

ALEXANDRU-GABRIEL VASILE

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Education

University POLITEHNICA of Bucharest
Bachelor's Degree, Computer Science |

Expected graduation date: Jun. 2026

- Finished first year with a cumulative grade of **9.62/10**.
- Relevant Courses: **Computer Programming, Data Structures and Algorithms, OOP, Numerical Methods.**

Projects

GlobalWaves - Audio Player - Java

Nov 2023 - Ongoing

- A **spotify-like player** with functionalities like **search, next, prev, pause, top5 for a track (song, podcast, playlist)** which uses OOP for a structure that can easily be extended to other functionalities.
- The program uses particular **design patterns** (Singleton, Strategy, Factory) and various **data structures**.

MiniShell - C++

July 2023 - Aug 2023

- A **bash-like shell** with minimal functionalities like **traversing the file system, running applications, redirecting their output or piping the output** from one application into the input of another.
- For implementation, the program uses **C++ STL** for better understanding and for ease of future shell extensions.

Load Balancer - C

Apr 2023 - May 2023

- This program simulates a mechanism frequently used in distributed systems and has the advantage of fulfilling the **minimal disruption constraint**, i.e. minimizing the number of transfers required when a server is stopped or started.
- The program uses **Consistent Hashing** on a **hash-ring** structure which can contain up to **100.000 linked servers**.

Markov chain, Regression and MNIST - MatLab

Apr 2023 - May 2023

- A collection of 3 implementations written in Matlab that reliefs the **basic knowledge and theory in machine learning**.
- Compute path through a labyrinth codified using the **Cohen-Sutherland algorithm** with the help of **Markov chains** and a **DFS-like heuristic** algorithm to traverse and exit.
- Provided a set of functions to train a model to predict the price of any apartment that meets a specified set of criteria using **linear regression** and **gradient descent algorithm**.
- Provided a set of functions to efficiently train a model for the famous **digit recognition** problem **with 93% accuracy** on 20X20 images from the **MNIST database** using a simple **two layer neural network**.

Virtual Memory Allocator - C

Mar 2023 - Apr 2023

- Developed an entire virtual memory allocator that had the role of **reserving memory**, at the library level, traditionally through memory calls such as **malloc()** or **calloc()**.
- Also, the memory allocator deals with **freeing reserved** areas, the related library call being **free()**.

PPM Image Editor - C

Nov 2022 - Jan 2023

- An entire photo editor built to handle **.ppm** and **.pgm** files and apply different **effects** and **filters** such as **crop, rotate, Edge, Sharpen, Blur** using kernels and convolution matrices.
- Special features for **black and white** pictures such as **histogram** (displays a histogram of the gray shades used) and **equalize** (adjust the contrast of an image by modifying the intensity distribution of the histogram).

Volunteering and Extracurricular

LSAC - association for students

Oct 2023 - Ongoing

- Orchestrating **workshops, coding sessions, and events** to enhance skills and encourage continuous learning.

Competitive Programming

Oct 2021 - Ongoing

- Participation in various online programming competitions such as **CodeForces, AtCoder, CodeChef, LeetCode**.

Skills

Programming Languages:

C/C++, Java, Python, Assembly Languages, Octave

Technologies & Tools:

Flask, Git, Linux, Docker

Languages:

English(Fluent), Romanian(Native).