

Dr Harry Thomas Mason

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About Me

I am a data scientist/engineer with a particular specialty in optimization and analysis of time-series data. I have done work with datasets in ECG, fMRI, CEST MRI, digital health physiotherapy, and other clinical datasets. I have broader experience of Bayesian inference, linear algebra, machine learning, and software engineering. My main coding expertise is in MATLAB and Python, with some experience using bash and R.

I recently finished a Post-doctoral Research Associate position with Prof. Stephen Smith, Dr. Elena Geangu, Dr. Quoc Vuong, and Prof. Marina Knight, working as part of the University of York's FIRST LEAP group - part of the broader \$45 million [Wellcome LEAP project](#) which spanned multiple disciplines to improve executive function in the first 1000 days of life. Specifically, I worked on developing a complete pipeline to turn raw infant ECG into a high-quality heart rate signal, with signal rejection where appropriate. I also developed high level data processing pipelines and helped with the larger data management problems.

I worked with Prof. David Wong and Dr Emma Stanmore in a freelance project for MIRA rehab, where we developed multi-dimensional adherence criteria that could be applied to both virtual and non-virtual physiotherapy programs.

I completed a D.Phil at the University of Oxford with Prof. Karla Miller and Prof. Mark Chiew as a (fully EPSRC-funded) student of the Oxford Nottingham Doctoral Training Centre in Biomedical Imaging. My thesis, titled "[Exploring subspace-constrained approaches to low-rank fMRI acceleration](#)", aimed to develop a novel way to accelerate fMRI data given low-rank and prior constraints. I was part of the Physics Group in the Nuffield Department of Clinical Neuroscience, working in the FMRI/WIN Centre.

I achieved an M.Eng in Engineering Science also at the University of Oxford, with a dissertation titled "Quantitative analysis of ultrahigh field chemical exchange saturation transfer (CEST) MRI data". My primary focus at undergraduate was on Biomedical Engineering applications, with a secondary focus on information engineering.

I worked two consecutive summers with the Clinical Health Informatics group at Oxford under Prof. David Clifton, with additional supervision by Prof. David Wong. I am particularly proud of my work there on the [SEND project](#), which has been rolled out in Oxford hospitals.

Outside of research, I have a passion for outreach and charity, working with Oxfam, Living Wage campaigns, Oxford City Council, Oxford Mutual Aid, Mansfield College access, various schools, and multiple other organizations. I worked at the National Science Learning Centre under Gemma Taylor, seeing firsthand how scientific ideas are translated into education and teaching. I played Ultimate for Oxford and at international levels. I am one of the UK's top Ultimate media figures with writing, editing and commentating experience. I write weekly poetry, co-founded Mansfield Poetry Society, was Wadham MCR Poetry officer for three years, and enjoy performing in front of large audiences (currently doing so with the York Howlers group).

Work Experience

Honorary Researcher, University of York (October 2023-June 2024)

Finishing publications, preserving code, and analyzing additional data from FIRST LEAP project. Supervisors: Prof. Stephen Smith, Dr. Elena Geangu, Dr Quoc Vuong, & Prof. Marina Knight. University of York, YO10 5DD

Post-Doctoral Research Associate, FIRST LEAP, University of York (September 2021-October 2023)

Analyzing child ECG data to make inferences about psychological development of infants. Supervisors: Prof. Stephen Smith, Dr. Elena Geangu, Dr Quoc Vuong, & Prof. Marina Knight. University of York, YO10 5DD

Freelance Project with MIRA Rehab (Feb 2021 – Jan 2024)

Development and exploratory analysis of a multi-dimensional metric of adherence for physiotherapy e-Health interventions. Supervisors: Prof David C Wong, Dr Emma Stanmore.

