Alessio Michael Barranca

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Objective

3rd year Information Systems Engineering co-op student seeking a work term where I can apply my strengths in software development, problem-solving, and teamwork. Skilled in Python, C, HTML, CSS, JavaScript, and Java, with a focus on designing and implementing efficient information systems.

Technical Skills

- Proficient in **Python**, **C**, and **Java** for software development and system design.
- Strong understanding of **data structures**, **algorithms**, and **object-oriented programming**.
- Experience with **VHDL** and **embedded systems**.
- Knowledge of **database management systems (DBMS)** and **SQL** for efficient data handling.
- Understanding of **network protocols**, **security**, and **distributed systems**.
- Familiar with version control systems like **Git** for collaborative development.

Soft Skills

- Strong **problem-solving** and **logical thinking** skills for tackling technical challenges.
- Effective **teamwork** and **collaboration** skills, with experience in cross-functional environments.

Education

Bachelor of Engineering, Information Systems Engineering
Humber Polytechnic, Toronto, ON   **May 2027**

- Achieved academic distinction with a **GPA of 82.3** in the 4th semester.
- _Relevant Completed Courses:_ Databases, Data Structures and Algorithms, Communications Engineering, Object-Oriented Programming, Operating Systems

Projects

Online Tic-Tac-Toe Game with AI   **Feb 2024 - April 2024**

- Developed a web-based Tic-Tac-Toe game in Python, with two AI difficulty levels:
  - **Weak AI:** Selected random positions without strategic considerations
  - **Strong AI:** Made decisions based on winning combinations and player moves
- Enabled multiplayer functionality for users on different machines to play online

AES Encryption Implementation   **Oct 2024 - Present**

- Currently developing an AES encryption system in Python using only NumPy, focusing on key operations such as XOR, shift rows, mix columns, and Galois field multiplication
- Implemented a secure round key generation system for 10 rounds, with each round key represented as hexadecimal bytes
- Ongoing work involves refining the key operations to ensure the accuracy of the encryption process, as well as implementing the decryption process

Work Experience

Stock Clerk and Carryout Associate   **July 2022 – Present**
MVR Cash and Carry, North York, ON

- Organized and stocked shelves with merchandise, ensuring products were correctly labeled and accessible to customers
- Assisted with unloading shipments, restocking products, and managing inventory.
- Provided exceptional customer service, assisting customers with locating items and answering product inquiries
- Ensured efficient carryout services by helping customers transport purchases to their vehicles
- Maintained a clean and organized work environment, contributing to the overall customer experience

Interests and Achievements

- **Cybersecurity:** Strong interest in network security, encryption technologies, and data protection strategies.
- **Encryption Projects:** Developed a file encryption and decryption system using **PyCryptodome** to securely store sensitive data, including IP addresses.
- **Coding:** Passionate about solving complex problems through code, proficient in **Python**, **Rust**, **Java**, and **C#**.
- **AI and Machine Learning:** Enthusiastic about **AI technologies** and **machine learning algorithms**, currently exploring applications in cybersecurity, automation, and data analysis.
- **Automation Projects:** Implemented automation scripts for tasks like **server monitoring** and **file management** using Python.