Oyebamiji Oluwole Kehinde
(PhD, MPhil, BSc)
School of Computer Science,
University of Birmingham, Edgbaston, Birmingham, B15 2TT, UK.
Email: o.k.oyebamiji@bham.ac.uk

General Information

Employment History

- DeepMind Academic Fellow, School of Computer Science, University of Birmingham 2023 -
- Senior Statistician, Data Science Group, HR Wallingford Ltd, Wallingford, UK 2021 - 2023
- Senior Research Associate, Mathematics and Statistics, Lancaster University. 2018-2021
- Research Associate, Mathematics, Statistics and Physics, Newcastle University. 2015-2018
- Graduate Teaching Assistant, Obafemi Awolowo University. 2005 – 2006

Academic and Professional Qualifications

- *Ph.D.* Statistics, The Open University, Milton Keynes, UK 2015
  Thesis Title: *Statistical Emulation for Environmental Sustainability Analysis*
- *MPhil.* Statistics and Modelling Science, University of Strathclyde, Glasgow 2010
  Thesis Title: *Modelling Air Pollution in Scotland*

Research and Scholarly Work

Research Interests

Oluwole expertise lies in theoretical foundations and multidisciplinary applications of Machine learning and Data mining, with a particular focus on Probabilistic Modelling, Numerical Optimization, and cutting-edge computational techniques for analysing high-dimensional spatio-temporal data.

Past projects

- EA WRMP24 Decision-Making Process (2022-2023): A project to undertake assessments and provide support to the Environment Agency (EA) on Water Resources Management Plans (WRMP).
- Groundwater emulator (2022-2023): The future for groundwater in UK water resources planning. HR Wallingford, UK.
- FWY0596 (2022): Enhancements to Dam Monitoring from Satellites for Bristol Water (DAMSAT) Capability to Support Roll-out: Cloud masking. This project compared the performance of selected cloud masking algorithms for Sentinel-2 image data.
- D-MOSS (2021-2022): Dengue forecasting MOdel Satellite-based System in Vietnam. A dengue fever early warning forecasting system sponsored by the UK Space Agency. It combines the latest Earth Observation data from satellites with weather forecasts and other data to forecast dengue fever.
- DAMSAT (2021-2022): Dam Monitoring from Satellites for Bristol Water: A system that uses satellite technology to remotely monitor water and tailings dams and other tailings storage facilities. The system helps to reduce the risk of failure of these structures and the consequent risk to the downstream population and ecosystems.
- DSNE (2018-2021): Data Science for the Natural Environment. A joint project between Lancaster University and the Centre for Ecology & Hydrology (CEH), EPSRC-Funded. The aim is to co-create and deploy a data science of the natural environment driven by the grand challenges of environmental science.
- NUFEB (2015-2018)**:** Newcastle University Frontiers in Engineering Biology - A new frontier in design: the simulation of open engineered biological systems. This is an EPSRC-funded Frontier Engineering award.
- ERMITAGE (2010-2013): Enhancing Robustness and Model Integration for the Assessment of Global Environmental Change (ERMITAGE), an FP7 EU-funded project which Involves the development of multidisciplinary modelling tools to address interactions of natural and socio-economic systems such as climate change, land use, energy market trends and economic development models for the assessment of global climate changes.

Awards & Scholarships

2024: RSS International Conference 2024 registration (£350).
2024: The Royal Statistical Society (RSS) Future Leaders.
2023: DeepMind Research Fellowship, Google DeepMind, UK.
2019: Isaac Newton Institute for Mathematical Sciences financial support to attend a workshop on Mathematical and statistical challenges in landscape decision-making (£330).
2018: Lancaster University travel grants (£1000) - Bayesian Statistics in the Big Data Era, France.
2016: Conference Travel Fund - MEWE and Biofilm specialist conference in Copenhagen.
2016: NUFEB Project travel grant - VIII International Conference on Sensitivity Analysis of Model Output (SAMO), The University of Reunion Island, (£1500).
2012: Central Research Funding - ERMITAGE 2nd Annual Meeting and Workshop, Potsdam, Germany (£200).
2011: Enhancing robustness and model integration for the assessment of global environmental change (ERMITAGE), EU Framework 7, PhD Scholarship, UK.
2011: The Open University Charter Studentship Scheme, Milton Keynes UK.
2002: Federal Government Graduate Scholarship, Nigeria.

