

# Luke Shepherd Curriculum Vitae

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lukemshepherd.github.io

## Education

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**University College London** *Social Science with Quantitative Methods BSc (2017 - Present) Upper 2:1 Predicted*

**University of Southampton** *Politics and International Relations (2016 - 2017) Grade: 68*

**Abingdon School** *(2010-2015)*

## Publications

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**Deep Placental Vessel Segmentation for Fetoscopic Mosaicking.** *Banno S, Vasconcelos F, Shepherd LM, Poorten EV, Vercauteren T, Ourselin S, Deprest J, David AL, Stoyanov D, (2020) International Conference on Medical Image Computing & Computer Assisted Intervention/ Number 23/ October 2020.*

**Using segmented static CBCT scan to aid reconstruction of a dynamic scan of a rigid foot and ankle structure.** *Djurabekova N, Goldberg A, Hawkes D, Long G, Shepherd LM, Betcke MM, (2020) International Conference on Image Formation in X-Ray Computed Tomography/ Number 6/ August 2020*

**Challenges and opportunities in conducting mesophotic reef research.** *Andradi-Brown DA, East A, Shepherd LM, Stockdale EJ, Rogers AD (2016) Reef Encounter 31(1):26-31 / Number 43 / April 2016.*

## Posters

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**Thinking Deep: The Scientific Surveying of Mesophotic Reefs.** *East A, Shepherd LM, Stockdale EJ, Rogers AD (2015) Poster Presented at: Reef Conservation UK 2015)*

## Teaching

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**GEOG0027: Principles and Practice of Remote Sensing** *(Spring 2019)*

Was the teaching assistant to Dr Qingling Wu and Prof Philip Lewis; assisted with demonstrating of the computer practicals.

## Mentorships

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**MICCAI Mentorship Program** *(September 2020 - Current)*

Mentorship scheme for early career researchers. Mentored by Antonio R. Porras.

## Research Positions

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**Independent SAGE** *(October 2020 - Current)*

Worked for Prof. Christina Pargel researching and creating graphs for her Independent SAGE briefings and public communicating the effect of COVID-19.

**Surgical Robot Vision Research Group** *(July 2019 - Current)*

Built a CNN segmentation model using a UNET architecture with a Resnet encoder for in-utero surgery videos with Dr Sophia Bano. Using progressive resizing and mixed-precision training to improve model performance. The output was used for registering video frames from the surgery.

## Research Positions *Continued*

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### **Vision and Imaging Science Group** (*June 2019 - March 2020*)

Worked with Dr Marta Betke and Nargiza Djurabekova on limited-angle CT reconstructions of the ankle. Creating the *PCA-2* library that can load, plot, provide summary analysis and apply a transformation and translation that aligns two bones of different positions and orientations in 3D space.

### **3DImpact** (*February 2019 - March 2019*)

Created an machine learning training data for visual tagging of construction-specific objects.

### **Conflict Analysis Lab** (*July, September 2018*)

Worked with Dr Nils Metternich using DMSP-OLS satellite imagery to measure and model active and post-conflict areas. Coded the inter-pixel calibration of the satellite images and researched the most appropriate clustering algorithm.

### **Harris Lab** (*July 2018*)

Worked with Dr Adam Harris in the designing an online experiment examining prospect theory and decision by sampling. Developed the interactive R Shiny app deployed through *Digital Ocean*.

## Courses and Qualifications

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### **SCA Barista Skills: Foundation**

### **UCL Global Citizenship Program: Global Environmental Justice** (*29th May-8th June 2018*)

Exploring the impacts of anthropogenic climate change and the wider issue of environmental justice; examining the Paris agreements and the underlying UNFCCC framework.

## Technical

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**Programming:** Python, R, Shell, Bash

**Visualisation Libraries:** Matplotlib, Seaborn, Mayvi, Bokeh

**Markup:** HTML, CSS, L<sup>A</sup>T<sub>E</sub>X

**Deep Learning Libraries:** PyTorch, Fastai

**Containerisation:** Docker

**GIS Programs:** ENVI, CloudCompare

**Version Control:** Git

## Professional Memberships

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**The Royal Institution** (*RI*)

**Association for Geographic Information** (*AGI*)

## References

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Dr Sophia Bano  
sophia.bano@ucl.ac.uk

Dr Marta Betcke  
m.betcke@ucl.ac.uk