Ibrahim M. Alsaggaf

School of Computing and Mathematical Sciences, Birkbeck, University of London

0009-0007-7379-5915 i.m.saggaf@gmail.com

Biography

Ibrahim is an IT professional with two decades of experience in the industry. His expertise spans modern technologies, including cloud computing and high-performance computing (HPC). Driven by his passion for research and professional growth, he began pursuing higher education in 2019. By 2020, Ibrahim has earned an MSc with Distinction in Advanced Computing Technologies from Birkbeck, University of London, showcasing his outstanding academic capabilities, and by 2025, he has earned a PhD in Computer Science from the same institution. Since 2022 he had proposed a new family of novel machine learning algorithms for single-cell RNA-Seq analysis and authored several journal articles. In addition, he has worked as a tutor and assessment marker for the MSc Computer Science programme at Birkbeck in collaboration with the University of London Worldwide, from January 2022 to July 2025. Ibrahim's research interests are Machine Learning and Bioinformatics.

Awards

1. PhD Prize award in Computing and Mathematical Sciences, organised by the Faculty of Science at Birkbeck, University of London, June 2025.
2. Bronze award - Placental Clock DREAM Challenge, organised by Professor Adi Tarca at Wayne State University, September 2024.
3. Best presentation award, School of Business, Economics, and Informatics PhD conference, Birkbeck, University of London, June 2023.
4. Graduate teaching assistant studentship, School of Computing and Mathematical Sciences, Birkbeck, University of London, January 2022.
5. Academic excellence award, Department of Computer Science and Information Systems, Birkbeck, University of London, April 2021.

Education

- Birkbeck, University of London (January 2022 – October 2025)

  PhD in Computer Science.

  Thesis title: Novel single-cell RNA-Seq contrastive learning methods for cell type identification
- Birkbeck, University of London (September 2019 – December 2020)

  MSc with Distinction in Advanced Computing Technologies.
- King AbdulAziz University (September 1998 – May 2003)
  BSc in Electrical Engineering, Electronics, and Communication.

Journal articles

1. **Alsaggaf, I.,** Buchan, D. and Wan, C. (2024) Improving cell-type identification with Gaussian noise-augmented single-cell RNA-seq contrastive learning, *Briefings in Functional Genomics*, elad059. (SJR Quartile 1)

2. **Alsaggaf, I.,** Freitas, A.A. and Wan, C. (2024) Predicting the pro-longevity or anti-longevity effect of model organism genes with enhanced Gaussian noise augmentation-based contrastive learning on protein-protein interaction networks, *NAR Genomics and Bioinformatics*, lqae153. (SJR Quartile 1)
3. Rafi, A., ..., Random Promoter DREAM Challenge Consortium (including **Alsaggaf, I**.), ..., de Boer, C. (2024) A community effort to optimize sequence-based deep learning models of gene regulation, *Nature Biotechnology*. (SJR Quartile 1)
4. **Alsaggaf, I.** and Wan, C. (2024) Functional Yeast Promoter Sequence Design Using Autoregressive Generative Models, *bioRxiv*.
5. **Alsaggaf, I.,** Buchan, D. and Wan, C. (2025) Less is more: improving cell-type identification with augmentation-free single-cell RNA-Seq contrastive learning, *Bioinformatics*. (SJR Quartile 1)
6. Bhatti, G., …, **Alsaggaf, I.,** …, Adi Tarc (2025) Placental Epigenetic Clocks derived from crowdsourcing: Implications for the study of accelerated ageing in obstetrics, *iScience*. (SJR Quartile 1)
7. **Alsaggaf, I.,** Buchan, D. and Wan, C. (2025) An extensive evaluation of single-cell RNA-Seq contrastive learning generative networks for intrinsic cell types distribution estimation, *bioRxiv*.
8. **Alsaggaf, I.,** Buchan, D. and Wan, C. (2025) Improving cell-type identification with generative adversarial networks-enhanced augmentation-free single-cell RNA-Seq contrastive learning, *bioRxiv*.

Peer-reviewed conferences

1. The 33rd annual Intelligent Systems for Molecular Biology and the 24th annual European Conference on Computational Biology ISMB/ECCB, July 2025 [Abstract: Enhanced Gaussian noise augmentation-based contrastive learning for predicting the longevity effects of genes using protein-protein interaction networks].
2. The 16th annual RECOMB/ISCB Conference on Regulatory & Systems Genomics with DREAM Challenges, October 2024 [Abstract: An enhanced Gaussian noise augmentation-based contrastive learning approach to predict the gestational age of the placenta].
3. The 31st annual Intelligent Systems for Molecular Biology and the 22nd annual European Conference on Computational Biology ISMB/ECCB, July 2023 [Poster: Improving cell-type identification with Gaussian noise augmented single-cell RNA-seq contrastive learning].
4. The 14th annual RECOMB/ISCB Conference on Regulatory & Systems Genomics with DREAM Challenges, November 2022 [Poster: Predicting gene expression using millions of random promoter sequences].

Worldwide academic competitions

1. DREAM Challenge 2024: Placental Clock [ranked 3rd out of 7 teams].
2. DREAM Challenge 2022: Predicting gene expression using millions of random promoter sequences [ranked 17th out of 28 teams, over 100 teams joined the 1st stage of the competition].

Workshops and seminars

- Research Methods, School of Computing and Mathematical Sciences, May 2025 [Title: How to use SLURM effectively and responsibly].
- Data Science and Artificial Intelligence group seminar, School of Computing and Mathematical Sciences, April 2025 [Title: Novel contrastive learning algorithms for single-cell RNA-Seq-based cell-type identification].
- PhD conference, School of Business, Economics and Informatics, June 2023 [Title: Data augmentation methods for contrastive learning: An overview].

Teaching experience

- Teaching assistant and assessment marker, MSc Computer Science programme at Birkbeck in collaboration with the University of London Worldwide (January 2022 – July 2025).
    - Supporting up to 88 students per module with two modules running concurrently.
    - First marking of all items of the coursework following a systematic marking scheme and providing informative feedback.
    - Assisting students with practical labs through the module and updating the labs contents when necessary.

Professional experience

- Research Fellow, UCL Knowledge Lab (15 November 2023 - 31 May 2024)
    - Designing and developing potential activities to use data, evidence, theory, and practical knowledge to guide the implementation and adaptation of the project.
    - Exploiting materials and outputs to summarise the learning from these activities.
    - Supporting a small team in an interdisciplinary project to work out how to achieve their aims.
    - Troubleshooting/leading on the technical aspect during team meetings.

Additional relevant experience

- 4 years of experience with High-performance computing (HPC) and the SLURM workload manager.

Referees

- Professor George Magoulas, School of Computing and Mathematical Sciences, Birkbeck, University of London, g.magoulas@bbk.ac.uk.
- Professor Geroge Roussos, School of Computing and Mathematical Sciences, Birkbeck, University of London, g.roussos@bbk.ac.uk.
- Professor Mina Vasalou, UCL Knowledge Lab, University College London, a.vasalou@ucl.ac.uk
- Dr Cen Wan, School of Computing and Mathematical Sciences, Birkbeck, University of London, cen.wan@bbk.ac.uk.
- Dr Daniel Buchan, Department of Computer Science, University College London, daniel.buchan@ucl.ac.uk.
- Dr Martyn Harris, Programme Director MSc Computer Science (UoLWW), School of Computing and Mathematical Sciences, Birkbeck, University of London, martyn.harris@bbk.ac.uk.