



## Fully-funded PhD Studentship

Application deadline: Ongoing

Start Date: As soon as possible

<b>Project Title</b>	<b>Self-driving cars – robotics, machine vision, human interactions</b>		
<b>School</b>	Institute for Transport Studies		
<b>Lead Supervisor</b>	Dr Charles Fox	<a href="mailto:C.W.Fox@leeds.ac.uk">C.W.Fox@leeds.ac.uk</a>	Phone: +44 (0)113 343 31794
<b>Co-supervisor</b>	Professor Natasha Merat	<a href="mailto:N.Merat@its.leeds.ac.uk">N.Merat@its.leeds.ac.uk</a>	Phone: +44 (0)113 34 36614

### Project Details

Self-driving pods are small, electric, shared, autonomous person transporter vehicles which may form a solution to “last mile” transportation, with commuters travelling by train into a city then transferring to a pod to reach their workplace. Such vehicles have recently been used for demonstrations in a number of cities.

We have previously worked with self-driving minibus-like vehicles in the EU CityMobil2 project, including delivering road user detection systems ([www.citymobil2.eu/en/](http://www.citymobil2.eu/en/)). We also led the InnovateUK IBEX2 autonomous agriculture vehicle project, delivering localisation, planning and vision systems ([www.ibexautomation.co.uk](http://www.ibexautomation.co.uk)).

As part of newly funded projects in this area, there is currently full funding available for a PhD position to extend the work in related areas including:

- 1) Construction of new hardware and software systems for pod vehicles. Using SLAM algorithms, lidar and machine vision sensors, mapping and planning systems; which may also include mechanical and electronics work on the vehicles themselves;
- 2) Use of the pod to study live and recorded human-vehicle interactions with pedestrians and other road users. Machine vision methods for road user detection and novel scene analysis / event detection and prediction algorithms to understand road user behaviour and potential safety threats, such as who is likely to pull out in front of the vehicle. This work may include models from Psychology such as crowd behaviour and game theory, as well as agent-based micro-simulation, and statistical / big-data analysis of results.

### Entry Requirements/necessary background

**Required skills** (to be evidenced by CV, references and interview):

- Very strong programming and applied maths skills; (e.g. from industry experience, portfolio, open source contributions, or academic qualifications)
- Knowledge and experience of robotics, machine vision, and/or human behaviour /game theory/ HCI interaction modelling (e.g. from academic qualifications, industry experience, portfolio, or open source contributions)
- Ability to work well in a technical team (e.g. from strong recommendation letters, social networks, or documented open source history)

**Desirable/optional skills:**

- Experience of publishing academic or industrial papers, or open-source projects
- Linux, Python, C++, ROS, OpenCV, git, PCL, SQL, SGE/Hadoop/Spark
- Understanding the behaviour of pedestrians or crowds on the road
- Electronics, mechanics, vehicle maintenance, DIY, welding, Arduino, hardware hacking

Further information about entry requirements can be found here:

<http://www.its.leeds.ac.uk/courses/phd/apply/>

**How to Apply:** Please send a CV and a short 'statement of motivation' to Dr Charles Fox ([C.W.Fox@leeds.ac.uk](mailto:C.W.Fox@leeds.ac.uk)). Further information will then be provided. Dr Fox is also available for informal consultation if you would like to find out more about the project.

### **Funding**

Funding is only available to UK/EU applicants who are eligible to pay fees at the UK/EU rate. It provides an enhanced stipend (£16,250 for 2017/18). A Research Training Support Grant will also be provided.

We welcome scholarship applications from all suitably-qualified candidates, but UK black and minority ethnic (BME) researchers are currently under-represented in our Postgraduate Research community, and we would therefore particularly encourage applications from UK BME candidates. All scholarships will be awarded on the basis of merit.