UNIVERSITY OF LEEDS

Faculty of Environment
Institute for Transport Studies

Research Fellow in Choice Modelling: Emphasis on Behavioural Realism

Three year fixed term contract, available from 1 December 2014

https://jobs.leeds.ac.uk/vacancy.aspx?ref=ENVTR0037

We are looking for a committed, highly motivated and innovative individual with strong choice modelling skills and a proven ability to conduct state-of-the-art research.

This is one of three post-doctoral positions under this project, hosted in the Institute for Transport Studies (ITS), but with cross-university collaborations through the Choice Modelling Centre (CMC). You may also wish to consider the post of Research Fellow in Choice Modelling: Emphasis on Long Term Choices, job ref: ENVTR0038.

The specific area of research for this post is concerned with reconciling modelled choices with real world choices. This is a multi-faceted research task, drawing heavily on recent developments in behavioural economics and mathematical psychology and working on bridging the gap with traditional choice modelling research. The work will look at choice processes, decision rules, the growing role of social network, and incorporating interactions between decision makers. You will be expected to take academic ownership of large parts of the programme and make a lasting contribution to the field. You will also contribute to the empirical component of the project, which looks at modelling energy related decision making in a broader context, incorporating once again the role of interactions with other agents, and also the distinction between short term and long term decisions.

You will be expected to make a full contribution to the vibrant cross-university Choice Modelling Centre and will also be a member of the Economics and Discrete Choice research group within ITS.

Your qualifications will include a PhD (or you will be very close to obtaining a PhD) in choice modelling and a strong track record of developing state-of-the-art modelling techniques and applying them to different decision contexts. Cross-disciplinary experience is welcome.

University Grade 7 (£31,342- £37,394 p.a.)

Informal enquiries may be made to Professor Stephane Hess, tel +44 (0)113 343 6611, email s.hess@its.leeds.ac.uk

Interviews are expected to be held on 4 November 2014

Closing Date: 5 October 2014

Ref: ENVTR0037

Click here for further information about working at the University of Leeds
www.leeds.ac.uk/info/20025/university_jobs

Job Description

Responsible to: Head of School
Reports to: Professor Stephane Hess

Summary of post

This role provides an exciting opportunity to contribute to a major cross-disciplinary research programme at the heart of the new Choice Modelling Centre (CMC) set up within the University of Leeds. The five year DECISIONS project, funded by the European Research Council (ERC) seeks to make a step change in choice modelling. The project aims to develop a new framework which realigns modelled behaviour with real world behaviour, incorporating links between long term decisions and day to day choices, and accounting for the growing importance of virtual social networks and the role of joint decisions.

Main duties and responsibilities

- Contribute to the DECISIONS project by working on the tasks outlined below.
- Take intellectual ownership of subcomponents of the project and help shape the direction of the research.
- Make a contribution to the Choice Modelling Centre through interactions with other choice modellers working in the University of Leeds.
- Lead and contribute to research papers for publication.
- Transform and apply knowledge acquired from the projects by presenting research papers at conferences.
- Develop collaborations with colleagues in other Institutes, Schools and Faculties at the University of Leeds and develop research links with external organisations.
- Use initiative and creativity to identify areas for further research.
- Contribute to the development of follow-on research funding applications where appropriate.
- Plan and manage your own research activity within the strategy identified for the project teams as a whole.
- Develop and support a small number of undergraduate and master's student dissertations in areas which support the overall objectives of the post.
- Balance the competing pressures of research and administrative demands and deadlines.
- Ensure satisfactory compliance in your work with respect to health and safety, ethical requirements etc.
- To undertake any other duties which may be commensurate within the role and grade as requested by the project leader.

Your work will focus on a number of subtasks of the DECISIONS project. These are likely to evolve over time and there is substantial scope for you helping to shape the direction of the work.

The specific tasks to which you will contribute are:

Recognising the choice process in our models: The actual choice process leading to a decision, which very often includes making a plan and modifying it based on updated contexts, is usually not observed in the data and generally ignored in the models. This can lead to biased estimates and ultimately affect prediction capabilities and accuracy of valuation estimates. Researchers are now gradually integrating the role of the choice process, accommodating the formation of plans leading up to decisions, learning and adaptation and the role of attitudes, reference points and perceptions or convictions. This task will expand on this emerging body of work, recognising potential confounding between these processes and identifying additional indicators of behavioural processes and further information for each person to allow us to better model the heterogeneity in the choice process, including non-traditional methods, such as eye tracking in SP surveys.

Decision rules and operationalising alternative theories of behaviour: Although the majority of large scale choice modelling work continues to rely on the random utility framework, the actual choice of decision rule is a growing area of research. In recent years, the focus has been on Random Regret Minimisation as an alternative to RUM but there is ample evidence in the experimental literature of decision makers using even less compensatory decision rules. Theoretical models developed for these theories have largely failed to make the transition from experimental settings into the modelling of multi-alternative multi-attribute choices. This task is concerned with implementing alternative structures and contrasting their empirical performance with standard models. Improved capability to predict choices is just one component in this comparison and needs to be contrasted with their suitability for use in computing welfare measures.

The role of social networks and wider societal influences: The impact of social networks and societal and media influences on individual behaviour is perhaps the least understood and modelled aspect of behaviour although it is of critical importance in this changing world. Even state-of-the-art models of behaviour do not fully account for these effects, despite growing interest in the impacts of societal influences. The growing influence of virtual social networks in passing around word of mouth about products/services makes this work even timelier. This task will develop structures to explicitly model the impacts of social networks on behaviour, drawing on literature in sociology to design a suitable mechanism. A key component will be the way in which information is propagated through the network.

