# Luke **Jenkinson**

Deep Learning PhD Student · Computer Science Graduate

*London*

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## Sum**mary**

I am currently undertaking a 4 year PhD programme at the ESPRC Centre for Doctoral Training in Medical Imaging at UCL, consisting of an MRes and PhD. In my undergraduate degree in Computer Science I gained an interest in how novel deep learning methodologies can be used to solve real world problems. My current research focuses on evaluation of Generative Adversarial Networks, and how they can be applied to the detection of Tuberculosis. My future research will involve developing human-in-the-loop systems for medical decision making.

## Edu**cation**

**University College London** *London, UK*

Doctor of Philosophy *Sept 2019*

- Work extending the use of deep learning for detection of thoracic x-ray identifiable morbidities.

**University College London** *London, UK*

Master of Research *2018-2019*

- Dissertation: "Generative Adversarial Networks for Anomaly Detection in Chest Radiographs".
- Modules: Computational MRI; Computational Modelling; Information Processing; Research Software Engineering.

**University of York** *York, UK*

Bachelor of Science (Hons.) in Computer Science (Upper second-class honours) *2015-2018*

- Dissertation: "Using 2D convolutional Neural Networks for Electrocardiogram Abnormality Detection" (self-proposed).
- Modules Including: "Introduction to Neural Computing & Applications", "Machine Learning & Applications", "Computer Vision" and "Software Engineering Project".

**Meadowhead School & King Edward VII school** *Sheffield, UK*

GCSEs & A Levels *2008-2015*

- 12 GCSEs - including 9 at A*-A.
- A-levels - Maths: A*, Chemistry: A, Physics: B, Further Maths: B.

## Exp**erience**

**Research Internship**

Advanced Architectures Group, Department of Computer Science, University of York *2017*

- 10 week research internship (funded through the Laidlaw scholarship) working with Dr Nick Pears and Dr Chris Bailey on the use of deep learning in detection of Parkinson's, culminating in a poster at the YDS2017 conference. This project involved industry collaboration with Cybula, a spin-off company of the department.

## Tec**hnical Skills**

### Programming languages

**Python**, proficient. Used extensively for approximately 4 years.

**MATLAB**, used frequently in MRes taught components, and at various points in my undergraduate education.

**Java**, have completed 1 mid-sized project with the language (See GitHub).

**Others**, other languages used occasionally include: Haskell, R and Racket (Scheme dialect of Lisp).

### Frameworks

**TensorFlow**, used in MRes Project and PhD. Also used stand alone Keras in undergraduate degree.

**NumPy and MatPlotLib**, used in various projects.

### Software Development

**Git**, used in collaborative projects, as well as for making code public (Via Github).

### Other

**Amazon Web Services**, basic experience of using AWS, EC2 instances for running code, S3 for web hosting.

**LaTeX**, latex typesetting for most written work.

# Projects

A full list of projects can be found on my website Link.

**Using 2D convolutional Neural Networks for Electrocardiogram Abnormality Detection** *Link*

Python – Keras, Numpy

- Implemented and trained 2D convolutional neural networks (CNN) to detect abnormal ECG readings. Specifically, trained an AlexNet inspired CNN for classifying whether a patient is having a myocardial infarction or is displaying no symptoms, achieving an accuracy of 86.36% compared to 59.36% for a MultiLayer Perceptron.

**BioSensor** *Link*

Python – Matplotlib, picamera

- Created a hardware and software solution for tracing the light production of a reaction involving luciferase. With this project, I helped a team of biologists with coding and also with software engineering principles such as object oriented programming and version control.

**Deep Learning for Activity Classification of Limb Motion Data** *Link*

Python - Keras, Numpy, SciKit-Learn, MatPlotLib

- Implemented a Deep Neural Network (DNN) to classify movement types as a proof of concept for their ability to detect and classify movement disorders such as Parkinson's Disease. It was also shown that the network can achieve comparable accuracy to state-of-the-art machine learning techniques on the dataset.

# Scholarships and Awards

**Laidlaw Research and Leadership Scholarship**

Year of Award: 2017

- "The Laidlaw Undergraduate Research and Leadership Scholarship was established to help develop leadership potential in the world's top students." In 2017, I was selected as a Laidlaw scholar, one of only 150 such successful applicants of this worldwide scholarship. The scholarship is composed of two sections, a 10 week research internship; and an 18 month leadership programme in which I gained a Chartered Management Institute (CMI) accredited level 5 qualification.

**EPSRC Funded PhD**

Year of Award: 2018

- EPSRC funding at the Centre for Doctoral Training in medical imaging for a 4 year PhD programme consisting of a 1 year MRes followed by a 3 year PhD.

# Publications and Conferences

**York Doctoral Symposium (YDS2017)** *York, UK*

Deep Learning for Activity Classification of Limb Motion Data *November 2017*

- Presented work completed for the Laidlaw scholarship at a peer reviewed conference for PhD students.

# Additional Qualifications

**CMI Level 5 Certificate in Management and Leadership**

*2018*

- The Level 5 Certificate in Management and Leadership is designed to develop core management and leadership skills. The certificate consists of two modules: "Conducting a management project" and "Personal development as a manager and leader".

**Full Clean Driving Licence**

*2015 - Present*

**RLSS National Pool Lifeguard Qualification**

*Qualified 2015-2017*

Covers wide-ranging first aid techniques such as CPR and use of an Automated External Defibrillator (AED), in addition to pool specific life saving techniques.

# Interests

I enjoy strength & conditioning training; and cooking for friends. I was a member of the scouting organisation for 14 years, during which I took part in and helped run many different events and trips.