Andrew **Everall** Curriculum vitae

I am an experienced astrophysics and bioinformatics researcher and programmer with many applied statistics papers published in high impact journals. My goal is to develop and implement novel statistical models and ML methods to complex datasets to provide impactful solutions with a particular interest in Bayesian statistics.

EDUCATION

Institute of Astronomy, University of Cambridge
PhD in Astronomy ***September 2018 - September 2021***

- **Applied Bayesian statistical methods to correct selection bias in a survey of 2bn stars and inferred the structure of the Galaxy.**
- **co-PI of the Completeness of the Gaia-verse project: gaiaverse.space, gaiaverse**
- **Awarded the Murdin Prize for best published journal paper by a PhD student.**

University of Oxford
Master of Physics ***September 2013 - July 2017***

- **Specialised in Astrophysics and Theoretical Physics.**
- **Thesis: The origin of streams in our Solar Neighbourhood.**

WORK & RESEARCH EXPERIENCE

Institute of Cancer Research
Postdoctoral Training Fellow ***October 2021 - Present***

- **Decomposed mutation rates in 10k cancer tumours to find underlying processes using non-negative matrix factorisation.**
- **Implemented novel conditional resampling techniques to control type I error rates in large multiple-testing studies.**

Rudolf Peierls Centre for Theoretical Physics, Oxford
Assistant Researcher ***October 2017 - April 2018***

- **Received University funding for full time research in Galactic Dynamics until December 2017. Invited to continue in 2018, funded by an ERC grant.**
- **Developed `seestar`, a Python repository which automatically analyses selection bias of spectroscopic stellar surveys.**

Susquehanna International Group, Dublin, Ireland
Assistant Trader Intern ***June - August 2017***

- **Created a Python desktop application for automated classification of exotic options from text information using basic NLP.**

Deutsche Bank, London ***June -August 2016***
Summer Analyst

- **Produced detailed PowerPoints for client presentations.**

CONTACT

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London,
SW17 0HR

COMPUTING SKILLS

Programming languages:

- **Python** > 6 **years**
- **Bash** > 5 **years**
- **R** > 1 **year**
- **matlab** ~ 1 **year**
- **gnu octave** < 1 **year**
- **C++** < 1 **year**

Python modules:

- **NumPy, pandas, sklearn**
- **matplotlib, seaborn**
- **PyTorch, TensorFlow, keras**
- **PyStan, emcee**

Open source:

- **aeverall, gaiaverse**
- **kaggle**

Data management:

- **PostgreSQL**
- **ADQL**
- **Microsoft Access**

Software Development:

- **JavaScript, CSS, HTML (Google Developer Challenge Scholarship)**

Other:

- **Linux**
- **LaTeX**
- **VBA**

TEACHING

Supervisor *2019-2021*
Part II: Cambridge Undergraduate Astrophysics, Stellar Dynamics and Structure of Galaxies.

Supervisor *April -June 2019*
Part Ia: Cambridge Undergraduate Natural Sciences, Gravitational and Electromagnetic Fields.

FIRST AUTHOR PUBLICATIONS

- **Andrew Everall, Andreas J. Gruber, et al. Repertoire of mutational signatures in 10,983 whole-genome sequenced cancers. *in prep.*, January 2023**
- **Andrew Everall, Vasily Belokurov, et al. The photo-astrometric vertical tracer density of the Milky Way - II. Results from Gaia. *MNRAS*, 511(3):3863–3880, April 2022**
- **Andrew Everall, N. Wyn Evans, et al. The Photo-Astrometric vertical tracer density of the Milky Way - I. The method. *MNRAS*, 511(2):2390–2404, April 2022**
- **Andrew Everall and Douglas Boubert. Completeness of the Gaia verse - V. Astrometry and radial velocity sample selection functions in Gaia EDR3. *MNRAS*, 509(4):6205–6224, February 2022**
- **Andrew Everall, Douglas Boubert, et al. Completeness of the Gaia-verse - IV. The astrometry spread function of Gaia DR2. *MNRAS*, 502(2):1908–1924, April 2021**
- **Andrew Everall and Payel Das. seestar: Selection functions for spectroscopic surveys of the Milky Way. *MNRAS*, 493(2):2042–2058, April 2020**
- **Andrew Everall, N. W. Evans, et al. The tilt of the local velocity ellipsoid as seen by Gaia. *MNRAS*, 489(1):910–918, Oct 2019**

Publications are available on NASA ADS:

https://ui.adsabs.harvard.edu/search/q=author:"Everall,A"

INVITED TALKS

Institute of Astronomy, Cambridge, UK *January 2022*
The Paul Murdin Prize Talk *The astrometry spread function of Gaia DR2.*

University of Surrey, UK *January 2021*
Lunch Talk (Virtual) *Completeness of the Gaia-verse: Pinpointing sources in 5D.*

UCL, London, UK *December 2020*
Lunch Talk (Virtual) *Completeness of the Gaia-verse: Climbing down chimneys at L2.*

Institute of Astronomy, Cambridge, UK *April 2020*
Wednesday Seminar Series *Completeness of the Gaia-verse: Flipping coins at L2.*

China Three Gorges University, Yichang, China *October 2019*
LAMOST and Other Leading Surveys. *The tilt of the local velocity ellipsoid seen by Gaia RVS.*

Institute of Astronomy, Cambridge, UK *August 2019*
Gaia Treasure Hunt. *Dodgy distances and a spherically aligned local halo.*

OTHER SKILLS, INTERESTS & EXPERIENCE

Development Squad Officer, Cambridge University Cross Country Club *March 2020 - 2021*

Treasurer, Hughes Hall Boat Club *July 2019 - 2020*

Rowing Coach, Lady Margaret Hall Boat Club, Oxford *January - April 2017*

Sailing Instructor, Bewl Valley Sailing Club, East Sussex *June - September, 2011 - 2014*