Alexandru Buburuzan

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EDUCATION

The University of Manchester Sep 2021 – Jun 2025 | Manchester, UK

BSc(Hons) Artificial Intelligence with Industrial Experience Machine Learning · Computer Vision

- 1st year: **90%** grade, **ranked 2nd/486** first-year CS students, **Golden Anniversary and Netcraft awards.**
- 2nd year: **86%** grade (First-Class Honours), attending Prof. Tim Cootes' Computer Vision reading group.
- Summer schools: Oxford ML (2023), Cambridge AI in healthcare (2022), EEML (2022).
- Selected courses: Machine Learning, Probability, Knowledge-Based AI, Visual Computing, Data Science.

Grigore Moisil Theoretical High School Sep 2017 – Jun 2021 | Timisoara, Romania

Computer Science and Mathematics Algorithms · Data Structures · Mathematics

- **Valedictorian**; Romanian Baccalaureate with 10/10 in Mathematics, Informatics; IBM Quantum Computing course.
- National Olympiad in Mathematics (**Bronze** in 2021) and Informatics (2021, **qualified 9th** in 2020, **Bronze** in 2018).

EMPLOYMENT

FiveAI – acquired by **Bosch** Jun 2023 – Jun 2024 | Cambridge, UK

Research Engineer Intern Autonomous Driving · Multimodal learning · Explainability · PyTorch

- Published a paper [1] on **multimodal fusion** for 3D object detection in autonomous driving.
- Implemented **explainability techniques**, demonstrating enhanced complementarity between modalities.

Rayscape Jul 2021 – Jun 2023 | remote, part-time

Research Engineer Medical imaging · Domain generalization · Segmentation · PyTorch

- Reduced the out-of-domain gap in multi-label chest X-ray classification by 32% for two covariate shifts [2].
- Improved the metrics of a **nodule malignancy classification** algorithm by 3% using Vision Transformers.
- Developed a **CE-marked algorithm** for segmenting nodules on lung CT scans that has helped **radiologists from over 100 medical institutions** fare better at diagnosing lung cancer by providing precise measurements.
- Implemented a segmentation refinement mechanism that **halved the previous error** of the predicted measurements.

Rayscape Mar 2020 – Sep 2020 | Timisoara, Romania

Machine Learning Intern Medical imaging · Classification · Object detection · PyTorch

- Developed an algorithm for **detecting intracranial haemorrhages** which **sped up the triaging process.**
- Built models for lung segmentation, pathology classification and foreign object detection on chest X-ray scans.

PROJECTS

Manchester University Data Science Society Jun 2022 - Present

- As a **workshops executive**, I am teaching an introductory course on Medical Image Analysis using CNNs.
- Prepared a Jupyter Notebook consisting of a PyTorch pipeline used to train an organ classification model.

Citadel European Datathon Apr 2023

- Analysed 1.8 million traffic stops in Philadelphia to identify racial disparities in policing, using Plotly and Pandas.

SaferWalk – first-year team project Oct 2021 - May 2022

- Improved Flask API throughput by 4x, predicting safer pedestrian routes, using an optimised implementation of A*.

Climate Hack.AI – ranked 6th/25 top universities in UK, US and Canada. Jan 2022 – March 2022

- Developed a **video generation** model for predicting solar photovoltaic power production using satellite images.

PUBLICATIONS

[1] Gunn J, Lenyk Z, Sharma A, Donati A, **Buburuzan A**, Redford J, Mueller R, "Lift-Attend-Splat: Bird's-eye-view camera-lidar fusion using transformers" in *arXiv preprint arXiv:2312.14919*, 2023.

[2] Bercean B*, **Buburuzan A***, Birhala A, Avramescu C, Tenescu A, Marcu M, "Breaking Down Covariate Shift on Pneumothorax Chest X-Ray Classification" in *International Workshop on Uncertainty for Safe Utilization of Machine Learning in Medical Imaging (MICCAI UNSURE)*, 2023.

[3] Bercean B, **Buburuzan A**, Birhala A, Tenescu A, Avramescu C, Costachescu D, Marcu M, "Revised Set Prediction Matching for Chest X-ray Pathology Detection with Transformers" in *IEEE SMC Conference*, 2023.

[4] Bercean B, Birhala A, Ardelean P, Barbulescu I, Benta M, Rasadean C, Costachescu D, Avramescu C, Tenescu A, Iarca S, **Buburuzan A**, Marcu M, Birsasteanu F, "Evidence of a cognitive bias in the quantification of COVID-19 with CT: an artificial intelligence randomised clinical trial" in *Nature Scientific Reports*, 2023.

*Equal contribution.