Incorporating interactions between decision makers: Many decisions (long term and short term) are made jointly by multiple decision makers, with a complex process of negotiation and influence. Studies to date have focused either on developing models of observed patterns of joint activity participation as a function of observable attributes or on exploring different decision-making mechanisms using stated choice experiments. This task will develop a framework for modelling joint choice behaviour that can be calibrated and operationalized using revealed preference data sources, building on the behavioural theories and models of decision-making mechanisms developed thus far largely on hypothetical choices.

Empirical case study: The DECISIONS project includes a major case study looking at energy consumption. While this has received repeated attention from the choice modelling community, looking for example at the choice of providers, demand for alternative fuel vehicles, as well as continuous consumption, e.g. vehicle miles travelled, this task seeks to model overall energy consumption as a result of travel decisions as well as heating and appliance choices. Furthermore, it looks at consumption over a prolonged time horizon, thus covering day to day usage as well as more infrequent demand. Finally, the other key contribution will be to look at consumption within the larger framework of decision making developed in this project, studying the key impact of long term decisions on short term consumption and the role that attitudes and social networks play. A major data collection

effort will be undertaken, and you will contribute to both the survey work and the modelling work.

Career Expectations

The University of Leeds is committed to developing its staff. All staff participate in the Staff Review and Development scheme and we continue to work with individuals, supporting them to maximise their potential.

Progression to a higher grade is dependent on an individual taking on an increased level of responsibility. Vacancies that arise within the area or across the wider University are advertised on the HR website - http://jobs.leeds.ac.uk - to allow staff to apply for wider career development opportunities.

University Values

All staff are expected to operate in line with the University's values and standards, which work as an integral part of our strategy and set out the principles of how we work together. More information about the University's strategy and values is available at http://www.leeds.ac.uk/comms/strategy/.

The Institute for Transport Studies is a green impact award holder, and expects all staff to go about their duties in a resource efficient way, minimising impacts to the environment wherever possible.

Person Specification

Essential

- A PhD (or be very close to obtaining a PhD) in choice modelling.
- Experience in developing advanced choice models and applying them to real world decision contexts.
- A willingness to learn about unfamiliar sectors and literatures.
- A developing track record of peer-reviewed publications in international journals.
- Evidence of innovation in research.
- Ability to work independently and flexibly.
- Ability to work accurately and carefully.
- Ability to meet deadlines and maintain a professional approach to all aspects of the role.
- Excellent communication skills including examples of reaching different audiences.
- Ability to work as part of a team as well as autonomously.

Desirable

- Cross-disciplinary experience, applying choice models across different fields.
- Computer programming skills in the context of model estimation.
- Survey design experience.
- Ideas for ways in which the project could stimulate engagement with policy makers and/or the public.

Additional Information

Details of the terms and conditions of employment for all staff at the University, including information on pensions and benefits, are available on the Human Resources web pages accessible at http://hr.leeds.ac.uk/

The Partnership

To be aware of and work in line with The Partnership working with students as members of a learning community to provide world class education and an excellent student experience. More information about the Partnership is available at http://partnership.leeds.ac.uk

Disclosure and Barring Service checks

A Disclosure and Barring Service (DBS) Check is not required for this position. However, applicants who have unspent convictions must indicate this in the 'other personal details' section of the application form and send details to the Recruitment Officer at disclosure@leeds.ac.uk.

Disabled Applicants

The post is located in the Institute for Transport Studies. Disabled applicants wishing to review access to the building are invited to contact the department direct. Additional information may be sought from the Recruitment Officer, email disclosure@leeds.ac.uk or tel + 44 (0)113 343 1723.

Disabled applicants are not obliged to inform employers of their disability but will still be covered by the Equality Act once their disability becomes known.

Further information for applicants with disabilities, impairments or health conditions is available in the applicant guidance.

Further Information

Choice Modelling Centre (CMC)

The Choice Modelling Centre (CMC) is a large cross-disciplinary grouping of leading academics working in choice modelling. CMC aims to bring together expertise from all key disciplines and create an environment of collaboration by breaking down traditional barriers. It aims to be a one stop shop for conducting state-of-the-art theoretical research, making a step change in applied work, leading the way in postgraduate study, and providing world class teaching and continuing professional development.

Our research covers new methodological developments, theoretical insights and practical solutions to real world problems. We work both in modelling choices and the development of surveys and techniques for capturing data on choices. We are active across numerous thematic areas, including but not limited to transport, health, energy and business/marketing.

Further information can be found on www.cmc.leeds.ac.uk

Institute for Transport Studies

The Institute's primary purpose is to advance the understanding of transport activity, operations and use, and to develop skills and best practice among transport professionals and decision-makers. The Institute is the UK's largest single academic group providing transport courses and training. In a typical year there are around 500 students taking undergraduate modules, 80 students on Masters programmes, up to 40 registered PhD students, and dozens of delegates participating in short courses. Through this, the Institute makes a significant contribution to resolving the skills shortage faced by the transport sector, and to improving both the quantity and quality of transport professionals internationally.

ITS is a leading international centre for transport research. It is particularly notable for the breadth and depth of research, the international quality of which has been verified by Research Assessment Exercise (RAE) stretching back over a period of 20 years. The research is sponsored by a variety of organisations, including the UK Department for Transport, the European Commission, and the Engineering and Physical Sciences Research Council.

ITS has approximately 50 academic/research staff and about a dozen support staff. The Institute prides itself on its inter- and multi-disciplinary nature; the staff come from a wide variety of background disciplines, including economics, engineering, geography, mathematics, computing, psychology and social science. ITS staff have provided expert advice to international organisations such as the World Bank, the European Commission and the International Transport Forum, to national governments around the world and to UK entities such as the House of Commons Transport Select Committee. Staff also serve as editors and/or members of the editorial boards of many leading transport journals and play a prominent role in the organisation of international transport conferences.