Title:	Research Associate in machine learning and device development for disease diagnosis
Reference:	1739429
Grade:	Grade 7
Salary:	£34,635 – £41,864 per annum including London Allowance
Terms and Conditions:	In accordance with the conditions of employment as laid down in the relevant UCL Staff policies
Accountable to:	Professor Rachel McKendry, i-sense Director

Job Summary:

The McKendry group at UCL is looking to recruit an outstanding postdoctoral researcher to join the i-sense EPSRC IRC. The post holder will be responsible for building machine learning algorithms and devices for diagnostics tests.

The aim of the i-sense EPSRC IRC is to build a new generation of digital early warning sensing systems for infectious diseases. We are harnessing the power of telecommunications, big data, nanotechnology and genomics to detect infections much earlier than ever before. i-sense brings together a highly interdisciplinary team of over 100 researchers from UCL, Imperial, London School for Hygiene and Tropical Medicine, Surrey and Newcastle, with NHS, PHE, industry and overseas partners. Highlights include machine learning algorithms used by Public England for national influenza surveillance; smartphone connected tests for HIV; and research to build the first online care pathway for HIV in the UK.

This PDRA position is funded for 1 year in the first instance and must start in September 2018. The post will be based in the London Centre for Nanotechnology UCL.

Duties and Responsibilities

General duties include:
- Development of software and machine learning algorithms to capture, analyse, interpret and connect diagnostic tests results, based on images.
- Diagnostic device development.
- Production of large data sets with the developed system.
- To maintain appropriate databases, keeping accurate written and computerised records and to ensure that these records are stored in a secure place and to maintain confidentiality of all electronically stored personal data in line with the
- Progress report and academic manuscripts writing.

Person Specification

Essential Qualifications
- Applicants should be have a PhD in Engineering, Physical Sciences, Computer Science or other relevant subject.

Essential Knowledge and Experience
- Knowledge of applications of Tensorflow, LabView, MATLAB, Arduino, Python,
- Experience of using machine learning for healthcare applications.
- Experience using image classification models
- Diagnostics

Desirable Knowledge and Experience
- Experience in solving computer vision problems.
- Mobile phone app design
- Optics

Essential skills and abilities
- Highly motivated and can-do attitude
- Ability to work well in a team and build good working relations with diverse teams
- Outstanding oral and written communications skills
- Open minded attitude to other scientific areas than their own
- Ability to quickly learn new methods and techniques
- A demonstrated ability to maintain good experiment records

London Centre for Nanotechnology

The London Centre for Nanotechnology is an interdisciplinary joint enterprise between University College London and Imperial College London. In bringing together world-class infrastructure and leading nanotechnology research activities, the Centre aims to attain the critical mass to compete with the best facilities abroad. Research programmes are aligned to three key areas, namely Planet Care, Healthcare and Information Technology and exploit core competencies in biomedical, physical and engineering sciences.

The Centre occupies a purpose-built eight storey facility in Gordon Street, Bloomsbury, as well as extensive facilities within different departments at South Kensington. LCN researchers have access to state-of-the-art clean-room, characterisation, fabrication, manipulation and design laboratories. This experimental research is complemented by leading edge modelling, visualisation and theory.

LCN has strong relationships with the broader nanotechnology and commercial communities, and is involved in much major collaboration. As the world's only such facility to be located in the heart of a metropolis, LCN has superb access to corporate, investment and industrial partners. LCN is at the forefront of training in nanotechnology, and has a strong media presence aimed at educating the public and bringing transparency to this emerging science.

About UCL

UCL is one of the world's top universities. Based in the heart of London, it is a modern, outward-looking institution. At its establishment in 1826, UCL was radical and responsive to the needs of society, and this ethos – that excellence should go hand-in-hand with enriching society – continues today.

UCL's excellence extends across all academic disciplines; from one of Europe's largest and most productive hubs for biomedical science interacting with several leading London hospitals, to world-renowned centres for architecture (UCL Bartlett) and fine art (UCL Slade School).

