

Luke Shepherd Curriculum Vitae

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lukemshepherd.github.io

Education

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

Deep Placental Vessel Segmentation for Fetoscopic Mosaicking. *Banno S, Vasconcelos F, Shepherd LM, Poorten EV, Vercauteren T, Ourselinn 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

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

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

MICCAI Mentorship Program *(September 2020 - Current)*

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

Research Positions

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*

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 **PCA2** library to load, plot, provide summary analysis and align two bones of different positions and orientations in 3D space. By using PCA to create rotation vectors and quaternion rotation to improve performance and prevent gimbal lock. Using *nbdev* to create documentation and manage tests.

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

SCA Barista Skills: Foundation (*October 2020*)

Trained by Prufrock consulting

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.

NSS CDS/IANTD CCR cave diver (*August 2016*)

Trained by Martin Robson

Technical

Programming: Python, R, Shell, Bash

Visualisation Libraries: Matplotlib, Seaborn, Mayvi, Bokeh

Markup: HTML, CSS, \LaTeX

Deep Learning Libraries: PyTorch, Fastai

Containerisation: Docker

GIS Programs: ENVI, CloudCompare

Version Control: Git

Professional Memberships

The Royal Institution (*RI*)

Association for Geographic Information (*AGI*)

References

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

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