JOSEPH ORTIZ

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EDUCATION

Imperial College London *Oct. 2018-Present*
Doctor of Philosophy in Computer Science
Robot Vision Group, supervised by Prof. Andrew Davison and Dr Stefan Leutenegger.

University of Oxford – Christ Church. *Oct. 2014-2018*
MPhys – Masters in Physics ***First Class Honours, Top 5%***
Specialised in Theoretical Physics and Physics of Oceans and Atmospheres.
Thesis: Study of Detectability of Optical Transients associated with Gravitational wave events.
Supervised by Prof. Ian Shipsey and Prof. Marcelle Soares-Santos.

EXPERIENCE

Facebook AI Research (FAIR) *Aug. 2021-Present*
Research Scientist Intern (Aug-Dec 2021), Research Scientist Contractor (Jan 2022-Present).
Project: Continual learning of neural signed distance fields for robot motion planning.

Massachusetts Institute of Technology, CSAIL *June-Sept. 2018*
Visiting Research Student at the AnyScale Learning For All (ALFA) Group.
Project: Using GPs and NNs to approximate Nash Equilibrium for expensive black-box games. Designed novel acquisition function for Bayesian optimization which can be used to minimize game theoretic regret. With Prof. Una-May O'Reilly.

Brazilian National Institute for Space Research (INPE) *June-Sept. 2016*
Intern in the Earth Science Systems Department (CCST)
Project: 3D terrain reconstruction of regions of the Amazon rainforest using lidar data collecting from over-forest flights. Model was used to estimate the biomass in a region.

Oleeo, London *June-Sept. 2017*
Data Science Intern. Project: Quantify bias in hiring of minority gender and ethnicity groups.

AWARDS

Johnson Memorial Prize, University of Oxford June *2018*
Best MPhys Thesis in Astrophysics.

Academic Scholar at Christ Church, University of Oxford *2015-2018*

BP Internship Award *2015*
For Research at Brazilian National Institute for Space Research.

PUBLICATIONS

[1] **iSDF: Real-Time Neural Signed Distance Fields for Robot Perception.** Joseph Ortiz, Alexander Clegg, Jing Dong, Edgar Sucar, David Novotny, Michael Zollhoefer, Mustafa Mukadam. In: *Robotics: Science and Systems (RSS), 2022.*

[2] **A Robot Web for Distributed Many-Device Localisation.** Riku Murai, Joseph Ortiz, Sajad Saeedi, Paul Kelly, Andrew J. Davison. In: *ArXiv pre-print.*

[3] **Incremental Abstraction in Distributed Probabilistic SLAM Graph.** Joseph Ortiz, Talfan Evans, Edgar Sucar, Andrew J. Davison. In: *Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), 2022.*

[4] **iMAP: Implicit Mapping and Positioning in Real-Time.** Edgar Sucar, Shikun Liu, Joseph Ortiz, Andrew J. Davison. In: *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV), 2021.*

[5] **A Visual Introduction to Gaussian Belief Propagation.** Joseph Ortiz, Talfan Evans, Andrew J. Davison. Self-published at https://gaussianbp.github.io/.

[6] **Bundle Adjustment on a Graph Processor.** Joseph Ortiz, Mark Pupilli, Stefan Leutenegger, Andrew J. Davison. In: *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) 2020.*

[7] **FutureMapping 2: Gaussian Belief Propagation for Spatial AI.** Andrew J. Davison, Joseph Ortiz**.** In: *arXiv pre-print 1910.14139, 2019.*

SKILLS

Languages	English (native), Spanish (proficient).
Programming	Python, MATLAB, C++, Poplar (Graphcore), Javascript, HTML; PyTorch, Tensorflow.
Teaching	Imperial College TA - Mathematics for CS, CO145 (2019), Robotics (2021, 2022). Private tutor for Undergraduate Physics.
Students supervised	Frank Mu, Fengming Lui (Imperial College 2020).

INTERESTS

Sport	Member of Great Britain U19 Water Polo Team (2012-2014). Oxford Blue in Water Polo, Men's Captain 2016/17.
Other	Travelling, astronomy.