Honorary Researcher, Nuffield Department of Clinical Neuroscience (July 2020 – July 2021)

Wrapping up D.Phil work into publication. Supervisors: Prof. Karla Miller & Prof. Mark Chiew. WIN Centre for Integrative Neuroimaging, Oxford, OX3 9DU

EPSRC/MRC funded D.Phil in Biomedical Imaging, through Oxford-Nottingham Biomedical Imaging Centre for Doctoral Training (October 2015 – June 2020)

One year of structured learning, followed by a four year D.Phil with Prof. Karla Miller & Prof. Mark Chiew, working to use low rank constraints and priors to accelerate FMRI data. Wadham College, Oxford, OX1 3PN.

Internship for National Science Learning Centre (July-Sept 2015)

Worked in Design and Technology, specializing as creative consultant and researcher in fields of 3D printing and biodesign, especially with application to teaching. University of York, YO10 5DD

EPSRC funded internship for Computational Health Informatics group (June-Sept 2014)

Performed multivariate time-series analysis to predict instances of hypotension in at-risk haemodialysis patients. Old Road Campus Building, Oxford, OX3 7DQ

Internship for Computational Health Informatics research group (July-Aug 2013)

Analysed the signal quality of post-treatment dialysis data. Performed validation of a novel system for recording track-and-trigger scores for the NHS. Old Road Campus Building, Oxford, OX3 7DQ

Education

2015 to 2020	Wadham College, Oxford University, Oxford (ONBI CDT/DPhil)
2011 to 2015	Mansfield College, Oxford University, Oxford (Engineering Science)
2009 to 2011	Fulford School, York (VI form)
2003 to 2009	Manor CE School, York
1997 to 2003	Acomb Primary School, York

D.Phil in Biomedical Imaging (June 2020)

M.Eng in Engineering Science (Summer 2015)

- ▶ Class 2.i

A levels (Summer 2011)

- ▶ 3xA*s (Mathematics, Physics, Chemistry)
- ▶ 1xA (Biology)

AS levels (Summer 2011)

- ▶ 1xA (Further Mathematics)

GCSE (Summer 2009)

- ▶ 10xA*s (Biology, Chemistry, English Language, English Literature, French, Geography, Mathematics, Physical Education, Physics, Religious Studies)

Papers

[Subspace-constrained approaches to low-rank fMRI acceleration](#)

Harry T. Mason, Nadine N. Graedel, Karla L. Miller, Mark Chiew

[EgoActive: Integrated wireless wearable sensors for capturing infant egocentric auditory-visual statistics and autonomic nervous system function 'in the wild'](#)

Elena Geangu, William A. P. Smith, **Harry T. Mason**, Astrid Priscilla Martinez-Cedillo, David Hunter, Marina I. Knight, Haipeng Liang, Maria Del Carmen Garcia de Soria Bazan, Zion Tsz Ho Tse, Thomas Rowland, Dom Corpuz, Josh Hunter, Nishant Singh, Quoc C. Vuong, Mona Ragab Sayed Abdelgayed, David R. Mullineaux, Stephen Smith, Bruce R. Muller

Revise and Resubmit - [A complete pipeline for Heart Rate extraction from Infant ECG](#)

Harry T. Mason, Stephen Smith, Quoc C. Vuong, Marina Knight, Astrid Priscilla Martinez-Cedillo, Maria Del Carmen Garcia de Soria Bazan, Elena Geangu

Under Review - Development and exploratory analysis of a multi-dimensional metric of adherence for physiotherapy e-Health interventions

Harry T. Mason, Siobhán O'Connor, Emma Stanmore, David C. Wong

Work in Progress- Automatic detection of infant visual attention based on wearable device signals

*Non-finalised author list: Yizi Zhang, William A. P. Smith, **Harry T. Mason**, Astrid Priscilla Martinez-Cedillo, Marina I. Knight, Maria Del Carmen Garcia de Soria Bazan, Quoc C. Vuong, David R. Mullineaux, Bruce R. Muller, Elena Geangu*

Conferences

Posters:

Organization for Human Brain Mapping 2017, Vancouver

British Chapter of the Institute for Magnetic Resonance in Medicine Postgraduates, 2018, London

