Alexandru Buburuzan

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Education

University of Oxford · Visual Geometry Group (VGG)

DPhil (PhD) Autonomous Intelligent Machines and Systems — Oxford, UK · *Oct 2025 – present*

- Supervisor: Prof. Andrew Zisserman; co-supervisor: Dr. Puneet Dokania.
- Research on generative modelling for perception; fully funded by University of Oxford's AIMS CDT and Five AI.

University of Manchester

BSc (Hons) Artificial Intelligence with Industrial Experience — Manchester, UK · *Sep 2021 – Jun 2025*

- Dissertation with Prof. Tim Cootes: *"Reference-Guided Diffusion Inpainting for Multimodal Counterfactual Generation."*
- Ranked 1st/270+ in year 1, **Top 1%** in year 2; Golden Anniversary and Netcraft awards (see full transcript).
- Conferences: CVPR'25, MICCAI'23. Summer schools: Oxford ML (2023), Cambridge AI Med (2022), EEML (2022).
- Selected courses: Machine Learning, AI & Games, Knowledge-Based AI, Multivariate Statistics, Visual Computing.

Employment

Five AI – acquired by Bosch

Research Scientist Intern — Cambridge & Oxford, UK · *May 2025 – Mar 2026*

- *Main project:* built a SOTA driving VLA **4–31× faster** than prior art on A100, based on FastVLM with one-pass decoding.
- Formed the basis of FIVE-VLA [1] (NeurIPS'26) with recurrent action memory: **+10%** Bench2Drive success rate vs. SimLingo.
- *Other project:* co-authored a TMLR survey [2] of 37 foundation models for trajectory planning in autonomous driving.

Research Engineer Intern — Cambridge, UK · *Jun 2023 – Jun 2024*

- *Main project:* developed a new diffusion model for camera-lidar object inpainting in driving scenes [3] – patent filed.
- Fine-tuned Paint-by-Example for multimodal generation with 3D control, resulting in **13% LPIPS improvement**.
- *Other project:* co-authored a paper [4] on multimodal sensor fusion for 3D object detection in autonomous driving.
- Implemented explainability and interpretability techniques, demonstrating enhanced camera-lidar complementarity.

Rayscape

Research Engineer — Remote · *Jul 2021 – Jun 2023*

- Developed a CE-marked algorithm for lung nodule segmentation, **deployed in over 100 hospitals**.
- Devised a method reducing the out-of-domain gap in multi-label chest X-ray classification by 28% for two shifts [5].

Machine Learning Intern — Timisoara, Romania · *Mar 2020 – Sep 2020*

- *Main project:* developed an algorithm for detecting intracranial haemorrhages which **sped up the triaging process**.

Experience

The University of Manchester AI Society

President, previously Workshops Executive (2022–24) — Manchester, UK · *Sep 2024 – Feb 2025*

- Led a team of ten, launched a spotlight series of academic talks, and hosted Entrepreneurs First's first UoM event.
- Taught workshops on computer vision for medical image analysis and self-supervised learning with SimCLR.

Selected Publications

* indicates equal contribution

[1] Oksuz K, **Buburuzan A**, Yao Y, Dokania P, "FIVE-VLA: Fast and EffectIVE Autonomous Driving with Recurrent Action Memory", *Conference on Neural Information Processing Systems (NeurIPS)*, 2026.

[2] Oksuz K, **Buburuzan A**, Knittel A, Yao Y, Dokania P, "Foundation Models for Trajectory Planning in Autonomous Driving: A Review of Progress and Open Challenges", *Transactions on Machine Learning Research (TMLR), Survey Certification*, 2026.

[3] **Buburuzan A**, Sharma A, Redford J, Dokania P, Mueller R, "MObI: Multimodal Object Inpainting Using Diffusion Models", *CVPR Workshop on Data-Driven Autonomous Driving Simulation (DDADS)*, 2025.

[4] 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", *CVPR Workshop on Autonomous Driving (WAD)*, 2024.

[5] Bercean B*, **Buburuzan A***, Birhala A, Avramescu C, Tenescu A, Marcu M, "Breaking Down Covariate Shift on Pneumothorax Chest X-Ray Classification", *MICCAI UNSURE Workshop*, 2023.