UNIVERSITY OF LEEDS

CANDIDATE BRIEF

Research Fellow in Computer Vision and Autonomous Vehicles, Faculty of Environment

Salary: Grade 7 (£37,099 – £44,263 p.a.)

Reference: ENVTR1185

1 Year Fixed term until December 2024 – Extendable to June 2025

We will consider job share / flexible working arrangements.

Research Fellow in Computer Vision and Autonomous Vehicles
Institute for Transport Studies, Faculty of Environment

Are you an experienced and ambitious researcher looking for your next challenge? Do you have a strong research background in computer vision, machine learning, and autonomous vehicles? Do you want to further your career in a world-leading, research-intensive Russell Group University?

With 40 European partners, [Hi-Drive](#), a four-year European Commission flagship project (2021-2025) aims to deploy higher levels of driving automation in self-driving cars and extended operational design domain (ODD) for the next generation of highly automated vehicles. A longer period of automated mode, a lower rate of human take-over requests, comprehensive driver behaviour monitoring, and efficient multi-modal traffic perception beyond the current state-of-the-art are some of the objectives of the project.

As part of this project, the Institute for Transport Studies (ITS) at the University of Leeds, the leading research department in the field in the UK, is involved in several work packages and research tasks and is seeking a talented research fellow in the area of computer vision, machine learning, and sensor fusion for developing road-user detection, tracking, trajectory estimation, and in particular driver readiness monitoring in response to a take over request. Pedestrian crossing intention recognition using vision, lidar, and radar sensory data is another key programme output to support the Hi-Drive project by ITS, University of Leeds.

We require a motivated researcher with in-depth research experience in computer vision, driver monitoring, and road scene perception with an academic background in computer science/engineering, mathematics, or data analytics, and competent in developing real-world applications, programming and tools. You should have a PhD in computer science or relevant fields, a strong academic record, and be able to work both independently and as part of the University of Leeds team.

What does the role entail?

As a Research Fellow, your main duties will include:

- Contribution to the Hi-Drive project including methodology development, performing experiments and evaluations either independently or as part of a larger team under the direction of Assistant Professor Mahdi Rezaei and supervision of Professor Natasha Merat.
- Generating and pursuing independent original and novel ideas for driver behaviour monitoring and/or pedestrian intention recognition and action recognition;
- Contributing to the dissemination of research results in leading peer-reviewed journals and conferences such as both in either the Computer Vision field or Intelligent Transportation Systems such as IEEE Transactions on Intelligent Transportation Systems (T-ITS), IEEE Transactions on Vehicular Technologies (TVT), Transportation Research Part C: Emerging Technologies, CVPR, ICCV, EECV, … and through the presentation at meetings, workshops, and conferences with guidance as necessary;
- Preparing papers/articles for publication in leading international journals and disseminating research results through other recognised forms of output;
- Ability to work independently or as part of a larger team of multi-disciplinary researchers (human factors, physiology, engineers and designers) and stakeholders;
- Supporting external research activities, including contributing to research results and outputs and the generation of independent and original ideas, ensuring a successful programme of investigation;
- Collating and analysing data to inform the direction and progression of the research project;
- Participating in our regular research group meetings and presenting research output, where appropriate;
- Maintaining your own continuing professional development and acting as a mentor and supervisor to less experienced colleagues and students as appropriate;
- Contributing to the research culture of the School, where appropriate;
- Continually updating your knowledge, understanding and skills in the research field.

These duties provide a framework for the role and should not be regarded as a definitive list. Other reasonable duties may be required consistent with the grade of the post.

What will you bring to the role?

As a Research Fellow, you should have:
- A PhD or near completion in Computer Science, AI, Data Analytics, Machine Learning, Robotics, Mathematics or a closely allied discipline;
- Strong track record of peer-reviewed publications in top-tier computer vision and/or transport-related journals and conferences such as (CVPR, ECCV, ICCV, PAMI, ICIP, Pattern Recognition, T-ITS, TVT,... or similar);
- Demonstrated strength in mathematics, linear algebra, and statistical inference (e.g., proof of excellent marks in academic transcripts);
- An in-depth practical experience in CNNs, supervised/unsupervised learning for object detection/recognition, segmentation, and tracking;
- Highly skilled in Python/C++ programming, Visualisations, DNN frameworks (TensorFlow, PyTorch, Cloud platforms, Microsoft Azure), CUDA and GPU;
- Practical experience in developing novel deep neural network models, reinforcement learning, Bayesian networks, and decision trees;
- Good time management and planning skills, with the ability to meet tight deadlines, manage competing demands and work effectively under pressure without close support;
- Excellent written and verbal communication skills including presentation skills;
- A proven ability to work well both individually and in a team;
- A strong commitment to your continuous professional development.

You may also have some other desired skills:
- Prior experience in working with Lidar and Radar sensors and point cloud data;
- Prior work experience in international consortiums and funded projects;
- Experience in pursuing international research grants and funding to support research;
- Involvement in technology development for autonomous vehicles to increase the technology readiness level.

How to apply

You can apply for this role online; more guidance can be found on our [How to Apply](#) information page. Applications should be submitted by **23.59** (UK time) on the advertised closing date.

Contact information

To explore the post further or for any queries, you may have, please contact:

Dr Mahdi Rezaei, University Academic Fellow
Tel: +44 (0)113 343 5342
Email: m.rezaei@leeds.ac.uk

Additional information

In addition to this project which is being managed by the [human factors and safety research group](#) (led by [Professor Natasha Merat](#)), the Institute for Transport Studies has had extensive collaboration and partnership experience in other similar international projects and consortiums such as [L3Pilot](#), [interACT](#), [VeriCAV](#), and [HumanDrive](#). Reviewing the listed projects may help you to familiarise yourself more with the nature of the Hi-Drive project.

Please note: If you are not a British or Irish citizen, from 1 January 2021 you will require permission to work in the UK. This will normally be in the form of a visa but, if you are an EEA/Swiss citizen and resident in the UK before 31 December 2020, this may be your passport or status under the EU Settlement Scheme.

Find out more about our Institute for Transport Studies

Find out more about the Faculty of Environment

Find out more about our Research and associated facilities

Find out more about Equality and Inclusion in the Faculty

Find out more about our Faculty initiatives

A diverse workforce
As an international research-intensive university, we welcome students and staff from all walks of life and from across the world. We foster an inclusive environment where all can flourish and prosper, and we are proud of our strong commitment to student education. Within the Faculty of Environment, we are dedicated to diversifying our community and we welcome the unique contributions that individuals can bring, and particularly encourage applications from, but not limited to Black, Asian and ethnically diverse people; people who identify as LGBT+; and people with disabilities. Candidates will always be selected based on merit and ability.

The Faculty of Environment has received a prestigious Athena SWAN silver award from Advance HE, the national body that promotes equality in the higher education sector. This award represents the combined efforts of all schools in the Faculty and shows the positive actions we have taken to ensure that our policies, processes and ethos all promote an equal and inclusive environment for work and study.

Working at Leeds
Find out more about the benefits of working at the university and what it is like to live and work in the Leeds area on our Working at Leeds information page.

Candidates with disabilities

Information for candidates with disabilities, impairments or health conditions, including requesting alternative formats, can be found on our Accessibility information page or by getting in touch with us at disclosure@leeds.ac.uk.

Criminal record information

Rehabilitation of Offenders Act 1974

A criminal record check is not required for this position; however, all applicants will be required to declare if they have any 'unspent' criminal offences, including those pending.

Any offer of appointment will be in accordance with our Criminal Records policy. You can find out more about required checks and declarations in our Criminal Records information page.