Oussama Abderrahmane **Dairi**

CS Graduate · Security and Networks

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Summary

Systems programmer passionate about OS internals, network protocols, and low-level security. My research interests center on understanding and hardening system interfaces, from the kernel to the network stack, with a focus on exploitation techniques and defense mechanisms. Looking to apply deep systems knowledge to hard security problems.

Academic Background

Lycée Malika Gaid

Setif, Algeria

BACCALAURÉAT Sciences Naturelles — *Sept. 2020*

École Supérieure en informatique 08 Mai 1945

Sidi Bel Abbés, Algeria

cycle préparatoire — *Dec. 2020 - Jul. 2022*

École Nationale Supérieure d'Informatique

Alger, Algeria

MASTER AND ENGINEER DEGREE IN COMPUTER SYSTEMS — *Sep. 2022 - Sep. 2025*

Top Courses : Advanced Networking, Cybersecurity, High-performance Computing, Distributed Systems

Internships

Web Development Intern

Setif, Algeria

IRIS / EURL SATEREX — *Jul. 2023 – Sept. 2023*

- Identified inefficiencies in the employee leave management process and proposed the development of a dedicated web-based solution.
- Designed and implemented the web application solution to manage leave requests and approval workflows with role-based access control for different organizational roles.

Research Intern

La Rochelle, France

Laboratoire Informatique, Image et Interaction (L3i) — *Sept. 2024 – Jul. 2025*

- Reviewed state-of-the-art autonomous exploitation methods and identified key research gaps.
- Designed and evaluated a multi-agent framework to study protocol-aware planning and adaptive strategies.
- Developed reproducible experiments and benchmarks, analyzing metrics to draw insights on system performance.
- The internship's work resulted in a paper submitted to ACNS 2026.

Projects

INVEST

Research Internship Project — *Jan. 2025 – Jul. 2025*

- A two-agent LLM framework (Supervisor–Executor) to autonomously plan and execute packet-level attacks across OSI Layers 2–7.
- Implemented bounded feedback-loop control using stdout/stderr parsing and packet-level KPI validation for adaptive replanning.
- Designed reproducible benchmark of 7 network attack scenarios (flooding, ARP spoofing, TCP hijacking, CVE exploitation) in isolated VM testbeds.

Network Configuration and SIEM Integration

Fourth Year Academic Project — *Mar. 2024 - Jul. 2024*

- Designed and simulated a network infrastructure using GNS3 and VMware.
- Engineered a defensive stack by configuring a pfSense firewall, deploying a Snort IDS, and centralizing logs with a Wazuh SIEM.
- Validated the setup by simulating network attacks and successfully analyzing the generated alerts.

Development of security challenges for CTF competitions

Shellmates Club — *2023 - 2024*

- Authored binary exploitation and reverse engineering challenges for national CTF competitions (HackINI 2k24, DevFest 2023).

Networking and Systems Projects

Personal Projects — *2023 - 2024*

- Built a **terminal-based text editor**, demonstrating system programming and terminal interface skills.
- Developed a **TCP chat in C**, gaining hands-on experience with networking and sockets.
- Implemented a **binary loader**, deepening understanding of executable formats and their structures.

Skills

Programming and scripting, Python, Bash, C, C++, JavaScript, PHP, Java
Cybersecurity, Web security, Binary Exploitation, Reverse Engineering, SIEM, Network Security
Tools, Ghidra, GDB, Wireshark, Burp Suite, GNS3, VirtualBox, Linux, Git/GitHub
Frameworks & Libraries, Django/DRF, Flask, FastAPI, Laravel
LLMs & Agents, Multi-agent orchestration, RAG, prompt engineering

Extracurricular Activity

CTF Player

CTF competitions consist in competitive challenges that cover various topics of cybersecurity *2023 - Present*

- Competed in multiple national and international CTF competitions specializing in binary exploitation and reverse engineering.
- Ranked Top 1% globally on Root-Me (Rank: 1178).
- Authored technical write-ups detailing different types of security exploitation that can be found **here**.
- I participate with both teams *noreply* and *th3_r0n1ns*.

Cyber Security team leader

Alger, Algeria

GDG Algiers *Oct. 2023 – Jul. 2024*

- Spearheaded and organized the club's cybersecurity initiatives and activities.