PANAGIOTIS OIKONOMOPOULOS

Software Engineer - Pentester

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HTB PROFILE
My writeup blog

SUMMARY

I am an Electrical and Computer Engineering student with one year of experience as a Software Developer at a startup, where I worked on freelance projects. Currently, I serve as the Software Development Lead for my university's drone team, developing solutions for UAV systems. I am studying cybersecurity through online courses and have completed two virtual internships in the field. I am passionate about innovative technology and solving problems in both hardware and software.

EDUCATION

University of the Peloponnese

Electrical and Computer Engineer
2021 – Present

SKILLS

- **Python –** Experience in application development and automation.
- **C++** - Experience with Windows API and malware developed.
- **Problem-Solving –** Ability to analyze and address technical challenges.
- **SQL –** Knowledge of database design and management.
- Teamwork – Effective collaboration in professional and academic environments.
- **Cybersecurity –** Trained in system protection, threat analysis, and ethical hacking.
- **Cryptography –** Understanding of encryption algorithms and secure communication.

CERTIFICATIONS

CYBERSECURITY

- PJPT | TCM Security
- Bug Bounty Hunter | HTB
- Penetration Tester | HTB
- Zephyr ProLab | HTB
- FullHouse ProLab | HTB
- Dante ProLab | HTB
- P.O.O ProLab | HTB
- AI Red Teamer | HTB
- Jr Penetration Tester | THM
- Red Teaming | THM
- Offensive Pentesting | THM
- FCA | Fortinet
- FCF | Fortinet
- AWS Pentest | SimplyCyber
- Windows API for Red Team | CourseStack
- MCRTA | Cyberwarfare

PROGRAMMING

- Database Design | Oracle Academy
- Database Programming with SQL | Ocacle Academy
- Meta Front-End Developer | Meta
- Computational Motion Planning | Penn University
- Aerial Robotics | Penn University
- Programming with Python | Patras University

PROFESSIONAL EXPERIENCE

Software Engineer

Neux Ltd | 2023- 2024

- **Frontend Development for XR Applications –** Creating interactive experiences in virtual and augmented reality environments.
- **Bot Development –** Automating processes and enhancing user interaction across various platforms.
- **API Implementation and Integration –** Developing APIs for system communication and seamless application functionality.

Lead Software Engineer

Hyperion Drone Team | 2023 - Present

- **PID Controller Development and Optimization** – Designing and tuning PID controllers for drone flight control, ensuring stability and precise responsiveness.
- **AI Model Creation and Training for Object Detection** – Enhancing drone autonomy and navigation capabilities through trained AI object detection models.
- **Flight System Simulations** – Using Matlab for performance analysis and evaluation of the flight system through simulations.
- **Custom Flight Controller Design and Development** – Building a tailored flight controller to meet the specific needs of the team and drone applications.

Cybersecurity Intern

ShadowFox | 1 month 2025

- **Learned** - Hands-on experience in cybersecurity, work on real-world projects, certification, and enhancement of professional profile.

Cybersecurity Intern

The Red Users | 1 month 2025

- **Learned -** Practical skills in cybersecurity, tackling real-world problems, exploring the field of web application security.

PROJECTS

Capstone Project – Advanced Shellcode Obfuscation & AV Evasion Techniques

- Developed a multi-version polymorphic shellcode loader using C++ with progressive evasion strategies targeting Windows Defender.
- Implemented XOR encryption and polymorphic obfuscation, gradually advancing to indirect syscall execution and API hashing (MurmurHash3) to avoid AV detection.
- Demonstrated evasion improvement across six versions, culminating in complete bypass of Windows Defender in Version 4.
- Tested shellcode delivery through custom encoders and decoders, integrating runtime stubs and randomized key generation.
- Applied cybersecurity principles and red team tactics, including payload packing, memory protection changes, and antivirus sandbox behavior analysis.

More info about the project its on my **blog**.

Network Security Lab – Firewall, XDR & Traffic Analysis

- Designed and deployed a virtualized network lab to explore foundational network security using VirtualBox, pfSense, and Wazuh.
- Configured pfSense firewall/router with NAT and internal LAN/WAN segmentation to simulate realistic enterprise boundaries.
- Installed Wazuh (XDR/SIEM) server on Ubuntu and agent on LinuxMint to detect and log suspicious behavior through command execution simulations.
- Enforced firewall rules to block external ICMP traffic and verified network isolation and routing through controlled connectivity tests.
- Monitored traffic using Wireshark to analyze DNS queries, XDR heartbeat signals, and ICMP filtering effectiveness.

More info about the project is available on my **blog**.

AWS IAM & S3 Auditor – Python Security Tooling

- Developed a Python script using Boto3 to audit AWS IAM users, groups, roles, and policies.
- Enumerated attached and inline policies for IAM users and groups, printing permissions in readable JSON format.
- Integrated functionality to download files from S3 buckets and retrieve secrets from AWS Secrets Manager.
- Parsed and analyzed trust policies to identify potentially assumable IAM roles based on the caller's identity.
- Included support for optional S3 downloads, role assumption testing, and structured secret inspection using custom JSON serializers.

More info about the project is available on my **github**.

Drone Ground Station – Secure Long-Range Communication System

Hyperion UAV Team | 2025

- Collaborating with the Hyperion drone team to develop a custom ground station enabling secure two-way communication and control of UAVs over distances up to 10km.
- Built a modular system integrating a web-based user interface for drone telemetry, diagnostics, and remote task execution.
- Integrated embedded AI subsystems to enhance autonomy, responsiveness, and real-time decision support.
- Focused on system-level security, communication reliability, and performance under field conditions.

Further technical details are confidential due to project sensitivity.