



# DINA ELMNAJJA

**Second-year master's student in cryptology and cybersecurity.**

As a student actively pursuing a master's degree in Cryptology and Cybersecurity, I am deeply immersed in courses covering cryptographic algorithms and network security. Aspiring to apply my expertise to real-world challenges, I am committed to delivering innovative solutions and advancing the field of information security.

## EXPERIENCE

**JULY 2024 - SEPTEMBER 2024**

### **NETWORK SECURITY INTERNSHIP - ONDA (NATIONAL AIRPORTS AUTHORITY), AL HOCEIMA**

- Participation in the study and implementation of security solutions for the Moroccan Air Navigation IP Network (RINAM).
  - Configuration and securing of network communications using protocols such as VPN (IPsec) and SSH.
  - Analysis of existing tools for network supervision and proposal of improvements.
- Network simulation in GNS3 and use of VirtualBox to test and secure connections between different operating systems (Linux, Ubuntu, Windows).

## PROJECTS

### **TIME SERIES FORECASTING USING DEEP LEARNING.**

- Conducted time series analysis using deep learning on Yahoo Finance data.
- Compared ARIMA and LSTM models for price prediction.
- Developed a user-friendly web interface to adjust parameters and visualize prediction results.

### **DEVELOPED A DESKTOP APPLICATION FOR GENERATING AND VALIDATING JSON WEB TOKENS (JWT).**

- Used the Qt framework and C++ to develop the desktop application.
- Integrated the OpenSSL library to implement algorithms such as HS256.

### **ENCRYPTION OF DATA AND COMMUNICATIONS USING SSL/TLS AND IPSEC.**

- Created a self-signed certificate using command-line tools in an Ubuntu virtual machine to establish a secure session between a client and a server using SSL/TLS.
- Simulated a network architecture in GNS3 to secure traffic via an IPsec-based site-to-site VPN.
- Captured and analyzed traffic with Wireshark to verify the Encapsulating Security Payload (ESP), ensuring the confidentiality and integrity of data exchanged over the network.

### **DEVELOPMENT OF A SECURITY APPLICATION.**

- Developed a desktop application with a Python backend and an intuitive interface using Qt Designer, focused on various aspects of digital security.
- Key features include: detecting malicious links and analyzing files, identifying phishing emails, and hashing text using MD5 and SHA1 algorithms for integrity verification.
- Integrated machine learning models for effective threat detection.
- Designed a user-friendly interface with Qt Designer.

### **MUSHROOM CLASSIFICATION PROJECT USING MACHINE LEARNING.**

- Developed a mushroom classification model using Support Vector Machines (SVM), K-Nearest Neighbors (KNN), and logistic regression.
- Optimized the models to maximize accuracy and evaluated performance using appropriate metrics.
- Created a flexible application with Flask and Python that allows users to make predictions after selecting the 5 most important parameters.

### **APPLICATIONS OF ERROR-CORRECTING CODES IN PYTHON AND PYQT5.**

- Developed the first application: Message encryption using Goppa and cyclic codes.
- Developed the second application: Vernam encryption with one-time key cryptography.

## EDUCATION

**2023 - 2025**

Master's in Cryptology and Computer Security.

**2022 - 2023**

Bachelor's degree in mathematics and computer science.

**2019 - 2020**

Baccalaureate in physical sciences and chemistry.

## CONTACTS

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<https://github.com/dinaelmnaajja>

[https://dinaelmnaajja.github.io/Portfolio\\_dina/](https://dinaelmnaajja.github.io/Portfolio_dina/)

## SKILLS

- Python
- C++
- Java
- Html/Css
- Cybersecurity

## LANGUAGES

- English
- French
- Arabic

## PASSIONS

- Reading
- Photography
- Travel

## CERTIFICATIONS

- Essential career elements in cybersecurity by Microsoft and LinkedIn.
- Network security (Cisco).