Biluta Titus

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ABOUT ME

I am a graduate of both the bachelor's and master's programs at the Technical University of Cluj-Napoca. I earned a bachelor's degree in Electrotechnics from the Faculty of Electrical Engineering and later completed a master's program in Advanced Manufacturing Control Engineering, Systems Engineering from the Faculty of Automation and Computer Science.

I am optimistic, persistent and dedicated to staying current with the latest technological innovations, with a particular interest in the field of cloud computing and artificial intelligence. I approach every challenge with enthusiasm and determination, always seeking innovative and effective solutions.

In my free time, I enjoy sports, practicing both fitness training and basketball.

WORK EXPERIENCE

Internship at college - Security Systems Engineer
Saico General Cables [2020 – 2021]

City: Cluj-Napoca | **Country:** Romania

CFR Anti-Doping Assistant - UEFA Conference League
Adecco Romania [2021 – 2022]

City: Cluj-Napoca | **Country:** Romania

EDUCATION AND TRAINING

Master's student in Computer Science and Automation (ICAF).
Technical University Of Cluj-Napoca [2022 – 2024]

City: Cluj-Napoca | **Country:** Romania | **Website:** https://ac.utcluj.ro/acasa.html

Engineer (Electrical Engineering)
Technical University Of Cluj-Napoca [2018 – 2022]

City: Cluj-Napoca | **Country:** Romania | **Website:** https://ie.utcluj.ro/acasa.html

High school student
"Onisifor Ghibu" Theoretical High School [2014 – 2018]

City: Cluj-Napoca | **Country:** Romania | **Website:** https://www.liceul-onisifor-ghibu.ro/

LANGUAGE SKILLS

Mother tongue(s): romana

Other language(s): English

DIGITAL SKILLS

Devops

Linux (Terminal Commands, Bash/Shell) / Python Language - Basic knowledge / Docker / Docker Compose / GitHub Workflows / Git, GitHub, GitLab / Node JS / PostgreSQL, MySQL / Virtual Machines (VMWare, Virtual Box) / Flusk python

Network

Network Essentials (IP, TCP, UDP, TCP) / Network services and protocols (DHCP, DNS, SSH, etc.) / Port Forwarding

Frontend

CSS Grid / CSS Flexbox / jQuery library / HTML, CSS, Javascript

Electric

MATLAB-Simulink / OrCAD-PSPICE / Ansys Q2D/Maxwell/HFSS

Other

IDE - IntelliJ, Visual Studio, Visual Studio Code / Microsoft Office package: Microsoft Word, Excel, PowerPoint, Access / mathematical programming language: Matlab, MathCad / SolidWorks

PROJECTS

DockerPythonFluskApp
Web Python Flusk application with Docker and Docker Compose

Link: https://github.com/TitusBilutaViorel/DockerPythonFluskApp

DockerNodeApp
Web Node Js application with Docker and Docker Compose

Link: https://github.com/TitusBilutaViorel/DockerNodeApp

Trash Cans Detection - artificial inteligence (Master Thesis)
For my thesis, I proposed an idea that I consider promising: to examine what types of bins are emptied into the garbage truck and to count how many bins of each type are emptied, in order to optimize collection processes and improve waste management efficiency.

I chose to work on this thesis because it fits into a current field, namely artificial intelligence (AI) combined with computer vision and deep learning. The object detection model I selected and trained with my own dataset for this project is You Only Look Once, abbreviated as YOLO, specifically YOLOv8. This model offers high performance in terms of speed and accuracy. It has the capability to recognize objects, such as waste bins, in images or videos.

This thesis includes:
1. Research on object detection through AI, deep learning, and computer vision.
2. Labeling a small dataset (200 images) using the software application labelImg.
3. Evaluating the accuracy of models such as RTMDet, GroundingDINO, DETR, Faster RCNN, YOLOv7, YOLOv8, YOLOv9 using free resources provided by Google through Google Colab.
4. Testing different variants of YOLOv8, specifically nano, medium, small, and large, on my own dataset (200 images) at different iteration counts, using a notebook on Google Colab.
5. Annotating 3000 training images and 1500 validation images, with each image having an associated .txt file for each annotation box and creating a configurable .yaml file containing information about the location of the images, .txt files, and label names.
6. Documenting how to access a virtual environment using Python in the software application PyCharm.
7. Running commands to train the model in a virtual environment.
8. Counting the bins in a video and displaying the minimum detectable size of each bin during the video.

Link: https://flic.kr/p/2qfxExL

LED Resonance - Arcade Game (Bachelor's Thesis)
Throughout the course of a game, in order to have greater power to destroy an enemy, more intense vibrations are needed. Vibrations are obtained through high resonances.
When a physical system is subjected to a successive external action, with a frequency close to its own, a vibration state called resonance is formed.
To highlight this resonance, a circuit consisting of an LED strip and an accelerometer/gyroscope is chosen. The resonance is visible only when the module with accelerometer and gyroscope is activated by a sudden left-right movement.

The game reproduced by me, one-dimensional, consists of a breadboard, a Wi-Fi module (ESP32), another module consisting of the gyroscope and accelerometer (MPU6050), wires, a buzzer connected to an audio amplifier (PAM8043), a 470 Ohm resistor, a power supply module, and a LED strip with 144 diodes (NEOPIXEL).
The gyroscope and accelerometer have the role of helping the LED strip to know how the MPU6050 component is oriented and to understand its position in order to display the green LED. The precision of these functions in the module is very high.

Link: https://flic.kr/p/2pz3iZa

Frontend - Glas
The project was created using HTML, CSS, and JavaScript and represents the web application for the clothing brand that I plan to launch in the future.

Link: https://titusbilutaviorel.github.io/Glas/

SolidWorks - Lighter
An assembly (lighter) made up of eight components fully defined.

Link: https://flic.kr/p/2pz3nAP

SolidWorks - Bike
An assembly (bicycle) made up of nine components fully defined.

Link: https://flic.kr/p/2pu4YrG