Luke Shepherd Curriculum Vitae

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Education

University College London *Social Science with Quantitative Methods BSc (2017 - 2021)*

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

Abingdon School *(2010 - 2015)*

Publications

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

Segmented static CBCT as initialization of fully dynamic tomography reconstruction of foot and ankle. *Djurabekova N, Goldberg A, Hawkes D, Long G, Shepherd LM, Betcke MM (2020) International Meeting on Image Formation in X-Ray Computed Tomography. CT Meeting, pp. 328–331*

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.*

Publications Under Review:

Intra-Domain Adaptation for Robust Visual Guidance in Intratympanic Injections *Shepherd LM, Banno S, Manjaly JG, Lindenroth L, Stoyanov D (2022) Conference on New Technologies for Computer and Robot Assisted Surgery*

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)*
Teaching assistant to Dr. Qingling Wu and Prof. Philip Lewis; assisted with demonstrating computer practicals.

Mentorships

MICCAI Mentorship Program *(September 2020 - February 2021)*
Mentorship scheme for early career researchers. Mentored by Dr. Antonio R. Porras.

Research Positions

Independent SAGE *(October 2020 - Current)*
Worked for Prof. Christina Pagel researching and creating graphs on the effect of COVID-19 for her Independent SAGE briefings and public communications.

Wellcome / EPSRC Centre for Interventional and Surgical Sciences (WEISS) *(July 2019 - Current)*
Worked with Dr. Sofia Bano on fetoscopy segmentation and data annotation for TTTS applications. Currently, working on anatomical landmark segmentation to enable robot controlled Intratympanic Injections with Dr. Lukas Lindenroth and Dr. Sofia Bano.

Research Positions *Continued*

Vision and Imaging Science Group *(June 2019 - March 2020)*
Worked with Prof. Marta Betcke and Nargiza Djurabekova on limited-angle CT reconstructions of the ankle. Creating the ***PCA2*** library to align and plot the reconstruction with a reference phantom scan as well as providing summary statistics of the alignment. The library uses PCA to create rotation vectors and quaternion rotation to improve performance and prevent gimbal lock. Using *nbdev* to create documentation and manage CI tests.

3DImpact (*February 2019 - March 2019)*
Created machine learning training dataset 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 designing an online experiment examining prospect theory and decision by sampling. Developed the interactive R Shiny app deployed through *Digital Ocean*.

Courses and Qualifications

Imperial College London Coursera: Mathematics for Machine Learning Specialization

Fastai:

- Deep Learning for Coders with Fastai and Pytorch
- Computational Linear Algebra
- Practical Data Ethics

Technical

Programming: Python, JavaScript, R, Unix, Bash

Markup: HTML, CSS, LaTeX

Deep Learning Libraries: PyTorch, Fastai

GIS Programs: ENVI, CloudCompare

Visualisation Libraries: Matplotlib, Seaborn, Mayvi Plotly, ggplot2

Containerisation: Docker

Version Control: Git

References

Prof. Danail Stoyanov
danail.stoyanov@ucl.ac.uk

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