

CĂTĂLIN-ALEXANDRU RÎPANU

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Education

POLITEHNICA University of Bucharest

September 2020 – July 2024

Faculty of Automatic Control and Computers

Bucharest, Romania

- Bachelor's Degree in Computer Science, GPA: 9.75/10.
- Relevant coursework: Data Structures, Network Protocols, Computer Architecture, Parallel Programming, Electronics, Programming Paradigms, OOP, Algorithms Design, Numerical Methods, Operating Systems, Computer Graphics.

Work Experience

POLITEHNICA University of Bucharest

February 2022 – July 2024

Undergraduate Teaching Assistant

Bucharest, Romania

- Taught students **C**, **Numerical Methods** and **OOP** to help them solve important problems related to real-world ones.
- Helped in grading midterms and projects.

Projects

Seven-Segment LED Display on FPGA | Verilog, Vitis HLS, C++, Vivado

January 2023

- Created a [C++ project](#) which takes 8 signals as input from a Nexys A7-100T board and shows the right number on it.
- Implemented the Double Dabble algorithm for simplifying the conversion between **Binary** and **BCD** formats.
- Operated with High-level synthesis process so that the C++ behavioral specification is used along with a constraint file.

Car Race | C++, OpenGL, OOP, GLSL

December 2022

- Developed a [Car race](#) based game using C++, OpenGL and Graphics Design techniques.
- Designed a curvature effect in **Vertex Shader** modifying the 'y' coordinate of all the objects' vertices in the scene.
- Implemented collision detection with opponents (which are dynamic objects) using the **Sphere vs Sphere** test.
- Created a complex shape of the road rendering a large density of triangles so that no visual artifacts are generated.

Halite Bot | Algorithms, OOP, C++, Techniques Design

May 2022

- Implemented in C++ a [Halite bot](#) using techniques such as Divide and Conquer, Greedy and Dynamic Programming.
- Processed the **highest score cells** first so that the goal of the design (which is saving the bot's strength) is achieved.
- Developed a greedy approach used by the border cells so that all the unoccupied cells will be attacked.
- Created a **strength loss correction** method which uniformly redirects power to all own cells and

RPG Adventure Game | Java, OOP, JSON, Design Patterns

December 2021

- Designed a [Complex RPG](#) based game using Java and JSON files for **storing accounts** used for logging in the game.
- Implemented a functionality which allows the user to choose between 2 game formats (**GUI**, **CLI**).
- Developed a method such that there is a probability that an enemy can double its damage or dodge the user's attack.

Extracurricular Activities

POLITEHNICA University of Bucharest

February 2022 – July 2024

Undergraduate Student Assistant

Bucharest, Romania

- Participated as an **invigilator** along with professors in final exams.

3DPUB Summer School

June 2022

2nd Year Student

Bucharest, Romania

- Participated in 5 **Gameloft** and **PUB** workshops related to GPGPU, Computer Vision and Game Development.

Awards

National Student Mathematics Competition "Traian Lalescu"

November 2022

2nd Year Contestant

Transilvania University of Brasov, Romania

- Participated in the **National** phase and obtained the [3rd prize](#) of the **Complex Analysis** section.

Skills

Technical Skills

- Intermediate Knowledge: C/C++, Java, OOP, Computer Networking and Architecture, Algorithms Design, Linux
- Basic Knowledge: Python, x86 Assembly Language, Haskell, Prolog, Verilog, Parallel Programming, Bash scripting

Languages

- Romanian: Native Speaker
- English: Professional Level
- French: Good Command