→ Silver medal award

Investigating BOLD, 2018, Oxford

Organization for Human Brain Mapping 2018, Singapore

International Society for Magnetic Resonance in Medicine 2019, Montreal

Power Pitches:

British Chapter of the Institute for Magnetic Resonance in Medicine Postgraduates, 2018, London

→ Gold medal award

Institute for Magnetic Resonance in Medicine, 2019, Montreal

Presentations:

Organization for Human Brain Mapping 2018, Singapore

Github Link

Other Work

Science/Maths Tutor (2021) Hilltop Tuition, Oxford, OX2 7JL

Science Tutor (2015) Oxford Individual Tuition, Oxford, OX3 7BH

Access Worker/Admissions Runner (2011-2014) Mansfield College, Mansfield Road, Oxford, OX1 3TF

Youth Worker (October 2008) St. Michael Le Belfrey, 11/12 Minster Yard, York, YO1 7HH

Bike Mechanic (October-December 2007) Halfords, 9 Feasegate, York, YO1 8SH

Paper boy (2005 – 2007) Ward News, 45 York Road, York YO24 4LN

Skills

- ▶ Qualified Level 1 Ultimate Coach (recognized by Sport England) October 2013
- ▶ First Aid Certified by St. John's Ambulance 2010-2013, 2017 – 2020
- ▶ Full Driving License, June 2010; Pass Plus positive driving (DSA), August 2010
- ▶ Competent with: MATLAB, Python, LaTeX, Word, Excel, PowerPoint.
- ▶ Experience with: R, bash, C++, html, Linux command line.
- ▶ SEDA level 1 teaching award, 2017
- ▶ OSAB level 2 adult safeguarding
- ▶ UK Coaching Safeguarding and Protecting Children

Awards

- ▶ Duke of Edinburgh's Award (Bronze), 2009
- ▶ Academic distinction Award (A levels) (Fulford School), January 2012
- ▶ Subject Award (highest achievement, Mathematics) (Fulford School), January 2012
- ▶ Collection prize, Mansfield College, February 2012 & November 2012
- ▶ Sarah and Peter Harkness Academic Prize, November 2012
- ▶ Exhibition, Mansfield College, October 2014
- ▶ EPSRC summer internship funding winner, 2014
- ▶ Ultimate Frisbee Half Blue (Oxford Sport Award), 2012, 2013, 2015, 2016, 2017
- ▶ Outstanding Contribution to Sport – Oxford University Sport Awards, 2020
- ▶ Bronze Medal, European Ultimate Championship Finals, 2017 (Reading Ultimate, Mixed Division)

Other

- ▶ Senior Prefect, Manor CE School, 2008-2009
- ▶ York Christian Youth Holidays (Taskforce team member x2, Leader), Whithaugh, 2010/11/12
- ▶ Co-Founder/Head Mansfield Poetry Society, February 2012-2015
- ▶ Wadham MCR Poetry Officer, 2017-2020
- ▶ Founder/Co-Head Mansfield Living Wage Campaign, 2012-2014
- ▶ Standing Committee Member Mansfield Human Rights Forum 2014-2015
- ▶ Oxford University Ultimate (Frisbee) Club, President 2012-13, Alumni Rep 2012-19, Outreach Officer 2014-2015, Spirit Captain 2016-19
- ▶ Writer for The Show Game, 2013-present, Head University Editor 2016-2019
- ▶ Writer/Editor/Founder at The Cutting Lane Floor, 2017 – present
- ▶ Represented Great Britain Mixed at U23 Ultimate World Championships 2015, London (5th/12)
- ▶ Played for Reading Ultimate at the World Ultimate Club Championships in Ohio, USA (17th/48)
- ▶ 5x representative at European Ultimate Club Championships (2013, 2015, 2016, 2017, 2018)
- ▶ Coach, University of York Ultimate team (2021-present)
- ▶ Assistant Coach, GB U20 Women's Ultimate team (2022/23 Season)