

Alan O'Callaghan

BIOINFORMATICIAN · DEVELOPER

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Skills

Programming R, C++, Java, Ruby, Python.

Statistics Bayesian modelling, GLM, survival analysis, feature selection.

Computing Linux/Unix, \LaTeX , git, make, bash, unit testing, continuous integration.

Web HTML/CSS, JS, PHP, htmlwidgets (R).

Education

Ph.D., Biomedical data science

Edinburgh, Scotland

MRC HUMAN GENETICS UNIT, UNIVERSITY OF EDINBURGH

2018 - 2021

- Statistical methods and applied statistical analysis for single cell RNAseq in multi-donor experimental designs
- Implementation of scalable Bayesian inference (adaptive Metropolis within Gibbs)

M.Sc., Bioinformatics and computational genomics (Distinction)

Belfast, Northern Ireland

QUEEN'S UNIVERSITY BELFAST

2014 - 2015

- Dissertation: Java-based eye-tracking and image analysis of histopathology whole slide images
- Lectures: programming, image analysis, statistical learning techniques
- Programming projects: Implementation of alignment, clustering, linear regression and cross-validation algorithms in R; cell detection, Ki67 quantification and image segmentation (Java)

B.Sc. (hons), Biopharmaceutical chemistry (2.1)

Galway, Ireland

NATIONAL UNIVERSITY OF IRELAND, GALWAY

2008 - 2013

- Research Project: Structure elucidation and SAR of bioactive marine compound
- Lectures: chemistry, toxicology, pharmacology, molecular modelling, drug discovery and design

Experience

Bioinformatician

Edinburgh, Scotland

FIOS GENOMICS

October 2015 - August 2018

- Communicating regularly with clients to plan projects and explain results.
- Exploratory and statistical analysis for academics and commercial clients.
- Statistical analysis & visualisations for client publications & commercial research projects.
- Extensive software development.
- Author & maintainer of several proprietary R packages.
- System administration tasks (VMware, Ansible).

Writing

FIRST AUTHORSHIPS

- *BASiCS workflow: a step-by-step analysis of expression variability using single cell RNA sequencing data*
F1000 Research, 2020 (DOI)
- *Scalable Bayesian inference for single cell transcriptomics with BASiCS*
JSS, 2020 (DOI)

CO-AUTHORSHIPS

- *heatmaply: an R package for creating interactive cluster heatmaps for online publishing*
Bioinformatics, 2017 (DOI)
- *Species-specific regulation of angiogenesis by glucocorticoids reveals contrasting effects on inflammatory and angiogenic pathways*
PLoS One, 2018 (DOI)
- *Stress perception impacts on clinical signs of skin ageing and modifies the epigenome*
Journal of Investigative Dermatology, 2016 (DOI)

Presentations

IGMM statistical seminar series

Online

PRESENTER

Summer 2020

- Exploratory data analysis
- Experimental design, hypothesis testing, statistical power

Applied statistical analysis workshop for single cell RNAseq

IGMM

PRESENTER

March 2020

- Exploratory analysis
- Normalisation
- Feature selection

Conferences and meetings

IGMM internal meetings

Edinburgh

POSTER

2019-2020

- Scalable Bayesian analysis of single cell RNAseq
- Bayesian analysis of multi-donor scRNAseq data (2nd prize)

Normjam: jamboree for normalisation methods in scRNAseq

New York Genome Center

ATTENDEE

November 2019

- Discussions on, and posterior predictive checks for, scRNAseq normalisation methods.

UoE Centre for Statistics conference

Edinburgh

POSTER

June 2019

- Scalable Bayesian analysis of single cell RNAseq

Quantitative Genomics

Francis Crick Institute

PRESENTER

June 2019

- Scalable Bayesian analysis of single cell RNAseq

Genomic Medicine

Edinburgh

POSTER

May 2019

- Scalable Bayesian analysis of single cell RNAseq

Edinbr (R user group)

Edinburgh

PRESENTER

March 2019

- Building interactive modules using htmlwidgets

Edinburgh Bioinformatics

Edinburgh

PRESENTER

November 2018

- Interactive data visualisation using R and plotly.

Extracurricular Activity

Github/Bioconductor

CONTRIBUTOR

- Contributor:
 - heatmaply
 - BASiCS
- Maintainer:
 - contrast
 - scater
- Miscellaneous other contributions.

Postgraduate Society (POGS), Social committee (SC), IGMM

MEMBER

Edinburgh

2018 - 2021

- **POGS:** Organising student events, advocating for improvements in student working conditions and well-being.
- **SC:** Organising social events for students/postdocs/staff.

Honors & Awards

- 2018 **Best savoury food (mattar paneer)**, IGMM Christmas Party
- 2011 **School of Chemistry Medal (Molecular Modelling and Drug Design)**, NUI Galway
- 2008 **Entrance Scholarship**, NUI Galway