Ștefan-Alexandru BALABAN

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EDUCATION

Transilvania University of Brașov, Electrical Engineering and Computer Science **Oct. 2023-2027**
Automation and Applied Informatics *Brașov, Romania*
Relevant Courses: Data Structures, Algorithms, Files & Databases, Object-Oriented Programming, Numerical Methods

TECHNICAL SKILLS

Languages: C, **Java SE**, JavaScript, **Python**, C# , **SQL**, HTML5/CSS
Technologies:, Git, Node.js, **PyTorch**, Bootstrap
Tools: Jupyter, Microsoft Visual Studio, **Intellij IDEA**, PyCharm

SOFT SKILLS

Critical Thinking and Problem Solving: Analytical thinking, **Logical reasoning**, Attention to detail
Teamwork and Communication: Active listening, **Collaboration**, Empathy
Technical Collaboration and Project Contribution: Creative thinking, **Independent research**, Feedback receptiveness

PROJECTS

Attention-Driven U-Net for Prostate Cancer Detection in mpMRI Scans March 2025

- Developed a **prostate cancer** detection pipeline using **multi-parametric** MRI and an Attention U-Net architecture in PyTorch.
- The model leverages prostate and peripheral zone segmentations to **focus learning** on anatomically **relevant** regions. Input data includes **concatenated** T2-weighted, ADC, and B2000 MRI images from **725** patients (352 positive and 373 negative).
- Trained using 4-fold cross-validation, achieving an AUROC of **85%** and accuracy of **78%.**

Prostate Segmentation using U-Net Deep Neural Network in PyTorch Jan. 2025

- Developed a prostate segmentation application in Python using PyTorch and a U-Net architecture.
- Gained hands-on experience in medical image **preprocessing**, dataset organization, and model training for **semantic segmentation** tasks. Achieved a mean Dice **score of 70%** on a limited dataset of **47 patients**, demonstrating solid performance despite data scarcity.

Absoluto BJJ intranet webpage Jan. 2025

- Contributed to the backend development of "Absoluto BJJ Intranet", a **full-stack CRUD** web application built with Java Spring Boot and React. Implemented secure user authentication with password encryption and data protection in line with **GDPR** principles.
- Developed **core** CRUD functionalities for user management including registration, login/logout, and role-based access control (student, teacher, administrator). Enabled teachers to manage schedules and upload educational materials through protected endpoints.
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Desktop application for shop inventory management March 2024

- Built a desktop inventory management application in Java with a graphical user interface, integrated with a relational database for persistent storage that represents **30% of the code**, supporting user authentication, role-based access control, and **CRUD** operations for products, customers, and suppliers.

Arhiva studentului **June 2024**

- Developed a full-stack web application using C# and ASP.NET for managing and distributing educational resources. Implemented user authentication and role-based access control, integrated with a SQL database for **persistent data storage**.
- Front-end functionality enhanced with JavaScript and AJAX to dynamically populate **80%** of cascading dropdowns and improve user experience by fetching and updating data in real-time.

4-axis mobile robot remotely controlled via a local server **Dec. 2024**

- Designed and built a **4-axis** robotic arm mounted on a mobile chassis, controlled via an ESP-based microcontroller hosting a local web server. The robot can be **remotely** operated through a smartphone or computer over the same Wi-Fi network, allowing **real-time** control of both mobility and arm articulation.