

SEBASTIAN MOCANU

Research Scientist - Data Scientist

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EXPERIENCE

Scientific Research Assistant - Part-Time

UNSTPB

📅 Feb 2024 – Present

📍 Bucharest, Romania

- Developed a digital-twin of the bunker from Precis building, enabling real-world test replication in a simulation environment to validate system functionality.
- Conducted autonomous drone flight testing within the simulated bunker, ensuring operational reliability prior to real-world deployment.
- The skills enhanced here were: Computer Vision, Python, C++, Unreal Engine, Linux, Git, Mobile Robotics.

Scientific Research Assistant - Full-Time

UNSTPB & Google

📅 Apr 2023 – Sep 2023

📍 Bucharest, Romania

Scientific Research Assistant - Part-Time

UNSTPB & Google

📅 Jun 2022 – Apr 2023

📍 Bucharest, Romania

- Working on my masters thesis, due to my academic results, my coordinator proposed to work part-time (and later full-time) in collaboration with Google with a scholarship. Technologies used were computer vision, reinforcement learning and control algorithms in order build a fully autonomous visual-based control drone.
- Developed an advanced drone capable of continuous in-scene flight, autonomously navigating around obstacles while precisely locating its designated landing point. The techniques used were monocular depth estimation, semantic segmentation, using the camera parameters to map safe points and other computer vision and control algorithms.
- The skills enhanced here were: Machine Learning, Artificial Intelligence, Deep Learning, Python, C++, Linux, Git, Mobile Robotics.

Software Engineer

Endava

📅 Dec 2021 – Apr 2023

📍 Bucharest, Romania

- Collaborated with a dynamic team within an Agile framework at a well-known multinational banking institution, contributing significantly to the optimization of their payment processing backend systems. Our main mission was migrating critical segments of the Oracle database service to MongoDB resulting in an acceleration of read operations, thus significantly boosting system efficiency and response times.
- Furthermore, leveraged my personal time to create a full stack application. This solution, designed to access and display the contents of Amazon S3 buckets, proved invaluable to the testing team and reduced the cost of buying an application viewer for that the storage service for each developer and tester.

EDUCATION

PhD in Computer Science - AI

Doctoral School of Engineering and Applications of Lasers and Accelerators

📅 Oct 2023 – Oct 2027

📍 UNSTPB

Master in Artificial Intelligence

Automatic Control and Computers Faculty

📅 Oct 2021 – Sep 2023

📍 UNSTPB

Mechatronics & Robotics Engineer

Mechanical and Mechatronic Engineering Faculty

📅 Sep 2017 – Jul 2021

📍 UNSTPB

Psycho-Pedagogical Module II

📅 Sep 2021 – Jun 2023

📍 UNSTPB

Psycho-Pedagogical Module I

📅 Sep 2017 – Jun 2020

📍 UNSTPB



Received second place at Scientific Communication Session 2023 (UNSTPB Artificial Intelligence and Multi-Agent Systems department, from the Faculty of Automatic Control and Computers) for thesis with the title *Scene Surveillance and Mapping for Self-Flying Drones*.



Received third place at Scientific Communication Session 2022 (UNSTPB Artificial Intelligence and Multi-Agent Systems department, from the Faculty of Automatic Control and Computers) for thesis with the title *From The Mind To The Sky: Teaching Drones How To Fly*.

PROJECTS

Autonomous Drone - Computer Vision

- Worked for an autonomous flying drone that has obstacle avoidance capabilities, scene preservation functionality, and the ability to identify safe landing zones in the environment. Additionally, the drone can follow a designated individual responding to their specific commands, such as translations and rotation movements, landing, taking a photo and maintaining continuous proximity to that individual.

- The technologies used were: Java, Spring Framework, Maven, Amazon S3, Linux, HTML, CSS, JavaScript, Oracle Database, MySQL, MongoDB, REST APIs, Git, Bash.

CERTIFICATIONS & DIPLOMAS

- Applied Machine Learning – Google Digital Workshop for Programmers – Jun 2023
- Android Fundamentals – Google Digital Workshop for Programmers – Jul 2021
- Python – Google Digital Workshop for Programmers – Feb 2021
- Machine Learning, Data Science and Generative AI with Python – Udemy
- PyTorch for Deep Learning Bootcamp – Udemy
- Deep Learning: Advanced Computer Vision – Udemy
- PyTorch for Deep Learning with Python Bootcamp – Udemy
- Diverse advanced courses in AI and programming – Udemy and Coursera

TECHNICAL SKILLS

- Artificial Intelligence, Machine Learning, Deep Learning, Computer Vision, Natural Language Processing, Reinforcement Learning, Embedding Systems, Full Stack Development.
- Python 3, Django, Flask, PyTorch, TensorFlow, OpenCV, C, C++, MATLAB/Simulink, MySQL, Git, SQLite, Java, Android, Spring, PHP, Laravel, Arduino, Raspberry Pi, Linux, Maven.
- HTML5, CSS3, JavaScript, jQuery, Bootstrap, React.js, Adobe Photoshop.

PERSONAL SKILLS

- Punctuality and the ability to deliver the project on time.
- Provide clear direction and vision for project objectives.
- Adapt well to working both independently and within diverse teams.
- Problem solver, bug hunter.

HOBBIES

- Playing guitar and violin.
- Playing video games.
- Exploring new places.
- Building software.
- Electronics prototyping.

Abusive Language Detection in Social Media - Natural Language Processing

- Provided an analysis over the existent state-of-the-art abusive language datasets and deep learning models for Natural Language Processing in order to improve the classification of abusive language. By using 7 models on each dataset and having 5 datasets that are different can achieve an enhanced hate-speech detection algorithm. Performed an extensive data analysis and preprocessing for each dataset.

RL Crafter - Reinforcement Learning

- Enhanced a simple Deep Q-Network and fine-tuned it in order to become a baseline, then explored other DQN variants and using heuristics to get a better score.

TMETF Department Website UPB

- Led the development of a comprehensive website from its inception, specifically tailored to cater to the information needs of students enrolled in the Thermal Systems and Equipment (SET) program. This project delivers a user-friendly and informative platform, designed to empower administrators with robust control and flexibility.
- The website's architecture was crafted to ensure effortless management, giving the administrators the capability to effortlessly modify every page.
- <http://termo.pub.ro/>

Fourier Series and Components Application

- Made a desktop application using Python and Tkinter in order to compute Fourier Series coefficients more easily and to visualize the wave graph.
- Worked for a Fourier Harmonics Components Module, its purpose is to add the waves from a signal to reconstruct it.

Android Projects Portfolio

- For the final project within the Google Digital Workshop for programmers - Android Fundamentals made a portfolio application with all the challenges and tasks that were given during the course giving the ability to explore all the developed applications.

Web Application for Hosting Arcade Games

- For the final project of the Google Digital Workshop for programmers - Python developed an application in Django that contained arcade games written in JavaScript. Later recreated the application in Spring Boot and added more functionalities.