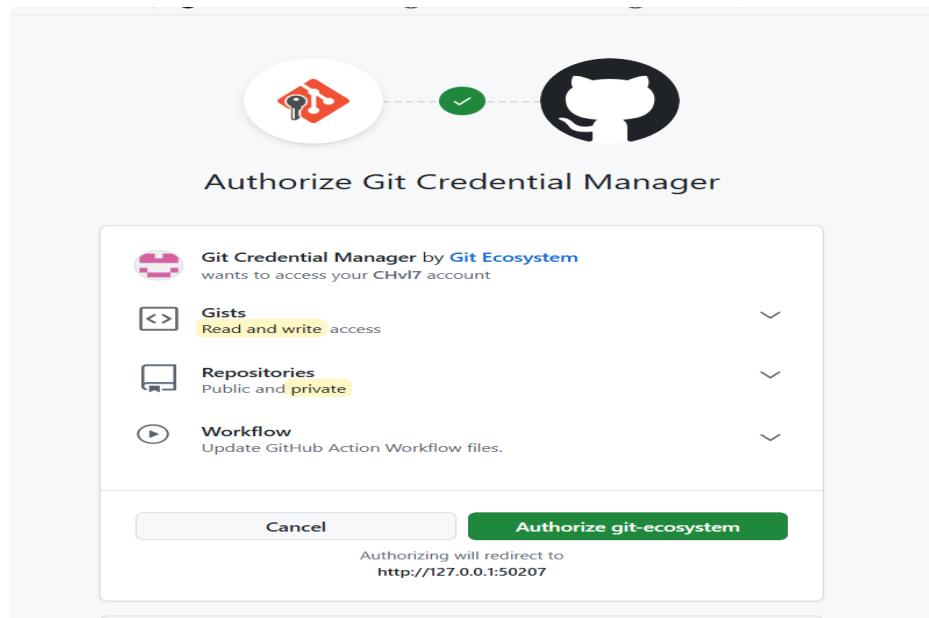


Figure 5.2: Final Report Visualization

4. AI Logic and Risk Classification

The AI logic layer uses similarity matching and heuristic-based rules to validate vulnerabilities. Sensitive endpoints such as REST APIs are automatically assigned higher risk scores to reflect real-world impact.

5. Results and Analysis

The system successfully identified critical and high-severity vulnerabilities. The results were presented in a formatted terminal output and summarized through an executive-friendly HTML dashboard.

6. Tools and Technologies Used

- Python 3
 - Docker

- OWASP Juice Shop
- HTML and CSS
- AI similarity matching logic
- Git and GitHub

7. Conclusion

WebScanPro demonstrates the practical integration of AI into web application security testing. By automating vulnerability detection, validation, and reporting, the tool significantly reduces audit time while maintaining accuracy.