Ana Horga

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Education

Technical University of Cluj-Napoca **Expected Graduation: July 2026**
Bachelor of Computer Engineering *Cluj-Napoca, Romania*

- Courses: Artificial Intelligence, Operating Systems, Computer Architecture, Algorithms and Data Structures, Intro. to Software Engineering

Projects

Coding Events Management | *Source Code* **Spring Boot | MySQL | HTML**

- Developed a secure web application for managing coding events with role-based authentication using **Spring Security**
- Implemented CRUD operations for event management using **JPA/Hibernate**, accessible only to admins
- Utilized **Spring Boot** for backend logic, **MySQL** for data storage, **Lombok** to reduce boilerplate code, and **HTML** for the user interface

BookStore App | *Source Code* **Java | MySQL**

- Developed a **Java-based desktop application** designed for bookstore employees, enabling efficient management of books, employees, and customers. The system follows **Layered Architecture** and adheres to **SOLID principles and OOP paradigms**, ensuring scalability and maintainability.
- Utilized **Java** for backend, **MySQL** for data storage, and **JavaFX** for the user interface, employing **DTOs** for data protection.

Pac-Man Projects | *Source Code* **Python**

- Implemented the UC Berkeley Pac-Man projects, applying fundamental **AI concepts** such as **search algorithms** (A*), **multi-agent** decision-making (Minimax), and **reinforcement learning**.

Queue Management System | *Source Code* **Java**

- Created an application that simulates a multi-queue management system using **multithreading and synchronization mechanisms** to efficiently allocate clients to queues. It ensures **thread safety** through synchronized data structures and logs events in real-time.

Single-cycle microprocessor | *Source Code* **VHDL**

- Designed a **single-cycle MIPS microprocessor** supporting basic instructions such as arithmetic operations, memory access, and control flow. Implemented key component, including the ALU, registers, data memory, and control unit.

Interactive 3D Scene Application | *Source Code* **C++**

- Designed and developed a photorealistic 3D scene rendering application using **OpenGL, GLFW, GLM, and other graphical libraries**. Implemented interactive controls, allowing users to navigate and manipulate the scene using mouse and keyboard inputs.

Technical Skills

Languages: Java, C++, C, Python, SQL, VHDL, HTML

Tools & Frameworks: IntelliJ, PyCharm, Visual Studio, Git, Spring Boot, MySQL

Platforms: Windows, Linux