Oliver King

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I enjoy generating insights into environmental challenges using code and remotely sensed data. I have technical and research experience in ecology and glaciology, where I use Python for geospatial data science and machine learning.

Programming	Python: Xarray, NumPy, Pandas, Shapely, Matplotlib; JavaScript; Julia; R
Computing	Linux, Windows, Bash, Batch, Git, SQL, Markdown
GIS Software	GDAL/OGR, QGIS, ArcGIS Pro & Online, Google Earth Engine, LASTools

Education

2023–2024 **MSc Earth Observation & Geoinformation Management *with Distinction***
School of GeoSciences, The University of Edinburgh

Dissertation: Drivers of terminus retreat at two contrasting central east Greenland tidewater outlet glaciers

- Awarded departmental prize for best dissertation on MSc programme.
  - Processed and analysed terabyte-scale satellite observations and climate reanalysis in Python to investigate mechanisms that drive glacier retreat.
  - Produced ~20 scientific illustrations using Matplotlib, including animations, maps, and graphs.
  - Programmatically automated all data workflows to enable full reproducibility, hosting code and final results on GitHub and Zenodo.
- Studied the fundamentals of remote optical, radar, and lidar measurements, as well as practical software engineering and spatial database management skills.
- Used Oracle SQL to populate and query spatial and non-spatial relational databases using formatted macros and the cx_Oracle Python API.
- Modelled omni-directional habitat connectivity for priority species using PlanetScope imagery and airborne lidar data in Julia.
- Performed Sentinel-1 radar processing, airborne lidar processing, and aerial photogrammetry using SNAP, LASTools, and Pix4D software, respectively.

2020–2023 **BSc Hons Geography *with First Class Honours***
Lancaster Environment Centre, Lancaster University

Minor: Computer Science
Dissertation: Recent Changes in ice dynamics at Upernavik Isstrøm, northwest Greenland

- Awarded the University Chancellor's Medal for exceptional merit, presented to the top eight students of the graduating cohort.
- Received several departmental awards for best academic performance, as well as nominations for two national RGS-IBG dissertation prizes.
- Processed and analysed eight years of satellite glacier observations, including by fusing digital surface models with ICESat-2 altimetry data.
- Developed a wildfire spread probability model for QGIS to simulate the success of controlled burns in California.
- Generated a weekly time series of post-hurricane mangrove forest health using PlanetScope imagery and ArcGIS Pro.

Experience

Oct 2024 – Feb 2025	**PhD Candidate** Scott Polar Research Institute, University of Cambridge

- Awarded a UKRI Natural Environment Research Council studentship through the Cambridge Climate, Life and Earth (C-CLEAR) Doctoral Training Partnership.
- Performed intercomparison and external GPS-based validation of four satellite-derived ice velocity datasets over southwest Greenland.
- Developed programmatic access to cloud AWS S3 buckets and HTTPS web servers to filter and subset velocity grids in Zarr, NetCDF, and GeoTIFF formats.
- Restructured datasets to a common multi-dimensional NetCDF format compliant with CF metadata conventions using Xarray and Python.
- Collaborated on project direction with researchers at the Geological Survey of Denmark and Greenland and the University of Oxford.
- Withdrew from programme to pursue a career outside of academia.

May 2023– May 2024	**Research Assistant** Lancaster Environment Centre, Lancaster University

- Independently led method implementation on a small research project (~£11,000) investigating the spread of a damaging plant species using remote sensing.
- Developed, trained, and tested a deep-learning convolutional neural network for image classification using TensorFlow, Keras, and OpenCV in Python.
- Applied trained neural network to multi-temporal aerial imagery at regional scale to evaluate changes in species distribution over time.
- Prepared a refereed extended abstract and delivered an oral presentation for the 2024 GIS Research UK (GISRUK) conference at the University of Leeds.

Jun 2019– Jul 2019	**Intern** JBA Consulting Ltd.

- Produced a geotechnical consultancy report on flood risk and bridge stability using field measurement and AutoCAD modelling.

Publications

2024 **King, O.G.**, Whyatt, J.D., Zhang, C., Stevens, C., 2024. Automatic detection of native invasive rush species with aerial imagery and deep learning. 32nd Annual Geographical Information Science Research UK Conference (GISRUK), University of Leeds, UK. doi:10.5281/zenodo.10926048

Awards

2024	Best Dissertation Prize, *MSc EOGM, £250*	School of GeoSciences, The Uni. of Edinburgh
	C-CLEAR DTP Studentship, *~£100,000*	Natural Environment Research Council, UKRI
2023	Chancellor's Medal	Lancaster University
	Peter John Vincent Geography Prize	Lancaster Environment Centre, Lancaster Uni.
	Best Dissertation Prize, *BSc Hons*	Lancaster Environment Centre, Lancaster Uni.
	Best Performance Prize, Overall, *BSc Hons*	Lancaster Environment Centre, Lancaster Uni.
2022	Best Performance Prize, Year 2, *BSc Hons*	Lancaster Environment Centre, Lancaster Uni.
2020	Lancaster Excellence Scholarship, *£6000*	Lancaster University