DMOSS Project Excellence Awards

I was part of the HR Wallingford team that won awards:
UK IT Industry Awards:

- Winner, "Emerging Technology of the Year" (2021).
- Winner, "Best charity (third sector) IT project of the Year" (2021).
- Winner, "User engagement project of the Year" (2021).
- Highly commended, "Data science project of the Year" (2021).

E&T Innovation Awards:

- Winner, "Digital Health and Social Care" (2021).
- Winner, “TechforGood” (2021).
- Finalist, “R&D” (2021).

Digital Technology Leaders Awards:

- Winner "Big Data/IoT Project of the Year" (2021).
- Highly Commended, "Best Not-for-Profit Project" (2021).

British Expertise International Awards:

- Winner "International Development Non-Physical Project" (2020).

GEO Sustainable Development Goals (SDG) Awards:

- Winner "Not-for-Profit" (2020).

DAMSAT NCE TechFest Awards 2021.

- Technology Leader - Trailblazer award for the development project of DAMSAT.
- Technology Provider - Trailblazer for the transformation of this into a commercial service.

Publications

- Oyebamiji, O.K., Dissanayake, D., Cavus, M. Enhancing Uncertainty Estimation with Parametric Predictive Deep Gaussian Processes. *The Second UK AI Conference 2024, The Exchange, Birmingham, UK.*
- Oyebamiji, O.K. A Novel Approach to Environmental Monitoring With Fused Satellite Data Using Sparse Convolutional Neural Network. *In Mathematical Sciences: An Indispensable Trajectory To Sustainable Development, OAU.*
- Oyebamiji et al. (2024). Deep parametric predictive Gaussian processes for uncertainty estimation. The 26th *International Conference on Computational Statistics*, University of Giessen, August 2024.
- **Oyebamiji**, O. K., Nemeth, C., Harrison, P. A., Dunford, R. W., & Cojocaru, G. (2023). Multivariate sensitivity analysis for a large-scale climate impact and adaptation model. *Journal of the Royal Statistical Society Series C: Applied Statistics*, *72*(3), 770-808.
- Blair, G., Bassett, R., Bastin, L., Beevers, L., Borrajo Garcia, M., Brown, M., Dance, S., Dionescu, A., Edwards, L., Ferrario, M. A., Fraser, R., Fraser, H., Gardner, S., Henrys, P. A., Hey, T., Homann, S., Huijbers, C., Hutchison, J., Jonathan, P., Lamb, R., Laurie, S., Leeson,

A., Leslie, D., McMillan, M., Nundloll, V., **Oyebamiji, O**., Phillipson, J., Pope, V., Prudden, R., Reis, S., Salama, M., Samreen, F., Sejdinovic, D., Simm, W., Street, R., Thornton, L., Towe, R., Vande Hey, J. D., Vieno, M., Waller, J. & Watkins, J. (2021), 'The Role of Digital Technologies in Responding to the Grand Challenges of the Natural Environment: The Windermere Accord'. Patterns, 8;2(1):100156.

