BIANCA MARIA VULSAN

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Linkedin
Github
Portfolio

I am always seeking to improve my knowledge and skills in different programming areas. So far, I have been working on computer vision and embedded systems projects, and I am eager to gain more experience.

EXPERIENCE

Software Engineer on Computer Vision, *2024 - Current*
Robert Bosch, Cluj-Napoca, Romania
- I am currently working on a keypoints and depth multitask network.
- The technologies that I use are: Python, PyTorch Lightning, Python Libraries.
- My main focus is restructuring the architecture of the network and improving its performance. The network is based on an encoder-decoder structure. The training is done self-supervised to avoid ground truth dependencies.

Working Student on Computer Vision, *2023 – 2024*
Robert Bosch, Cluj-Napoca, Romania
- I worked on a depth and surface normals multitask network.
- The technologies that I used are: Python, PyTorch, Python Libraries.
- My main responsibilities included implementing the network in PyTorch Lightning and researching ways to improve its performance.

Working Student on Embedded Systems, *2021 - 2023*
Robert Bosch, Cluj-Napoca, Romania
- I worked on Battery in the Cloud project.
- The technologies that I used are: C++, Google tests, CMake, Yocto, Docker.
- My main tasks involved implementing lifetime optimization features using C++ and writing unit tests.

EDUCATION

Technical University of Cluj-Napoca, *2024-2026*
Master Degree in Artificial Intelligence and Computer Vision

Technical University of Cluj-Napoca, *2020-2024*
Bachelor Degree in Computer Science
Pattern Recognition Systems, Image Processing, Artificial Intelligence, Machine Learning, Software Engineering, Operating Systems Design

SKILLS

- Python
- C/C++
- Java
- Fast Learner
- Creativity
- Adaptability
- Communication
- Teamwork

PROJECTS

- **Keypoints and Depth Simultaneous Prediction in Autonomous Driving**, *05/2024-Present*

I am currently working on this project, researching different ways to combine the depth with the keypoints estimation for predicting the car's trajectory using video sequences. My focus is improving the accuracy of the network, while also reducing its size to improve the inference time and make it easier to deploy on hardware limited devices.

- **Multitask Neural Network for Simultaneous Depth and Surface Normals Prediction in Autonomous Driving**, *09/2023-05/2024*

  This is my bachelor's thesis. The project involves implementing different depth and surface normals state-of-the-art architectures and combining them through a shared encoder and some geometric computations. This project improves state-of-the-art results by ~5%.
- **Ecommerce Clothes Shop**, *10/2022, 01/2023*
  Ecommerce application made using Django and Angular. It includes technologies like Stripe for payment and Redis for storing the cart items.
- **Chatty Letter**, *10/2022, 12/2023*
  Messenger Website that allows real-time communication using WebSockets. It was made using Django and Angular.
- **Depth from Mono**, *07/2023 - 09/2023*
  Implementing a monocular Depth estimation CNN inspired from state-of-the-art models. I have implemented and compared different deep learning techniques that allow depth prediction using monocular images.
- **Dog Breed Classifier**, *09/2022, 11/2022*
  A classifier that detects the dog breed from a photo. Load and preprocess the data, split the dataset, build the model, evaluate the prediction. This project was made on the purpose of getting familiar with TensorFlow and Keras.
- **Ecommerce Perfume Shop**, *03/2023, 05/2023*
  Ecommerce website made with Java Spring and Angular. The server connects to the database via Hibernate. Also, the client-server communication is done via HTTP protocol.
- **Omnifood Web Site**, *07/2021, 08/2021*
  Website made in order to deepen my HTML and CSS knowledge, following some tutorials from Udemy. It can be found at: https://biafood.netlify.app/

ACCOMPLISHMENTS

- The paper **"Joint Depth and Surface Normals Prediction in Autonomous Driving"** was submitted at the 2024 IEEE 20th International Conference on Intelligent Computer Communication and Processing (ICCP 2024)
- **1st Prize at "Einstein's Universe" Physics Contest**, *2017, 2019*
- **Bronze medal at "Traian Lalescu" Mathematics Contest**, *05/2019*
- **2nd Prize at the Olympiad of Mathematics**, *05/2017*, **3rd Prize**, *2019*

CERTIFICATIONS

- **CCNA Routing and Switching, Cisco**, *01/2020*
- **Microsoft Technology Associate, Microsoft**, *05/2018*
- **Cambridge English Level 2 Certificate (Advanced) Cambridge**, *10/2019*

VOLUNTEER EXPERIENCE

- **Member of RobotX team**, *09/2018, 05/2019*
- **Volunteer at Kindergarden no.1**, *09/2017, 07/2018*
  Teaching English to the children from the kindergarten as a volunteer in the project "Let's Teach the little ones...!".
- **Exhibitor at the European Researchers' Night**, *08/2017, 09/2018*
  Presenting the projects made as part of FiziTech and RobotX team.

HOBBIES AND INTERESTS

- Playing the piano
- Tennis
- Ping-Pong
- Chess