Cristofer Montes Lozada

Undergraduate Student in Computer Systems Engineering

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Education

Bachelor of Science in Computer Systems Engineering, *Instituto Politécnico Nacional* – Mexico City, Mexico

Expected graduation: December 2025

Relevant Courses: data structures and algorithms, analysis and design of algorithms, object-oriented programming, databases, software engineering, computer networking.

Major Projects

Prototype of electronic ballot box
Terminal Work | 2024

In this terminal work, my contribution stood out in the research of cryptographic algorithms and their mathematical foundations to design an electronic voting system with two key properties: confidentiality and anonymous voting. I collaborated in the architecture design and implemented the user interface for the results module in Python, which verifies integrity, mixes, decrypts, and counts the votes. I implemented the algorithm for the distribution and reconstruction of the decryption key using Shamir's Secret Sharing scheme. I also designed and implemented the algorithm to prove the correct mixing of the votes. Additionally, I applied configurations to isolate the system.

Prototype system for heart rate monitoring, temperature control, and water tank level monitoring
Instrumentation and Control Course | 2023

In this project, I contributed by providing the calculations for the circuit design, assembling the circuit, and programming the ATMega8535 microcontroller to process the signals. I developed a desktop application with a graphical user interface in C# to receive and display data from the microcontroller using a serial communication port. I performed both physical and simulated tests (in Proteus).

System for diagnosing deficiencies in set algebra using Venn diagrams
Social Service | 2024

In this project, I developed a desktop application in C# with two access roles: student and teacher. In the student role, I implemented the interface for solving Venn diagram exercises, serializing the results into encrypted files. In the teacher role, the instructor can view a summary of results after importing student data, with exercises sorted in descending order by error rate. To authenticate students, I added an SMTP client that sends a verification code to their institutional email. I also added a search filter by student ID to display individual results.

Skills

Hard skills:

- Programming languages:
  - Java (OOP, Swing, file handling, exceptions, collections; multithreading and networking fundamentals).
  - C# (OOP, file handling, exceptions; WinForms and EDP in .NET Framework).
  - Python (OOP, Tkinter, file handling, exceptions).
  - C (Dynamic memory allocation, data structures, file handling).
- Relational database design and implementation (MySQL, Oracle APEX).
- Background in cryptographic algorithms and number theory.
- Web design (HTML, CSS).
- Version Control (Git, Github).
- Microcontrollers (I/O Ports, ADC, Interrupts, Timers/Counters, USART).
- Bash scripting (basics).

Soft skills:

- Critical thinking, responsibility, decision-making, adaptability, time management, teamworking, continuous learning, effective communication, emotional intelligence.

Languages

Spanish (native), English (B2).