Thomas Kirk MEng

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Research Experience

- 2017 - 2021: DPhil, Anatomically informed Bayesian inference for physiological imaging
  Supervised by Professor Michael Chappell, funded by the Bellhouse Scholarship for Biomedical Engineering at the University of Oxford
  - Developed a suite of computational tools for surface analysis of neuroimaging data
  - Developed a framework for combined volumetric and surface-based Bayesian inference of arterial spin labelling data
  - Work led to one publication, one patent and numerous conference posters; further publications are in preparation
- 2020: Design and development of an emergency Covid-19 ventilator (OxVent)
  - Joint effort between the University of Oxford and Smith & Nephew to develop an emergency device; the UK government ordered 6000 units
  - Responsibile for overall system integration and calibration
  - Authored multiple technical documents for the UK healthcare regulator (MHRA)
- 2012 - 2013: MEng, Perfusion quanitifcation in the clinic
  Supervised by Professor Michael Chappell
  - Developed a clinical facing app using the MeVisLab platform to simplify and facilitate the use of arterial spin labelling for perfusion measurement

Education

- 2017 - 2021: DPhil Biomedical Engineering, University of Oxford
- 2013 - 2017: MEng Engineering, Economics and Management, University of Oxford (First class)

Awards and funding

- 2020: Global Challenge innovation award from the Institute of Engineering and Technology for development of an emergency Covid-19 ventilator (OxVent)
- 2020: OHBM trainee stipend for conference attendance
- 2020: Guarantors of Brain travel award
- 2019, 2020: ISMRM trainee stipends for conference attendance
- 2017: Bellhouse Scholarship in Biomedical Engineering, covering all fees and living costs at the University of Oxford
- 2012: Arkwright scholarship for engineering

Patents

- **T. Kirk** and M. Chappell, *Partial volume estimation from surface reconstructions*, filed April 2020, pending with application number 63013712.

Publications

- 2020 **T. Kirk**, T. Coalson, M. Craig and M. Chappell, *Toblerone: surface-based partial volume estimation*, IEEE Transaction on Medical Imaging

Conference abstracts

- 2020 **T. Kirk**, F. Kennedy McConnell, D. Ivanov, S. Kashyap, M. Craig and M. Chappell, *Partial volume effect correction of arterial spin labelling data using surface segmentations*, ISMRM poster
- 2020 F. Kennedy McConnell, J. Toner, **T. Kirk**, M. Craig, A. Segerdahl, M. Harms and M. Chappell, *Estimation of cortical perfusion from arterial spin labelling data on the cortical surface*, ISMSM poster
- 2020 S. Kashyap, R. Haast, **T. Kirk**, A. Vu, S. Kurban, C. Wiggins, A. Roebroeck, A. Khan, D. Feinberg, B. Poser, D. Ivanov *The impact of B1+ on the optimisation of high-resolution ASL acquisitions at 7T*, ISMRM poster
- 2019 **T. Kirk**, T. Coalson, F. Kennedy McConnell and M. Chappell, *Toblerone: surface-based partial volume estimation*, OHBM poster
- 2019 **T. Kirk**, T. Coalson, F. Kennedy McConnell and M. Chappell, *Toblerone: surface-based partial volume estimation*, ISMRM poster

Software

- Toblerone: *tools for surface-based analysis* (author) https://github.com/tomfrankkirk/toblerone
- Regtricks: *tools for manipulating, combining and applying image transformations* (author) https://github.com/tomfrankkirk/regtricks
- SVB: *stochastic variational Bayes for timeseries model fitting* (co-author) https://github.com/physimals/svb
- HCP-ASL: *ASL pipeline for the Human Connectome Project* (co-author) https://github.com/physimals/hcp-asl