Andrei-Alexandru Chitu

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EDUCATION

University POLITEHNICA of Bucharest October 2021 - July 2025

Bachelor's Degree in Computer Science and Engineering

- **Relevant Coursework: Operating Systems, Artificial Intelligence, Data Structures and Algorithms, Object Oriented Programming, Parallel and Distributed Algorithms, Network Protocols, Databases**

EXPERIENCE

NXP Semiconductors July 2023 - Present

Software Engineer

- Gained hands-on experience working with **AutoSAR**, including configuration and integration of software components, and ensuring compliance with automotive industry standards.
- Developed and maintained software using **C, C++, Python**, **Makefile**, and **Bash** scripting.
- Worked extensively with **embedded systems**, **microcontrollers**, and related technologies, contributing to the design and development of safety SOC architecture.
- Utilized network protocols such as **TCP, CAN, UDP**, and **MQTT** for effective communication and data exchange.
- Built and optimized routing and communication pathways for **AWS cloud integration** from microcontroller-based devices.
- Utilized technologies and tools such as **CI/CD pipelines**, **JIRA**, and **Docker** to streamline development processes and enhance project management.

PROJECTS

Medwise | *React, FastAPI, MongoDB Cloud* April 2024

- Developed a comprehensive application enabling seamless interconnection between patients and doctors, utilizing **React** for the frontend, **FastAPI** for the backend, and **MongoDB** for the database.
- Implemented features for patients to **add and manage their medical history**, creating detailed profiles accessible to authorized doctors for better healthcare management.
- Facilitated the creation and management of **appointments**, allowing patients to schedule visits and view doctors' profiles, enhancing transparency and ease of access to medical services.
- Incorporated secure **data synchronization** and **real-time updates**, ensuring both patients and doctors receive timely information and notifications.
- Designed user-friendly interfaces and intuitive navigation, prioritizing a seamless user experience for both patients and medical professionals.

AI-Based Timetable Generation | *Python* March 2024

- Developed an AI algorithm utilizing **Hill Climbing** and **Monte Carlo Tree Search** to generate conflict-free timetables based on constraints such as professor preferences, room capacities, and course enrollments.
- Designed the system to minimize scheduling conflicts, producing the most optimal timetable when a perfect solution was unattainable.
- Implemented a robust **heuristic approach** for decision-making, ensuring well-defined and general criteria for evaluating timetable configurations.
- Leveraged Python to build and integrate all components, ensuring a seamless and efficient algorithm execution.
- Tested and validated the algorithm with real-world data, demonstrating its effectiveness in creating practical and usable timetables.
- Optimized performance and scalability to handle large datasets and complex constraints, ensuring the solution's applicability in diverse educational settings.

Master-Slave Thread Scheduler | *Java* December 2023

- Crafted a resilient multithreaded scheduler in Java, skillfully managing race conditions through the strategic incorporation of **synchronization mechanisms** such as semaphores, mutexes, and barriers within the system's design.

- Employed **deadlock** prevention strategies by carefully orchestrating thread synchronization, ensuring seamless execution of concurrent tasks without contention issues.
- Integrated dynamic **priority assignment** algorithms, dynamically adjusting thread priorities based on workload and system demands, fostering efficient task execution.

Topic-Based Messaging Application | *C++, TCP, UDP*   May 2023
- Developed an innovative application featuring **UDP clients** that subscribe to specific topics, and a **TCP server** that manages subscriptions and message distribution.
- Implemented the server to **store and manage** all subscription and unsubscription requests, ensuring accurate topic tracking and efficient message delivery.
- Designed the system so that when a **TCP client** sends a message to the server on a particular topic, the server **redirects the message** to all subscribed UDP clients, ensuring seamless and timely communication.
- Utilized robust **error handling** and **data synchronization** techniques to maintain system integrity and reliability.
- Optimized network communication and resource management to handle multiple clients and high message throughput effectively.

Awards

First Tech Challenge   November 2020

Innovation Award
- Developed technical skills, **teamwork abilities**, and problem-solving techniques while building and programming a robot.
- Engaging with teams worldwide enriched the **global perspective**. This journey enhanced practical knowledge and fostered values like perseverance and continuous learning.

Olympiads   2016 - 2020

Multiple Awards
- Participated in the **National Olympiad of Computer Science**, achieving success in the county phase from 2016 to 2020.
- Consistently recognized for excellence in computer science, demonstrating proficiency and dedication.

Skills

Basic: MySQL, Matlab, Assembly x86, Bash, Haskell, Racket
Intermediate: C/C++, Python, Java
Technologies: Docker, Git, Wireshark, React, FastAPI, Agile