ALEXANDRU-GABRIEL VASILE

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Education

University POLITEHNICA of Bucharest   Expected graduation date: Jun. 2026
Bachelor's Degree, Computer Science |

- 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 - Jan 2024

- A **spotify-like player** with functionalities ranging from basic audio playback (**search, next, prev, top5)** to complex features like **analytics, recommendations, and monetization strategies** based on data collected from all users.
- The program uses particular **design patterns** (Strategy, Command, Observer) and various **data structures**.

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:
 Romanian(Native), English(Fluent)