Max Gamill, Ph.D.

Contact

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Max Gamill | Max-Gamill

Key Achievements

- Awarded the 2023 Sheffield FAIR software development award.
- Invited speaker at the BIRS DNA topology conference in Canada for my novel image analysis pipeline.
- First author Nature Communications journal paper.
- Achieved the highest client satisfaction score of 79% in my analytics team at IBM.

Key Skills

Production Software Development

| FAIR Software Development | | End-to-end Python Pipelines | | Milestone Planning | Version Control | Documentation (Sphinx, GitHub Pages) | Containerisation (Docker) | Deployment |

Machine & Deep Learning

| Scikit-Image | Scikit-Learn | | Clustering (kNN, DBSCAN, GMM) | TensorFlow | Data Version Control | Albumentations | | Segmentation Models (U-Net) | | Object Detection Models (YOLOv3, Mask-RCNN) | | Generative Models (CVAE) |

CI/CD & DevOps

| Git Collaboration | GitHub Actions | Test Automation | Tagged Releases | PyTest | Linting | | Hosting Town Halls | | Leading Multi-disciplinary Teams | User Training |

High Performance Computing

| Unix | Environment Management | SLURM and PBS Schedulers | MPI and Multiprocessing Parallelisation | HPC User Support |

Profile

Software developer with 5 years experience collaboratively building, testing, and enhancing research software from computer vision pipelines to Django web apps. These software packages total over 37,000 downloads and won the 2023 Sheffield FAIR software award. Motivated to drive automation further with a proven track record of developing classical and deep learning computer vision pipelines.

Professional Experience

Imperial College London | **2025 - Present** |

HPC and RSE Experience Programme

- Working with Intel to benchmark inference on new hardware with a variety of research-focused deep-learning models.
- Created a Cookiecutter UV template helping initialise new projects with documentation and CI/CD system tests.
- Resolved bash scripting, resource availability, software and parallel processing issues on HPC systems.

University of Sheffield | **2021 - 2025** |

Postgraduate Researcher

- Collaboratively developed classical and machine learning pipelines for image analysis software with 37,000+ downloads; TopoStats, AFMReader, and Napari-AFMReader.
- Trained and evaluated k-means, DBSCAN, and GMM models to cluster similar DNA shapes within the latent space of a loss-function modified CVAE. The GMM achieved 60% accuracy in a non-discrete classification task.
- Trained U-Net models for segmentation improvements of touching objects, reducing the error of area statistics by ∼30%.
- Validated YOLOv3 and Mask R-CNN models to classify biomolecular structures. Identified a dataset imbalance (70% in class 0 of 8), addressed by developing synthetic data for transfer learning.
- Improved pipeline governance by liaising with Microscopy companies and integrating proprietary file formats, removing bias.
- Guided external stakeholders to contribute and maintain software, helping with lifecycle management, and organised town halls between developers and users to align milestones to user needs.
- Disseminated knowledge via seminars, posters, and software workshops at international conferences (CBIAS, BIRS, I2K).
- First author of a Nature Communications paper - a 14.7 impact-factor journal.

IBM | **2018 - 2019** |

Cognos Analytics Technical Support Analyst

- Resolved 230+ cases spanning general questions, errors, defects, workarounds, and load balancing issues.
- Authored 36 technical documents and 11 corrections.
- Managed 10-20 concurrent cases, prioritising system critical cases.
- Configured minimal test case environments on Unix and Microsoft operating systems.
- Root cause analysis through the investigation of log files.
- Scored the team highest client satisfaction score of 79.

Languages & Packages

Python
| Pandas | Numpy | PyTest | Black | PyLint | Seaborn | Matplotlib |

Python - ML & DL
| Scikit-Image | Scikit-Learn | | TensorFlow | Albumentations |

Web Development
| Django | HTML | JavaScript | | CSS |

Documentation
| Markdown | GitHub Pages | | LaTeX |

Key Software

Git

Authored over 1.2k commits, 106 PR's and 72 issues in 2025. Setup automated CI/CD, test and publishing, GitHub actions.

TensorFlow / DVC

Created multiple reproducible ML training pipelines with data version control to compare parameter / data / architecture changes.

High Performance Computing

Unix, environment creation, SLURM, and parallelisation.

Docker

Making docker files and running containers to reduce machine-to-machine variability.

Testing and Documentation

PyTest (unit, integration, system testing), Sphinx, GitHub pages.

Published Packages

- **TopoStats** - Atomic force microscopy image analysis software to quantify and characterise topographs of nanoscale biomolecules. Has 12,000+ downloads from international research groups. Winner of the 2023 Sheffield FAIR software award.
- **AFMReader** - General file loader for many atomic force microscopy file types to extract data and metadata into Python. Has 25,000+ downloads demonstrating scalable software adoption.
- **Napari-AFMReader** - A widget for the interactive BioImage viewer software "Napari" to help integrate atomic force microscopy images into the bioimage analysis community. Has 450+ downloads for recent software and is the backbone of the Napari-TopoStats software (in publication).

Education

University of Sheffield | **2021 - 2025** |

Doctorate of Philosophy in Computational Biophysics

University of Leeds | **2016 - 2021** |

Master of Physics | First Class

- Trained and evaluated a 3D-point predicting DL model was ~30% more robust to 4× object density and noise vs a mathematical model. This better mapped receptor density across a SMLM killer T-Cell image.

Personal Projects & Commitments

- **Machine Learning**. Developed deep learning segmentation and style transfer models alongside image processing scripts to design personalised cards. Currently building into an interactive Django website. Using medical imaging BioImage Zoo and DL4Mic deep learning models during workshops. Hosting my own LLM via LM Studio.
- **Web Development (Django)**. Developed a dynamic website portfolio of interactive Python projects using the Django and AJAX frameworks on a Raspberry Pi Server.
- **Completed Courses**. Adding New Knowledge to LLMs (hosted by NVIDIA). Accelerating model training using HPC resources after attending introductory HPC skills courses. Attended multiple Git and GitKracken courses. Contributing and developing microscopy deep learning resources at I2K and CBIAS workshops.
- **Teaching & Knowledge Transfer**. Taught academics a beginners deep learning workshop in collaboration with the Research Software Engineering team. Developed best use HPC and TopoStats software guides as living documents.

Referees

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