



Further Particulars:

Research Associate in Control

– Ref: 1700575

Job Title:	Research Associate – Control
Department:	Electronic and Electrical Engineering
Reports to	Professor Sarah Spurgeon
Grade:	Research Associate Grade 7 full-time (1 FTE)
Salary:	£34,635 - £41,864 including London Allowance of £3,031 per annum
Start Date:	The position is available from 1 January 2018 or as soon as possible thereafter for a period of two years. Further funding the support the post may be available.

Appointment at Grade 7 is dependent upon having been awarded a PhD; if this is not the case, initial appointment will be at Research Assistant Grade 6B (salary £30,316 - £31,967 per annum) with payment at Grade 7 being backdated to the date of final submission of the PhD thesis (including corrections).

A PhD (or about to submit) in a relevant subject is required.

Project Outline

From a vehicle efficiency perspective, foundation brake systems exhibit a number of suboptimal characteristics:

- 1) Off-brake residual drag torque (RDT) is significant (2-5 Nm per brake parasitic loss).
- 2) Disc cooling requirements limit the opportunity to optimise wheels aerodynamically.
- 3) Component mass is significant on an overall vehicle scale.
- 4) Brake wear emissions are a predominant emission source on Electric vehicles.

The proposed project aims to transcend these compromises by integrating electric motors with drastically down-sized friction brakes into a single synergised inboard assembly to form an Integrated Torque Actuator Module (ITAM). The project will yield prototype hardware which will be tested both in simulation and on-vehicle. The components of work conducted at UCL will support the following objectives:

- Design, develop, deploy and test control software to control each ITAM at a component, system and vehicle level
- Ensure the vehicle is capable of covering all the duty cycles including anti-lock braking (ABS) and dynamic stability control (DSC)

This project has been funded by Innovate UK and is taking place within a multi partner consortium across industry and academia led by Jaguar Landrover Ltd.

Research Associate in Control

Duties and Responsibilities

The main responsibility of the Research Associate will be within the work stream lead by Jaguar Landrover Ltd and associated with software development and the electrical architecture of the experimental vehicle. The main focus is to support the development, deployment and test of the vehicle motion control systems. The following is indicative of the duties and responsibilities associated with this post:

- Develop and analyse dynamic models of the vehicle, performing open-loop simulation testing in matlab.
- Design robust controller and parameter estimation strategies and validate the performance in simulation tests.
- Be in charge of reporting on the progress of the project.
- Present the results at progress meetings.
- Publish research in leading journals and present it at national and international conferences.
- Contribute to the overall activities of the research team and department as required.
- Actively follow UCL policies including Equal Opportunities policies

As duties and responsibilities change, the job description will be reviewed and amended in consultation with the postholder who will carry out any other duties as

are within the scope, spirit and purpose of the job as requested by the line manager or Head of Department/Division.

The post is to be held in the UCL Department of Electronic and Electrical Engineering. The project will be carried out in collaboration with academic and industrial partners in a consortium led by Jaguar Landrover Ltd and will require travel to consortium meetings at various locations in the UK.

PERSON SPECIFICATION

Qualification/Skills Required

- PhD in control engineering (essential).
- First degree in a relevant branch of engineering, mathematics or physical sciences (essential).
- Experience with controller and/or observer design for nonlinear and complex processes. (essential)
- Experience with simulation and performance validation in the Matlab environment. (essential)
- Ability to analyse and write up data in the form of journal papers and reports (essential).
- Ability to organise and plan work effectively to meet deadlines (essential).

Personal

- Excellent interpersonal and communication skills, both verbal and written. (essential).
- Ability to present technical information effectively to a range of audiences (essential).
- Commitment to high quality research (essential).
- Ability to work collaboratively and as part of a team (essential).
- Commitment to UCL's policies eg equal opportunity, health and safety (essential).

About UCL and the Departments of Electronic and Electrical Engineering

University College London (UCL) was founded in 1826 as the third university in England, after Oxford and Cambridge. UCL is however the first university in England to admit students of any race, class or religion, and the first to welcome women on equal terms with men. UCL is now the largest comprehensive university in London with more than 4,000 academic and research staff in 72 departments. The main campus of UCL is located in central London, just a few minutes walking distance from British Museum, West-End and Thames River.

The Department of Electronic and Electrical Engineering at UCL was established by Professor Sir Ambrose Fleming in 1885 and has a very strong research culture, state-of-the-art research equipments and facilities, and a very rich history of many fundamental research achievements in electronic and electrical engineering. The Department currently hosts international renowned research groups in Communications and Information Systems; Photonics; Optical Networks; Sensors, Systems and Circuits; Electronic Materials and Devices. For more information about the department and our research achievements, please visit the website <http://www.ee.ucl.ac.uk>

Further information regarding UCL may be found at:

www.ucl.ac.uk/

Information about the departments may be found at:

www.ee.ucl.ac.uk

HOW TO APPLY

All applications should be submitted via UCL Online recruitment system at the following link:

<http://www.ucl.ac.uk/hr/jobs>

Job reference 1700575

Interested applicants are encouraged to make Informal enquiries about the post to Professor Sarah Spurgeon at s.spurgeon@ucl.ac.uk

If you experience any problems with the application process, please contact Vicky Coombes at v.coombes@ucl.ac.uk quoting reference **1700575**

UCL Taking Action for Equality