- Nezi, M., Counsell, C., Liu, Y., & **Oyebamiji**, O. (2022). The future for groundwater in UK water resources planning. Groundwater Modellers' Forum 2022, Birmingham, United Kingdom.
- Turchin, P., Whitehouse, H., François, P., Hoyer, D., Alves, A., Baines, J. **Oyebamiji, O**. ... & Xie, L. (2020). An introduction to Seshat: Global history databank. *Journal of Cognitive Historiography*, *5*, 115-123.
- **Oyebamiji OK**, Wilkinson DJ, Li B, Jayathilake PG, Zuliani P, Curtis TP (2019). Bayesian emulation and calibration of an Individual-based model simulation of microbial communities. *Computational Science*, 30: 194-208.
- Warren, R.F., Edwards, N.R., Babonneau, F., Bacon, P.M., Dietrich, J.P., Ford, R.W., Garthwaite, P., Gerten, D., Goswami, S., Haurie, A., Hiscock, K., Holden, P.B., Hyde, M.R., Joshi, S.R., Kanudia, A., Labriet, M., Leimbach, M., **Oyebamiji, O.K**., Osborn, T., Pizzileo, B., Popp, A., Price, J., Riley, G., Schaphoff, S., Slavin, P., Vielle, M., Wallace, C. (2019), 'Producing Policy-relevant Science by Enhancing Robustness and Model Integration for the Assessment of Global Environmental Change', Environmental Modelling and Software. 111, 248-258.
- **Oyebamiji OK**, Wilkinson DJ, Jayathilake PG, Rushton SP, Bridgens B, Li B, Zuliani P (2018). A Bayesian approach to modelling the impact of hydrodynamic shear stress on biofilm deformation. *PloS One*.12;13(4): e0195484.
- **Oyebamiji OK**, Wilkinson DJ, Jayathilake PG, Curtis TP, Rushton SP, Li B, Gupta P. (2017). Gaussian process emulation of an individual-based model simulation of microbial communities. *Computational Science*, 22:69-84.
- Jayathilake PG, Gupta P, Li B, Madsen C, **Oyebamiji O**, Gonzalez-Cabaleiro R, Rushton S, Bridgens B, Swailes D, Allen B, McGough AS, Zuliani P, Ofiteru ID, Wilkinson DJ, Chen J, Curtis TP (2017). A mechanistic individual-based model of microbial communities. *PLoS One*, 12(8), e0181965.
- **Oyebamiji, OK**, Edwards, N. R., Holden, P. B., Garthwaite, P. H., Schaphoff, S., & Gerten, D. (2015). Emulating global climate change impacts on crop yields. *Statistical Modelling*, 15(6), 499-525.
- Currie, T., Bogaard, A., Cesaretti, R., Edwards, N. R., Francois, P., Holden, P., ...& **Oyebamiji, OK** (2015). Agricultural productivity in past societies: Toward an empirically informed model for testing cultural evolutionary hypotheses. *Cliodynamics: The Journal of Quantitative History and Cultural Evolution*, 6(1), 24-56.
- **Oyebamiji OK**, Wilkinson DJ**.** Statistical emulation as a tool for analysing complex multiscale stochastic biological model outputs. *In: VIII International Conference on Sensitivity Analysis of Model Output* (2016). The University of Reunion Island.

Papers Under Review/ Submitted

- **Oyebamiji, O.K**., Dissanayake, D., Cavus. Sparse Attention-Augmented Gaussian Processes for Multivariate Time Series Forecasting. To be submitted to ICML 2025.
- Muhammed Cavus, Huseyin Ayan, Margaret Bell, Oluwole Oyebamiji, Dilum Dissanayake. (2024). Deep Charge-Fusion Model: Advanced Hybrid Modelling for Predicting Electric Vehicle Charging Patterns with Socio-Demographic Considerations. Under review in *Nature Energy*.
- **O. K. Oyebamiji**, M. Nezi,Y. Liu, A. McBride, A. Ball. Comparison of machine learning algorithms for emulating groundwater levels across the UK. Under review.
- **Oyebamiji OK**, Nemeth C, Harrison PA, Dunford, RW & Cojocaru G. Uncertainty quantification in high-dimensional landscape problems using Bayesian hierarchical models.

Conference Proceedings & Abstracts

- **Oyebamiji, OK**. & Wilkinson, D.J. (2017). A surrogate-based approach to modelling the impact of hydrodynamic shear stress on biofilm deformation in *10th International Conference of ERCIM Working Group on Computational and Methodological Statistics*, Birkbeck University of London.
- **Oyebamiji, OK**. & Wilkinson, D.J. (2016) Emulation as a tool for analyzing complex multiscale stochastic biological model outputs. Abstract submitted to the *MEWE and Biofilm specialist conference* in Copenhagen.
- **Oyebamiji, OK**. (2014). A new emulator of global climate change impacts on crop yields, *Uncertainty in Complex Models Conference Proceeding*, Sheffield, UK.
- **Oyebamiji et al.** (2012). Predicting terrestrial biospheric response to climate change and anthropogenic CO_2 emissions, *UCM 2012 Conference Proceeding.*
- **Oyebamiji, OK**., Gray, A. & Robertson, C. (2010). Spatio-temporal modelling of air pollution and its relationship to health: An abstract submitted for the *33rd Research Students' Conference in Probability and Statistics*. The University of Warwick, UK.