UCL is in practice a university in its own right, although constitutionally a college within the federal University of London. With an annual turnover exceeding £1 billion, it is financially and managerially independent of the University of London.

The UCL community

UCL's staff and former students have included 29 Nobel prizewinners. It is a truly international community: more than one-third of our student body – more than 35,000 strong – come from 150 countries and nearly one-third of staff are from outside the UK.

UCL offers postgraduate research opportunities in all of its subjects, and provides more than 200 undergraduate programmes and more than 400 taught postgraduate programmes. Approximately 54% of the student community is engaged in graduate studies, with about 29% of these graduate students pursuing research degrees.

<u>Quality of UCL's teaching and research</u>

UCL is independently ranked as the most productive research university in Europe (SIR).

It has 983 professors – the highest number of any university in the UK – and the best academic to student ratio of any UK university (*The Times*, 2014), enabling small class sizes and outstanding individual support.

In Research Excellence Framework 2014 (REF2014), UCL was rated the top university in the UK for 'research power' (the overall quality of its submission multiplied by the number of FTE researchers submitted). It was rated top not only in the overall results, but in each of the assessed components: publications and other research outputs; research environment; and research impact. REF2014 confirmed UCL's multidisciplinary research strength, with many leading performances across subject areas ranging from biomedicine, science and engineering and the built environment to laws, social sciences and arts and humanities.

<u>Equality</u>

UCL is proud of its longstanding commitment to equality and to providing a learning, working and social environment in which the rights and dignity of its diverse members are respected.

Some highlights below:

- **Race Charter Mark** - UCL holds a Bronze Race Equality Charter Mark award, recognising UCL's commitment to improving the representation, progression and success of minority ethnic staff and students.
- **Athena SWAN** - UCL holds an institutional Silver **Athena SWAN** award – this recognises our commitment to and impact in addressing gender equality. Departments at UCL are also engaged in the Athena SWAN charter, with 29 departments holding an award; 16 Silver and 13 Bronze.
- **Staff networks** - We have a number of staff networks that run a range of social and development activities, for example **Out@UCL**, **PACT**, **Enable@UCL**, **the race equality staff network**, **Astrea** and **UCL Women**.
- **B-MEntor** – **B-MEntor** is a mentoring scheme for black and minority ethnic staff. The mentoring scheme is a collaborative initiative with a number of London-based universities.
- **Sabbatical Leave following maternity** – UCL provides one term of sabbatical leave without teaching commitments for research-active academics returning from maternity, additional paternity, adoption or long-term carer's leave. This support for returners enables staff to more quickly re-establish their research activity.

Please see our **Equalities and Diversity Strategy 2015-2020** for information on our current priorities.

<u>Location and working environment</u>

The position is based at the London Centre for Nanotechnology UCL and funded by i-sense, the £11M five year EPSRC Interdisciplinary Research Collaboration in Early Warning Sensing Systems for Infectious Diseases and benefits from a large scale multidisciplinary project involving over 100 scientists, engineers and clinicians from UCL, Imperial College, London School for Hygiene and Tropical Medicine and Newcastle University, in conjunction with Public Health England and industrial partners ranging from OJ-Bio through to O2 Health and Microsoft

Based in Bloomsbury, UCL is a welcoming, inclusive university situated at the heart of one of the world's greatest cities.

UCL's central campus is within easy reach of Euston, Kings Cross and Marylebone mainline stations, the new Eurostar terminal at St. Pancras and the following Underground stations - Euston Square, Warren Street, Goodge Street and Russell Square. Road connections to the M1 and M40 motorways give easy access to the north and west road networks. There are also good public transport links to Heathrow airport.

Application procedure

Further details about the post and the application procedure are available at www.london-nano.com. If you are unable to apply online please contact Denise Ottley at the London Centre for Nanotechnology, d.ottley@ucl.ac.uk or 17-19 Gordon Street, London WC1H 0AH, for advice.