

TALIA HADDAD

Mechatronics Engineering Student — Robotics Software Track

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SUMMARY

Mechatronics engineering student (second degree) with a completed Bachelor's in Computer and Communication Networks Engineering. Hands-on experience across embedded systems, closed-loop control design, signal processing, and cybersecurity, built through coursework, internships, and independent projects. Comfortable working across the hardware-software boundary — from MATLAB control-system design and TTL/analog circuit builds to network security and penetration testing. Working toward a career as a robotics software engineer.

ENGINEERING & ROBOTICS PROJECTS

Speech Enhancement System — Three-Pass Wiener Filter

MATLAB, DSP

- Designed and implemented a noise-reduction pipeline for a real piano recording using frame-based FFT processing, noise PSD estimation, and a custom three-pass Wiener filter.
- Improved measured SNR from 20.7 dB to 39.5 dB (+18.8 dB); wrote all signal-processing functions from scratch without toolbox dependencies.

Endurance Conveyor Trainer with Heart-Rate Feedback Control

MATLAB, Arduino, Control Systems

- Modeled a coupled DC-motor / physiological-response plant from heart-rate sensor data and designed a P+lag controller in MATLAB.
- Reduced settling time from 645 s to 93.3 s and brought overshoot within a 35% spec, verified via step/impulse response, root locus, Bode, Nyquist, and Nichols analysis.

TTL-Only Smart Home Automation System

Digital Logic, NI Multisim

- Co-designed a nine-subsystem home automation system (elevator, security lockout, lighting, motorized doors, and more) using only 74xx/74LSxx logic ICs — no microcontrollers or software.
- Built counter/comparator/decoder chains and JK/D flip-flop state logic; verified each subsystem in simulation before breadboard construction.

Analog Stress & Concentration Indicator Circuit

Analog Electronics, GSR

- Designed a transistor-based analog circuit that maps galvanic skin response to LED brightness as a real-time biofeedback indicator.
- Performed manual bias-point and current-limiting calculations, verified against Multisim simulation across three focus states.

SECURITY PROJECTS & INTERNSHIPS

- Web Penetration Tester Intern — Karim Group (Jul 2024)
- IT Administration Intern — Lebanese University (Sep 2024)
- Telecommunications Field Intern — OGERO (Sep 2023)
- Independent projects: intrusion detection system, home security lab, web application firewall, keylogger, and penetration testing engagements on multiple web apps
- TryHackMe top 1% (user: TH1); active on HackTheBox (user: THgb); monthly CTF participant

EDUCATION

Mechatronics Engineering (in progress) — La Sagesse University

Bachelor's, Computer and Communication Networks Engineering — 2024

High School Diploma, General Science — Mont La Salle / MSA — 2021

CERTIFICATIONS

- Security Engineer, SOC Level 1 & 2, Web Fundamentals, Pre-Security — TryHackMe (2024)
- Deep Web and Cybersecurity — EC-Council (2023)

- IT Security: Defense Against the Digital Dark Arts — Coursera (2021)
- System Administration and IT Infrastructure Services — Coursera (2021)
- Using Git for Distributed Development; Linux Tools for Developers; Open Source Software Development Methods — Coursera (2020)

TECHNICAL SKILLS

Languages: Python, C++, Bash, HTML/JavaScript/PHP/CSS

Engineering: MATLAB, control system design, digital logic (TTL), analog circuit design, NI Multisim, Arduino

Security & Networking: Nmap, Wireshark, Burp Suite, Metasploit, Nessus, Splunk/SIEM, MITRE ATT&CK, TCP/UDP/DNS/TLS, vulnerability scanning

Platforms: Linux, Windows, virtualization, Git

LANGUAGES & INTERESTS

Fluent: Arabic, English, French — conversational Japanese

Piano (8 years), competitive football, gymnastics, marathon running, taekwondo, skiing