Conference Presentations, Invited Talks and Seminars

- Conference - RSS Future Leaders – Inspiring Data Career for All (panel discussion). RSS International Conference 2024, Brighton, UK. Sep 2024
- Seminar - Time Series Data Analytics in R: ARIMA and Machine Learning Techniques. Outreach: Climate Change Challenge, University of Birmingham, UK. Jul 2024
- Workshop - Uncertainty quantification using Deep parametric predictive Gaussian process (DPPGR). AI seminar, School of Computer Science, University of Birmingham. Jun 2024
- Conference - A novel approach to environmental monitoring with fused satellite data using Gaussian process transformer, ECDN Conference Presentations, University of Birmingham, UK. Jun 2024
- Workshop - Interactive session: Google DeepMind Programmes. BSURE (Birmingham Summer Undergraduate Research Experience), University of Birmingham, UK. Jun 2024
- Seminar - Environmental Data Science and Climate Change AI. Outreach: Climate Change Challenge, University of Birmingham, UK Jun 2024
- Workshop – Satellite-derived impacts of flooding in Bihar, India, HR Wallingford, Apr 2023
- Workshop – Masking out the clouds: Comparing algorithms performance to improve pollution detection, HR Wallingford 75th Anniversary Spotlight on Innovation Nov 2022
- Workshop - Integrating Quantitative Social, Ecological and Mathematical Sciences into Landscape Decision-Making, (online) Sep 2020
- Conference - The future for groundwater in UK water resources planning, Groundwater Modellers Forum, Birmingham Oct 2022
- Conference - Joint Statistical Meeting (JSM2020), USA (online) Aug 2020
- Workshop - STOR-i Workshop on Time-Series and Spatial Statistics, Lancaster May 2020
- Conference - 12th International Conference of ERCIM Working Group on Computational and Methodological Statistics, University of London Dec 2019
- Workshop - Mathematical and statistical challenges in landscape decision-making, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK Jul 2019
- Workshop - Data Science of the Natural Environment, Lancaster University Jul 2019
- *Workshop - Centre of Excellence in Environmental Data Science*, Lancaster Mar 2019
- *Conference - Bayesian Statistics in the Big Data Era Conference*, CIRM, France Nov 2018
- Seminar - Data Science of the Natural Environment, Lancaster University Nov 2018
- Conference - Joint Statistical Meeting (JSM), Vancouver, Canada Jul 2018
- Conference - 3rd Sub-Saharan African Research Conference, Newcastle Mar 2018
- Conference - 10th International Conference of ERCIM Working Group on Computational & Methodological Statistics, Birkbeck University of London Dec 2017
- Workshop - Dept. of Computing Science, Newcastle University Oct 2017
- Seminar - Mathematics, Statistics & Physics, Newcastle University May 2017
- Seminar - Mathematics, Statistics & Physics, Newcastle University May 2016
- Seminar - Advisory College Meeting, Newcastle University Jan 2016
- Workshop - Statistics Research Students' Day, The Open University May 2014
- Seminar – Partners Meeting, University of Cambridge Feb 2014
- Conference - Uncertainty in Computer Models, University of Sheffield Jul 2014
- Workshop - ERMITAGE 3rd Annual Meeting and Workshop, Belgium Jun 2013

- Workshop - ERMITAGE 2nd Annual Meeting and Workshop, Germany Sep 2012
- Conference - Uncertainty in Complex Models, University of Sheffield Jul 2012

Supervision completed/examined:

- Nikhil Handa: Predictive Models of Hard Drives Failures for Real-World Applications (2024).
- Ibrahim Hamid: Remote Sensing for Real-time Beehive Anomaly & Health Detection (2024).
- Martin Muru: Quantella: A Neural Network Approach to Automated Trading Systems (2024).
- Linlin Chen: Multiplayer Snake Game (2024).
- Katlego Kobuane: Evaluating the effects of different sampling schemes on the predictive performance of surrogate models (2020).
- Rebecca Tyson: Adaptive enrichment designs using frequentist techniques (2020).

Current students:

- Deniz Erdogan: A Music Composer Aide.
- Zaine-Ul-Abideen Qayyum: Developing a Neurodiverse Learning Platform.

Academic Leadership and Engagement

- University of Birmingham Representative to Martingale Google DeepMind AI Scholarships (2024).
- Google DeepMind Representative, School of Computer Science, University of Birmingham (2024).
- University Impact Representative: School of Computer Science, University of Birmingham (2024).
- DSNE Seminar Organiser, Lancaster University (2018 - 2019).
- NUFEB Modeller's Workshop Organiser, Newcastle University (2017 - 2018).
- Member of the Student Central Representative, Senate Reference Group, The Open University (2013 - 2015).
- Statistical Emulation and Robust Optimization Lead, ERMITAGE (2013 - 2014).

External Roles

Reviewer for the Journals:
Ecological Modelling
BMJ Open
Biofouling