Project title: DEPTHS: Data-driven Evaluation of Pollutant Dispersion in Urban Areas by Detached Eddy Simulation and Experiment

Project ID (optional):

Accept all year-round applications

Funding information: If you are a home (UK) student please contact the academic below to discuss possible funding options. Unfortunately, at this time we do not have funding for international applicants but would be happy to consider applications from international candidates who have secured their own sponsorship or are self-funded.

Project description:

Overview

Urban air pollution is a pressing global issue, with growing urban populations amplifying the need for accurate predictions and effective improvements in air quality around buildings. This project combines Computational Fluid Dynamics (CFD) and experimental approaches to investigate pollutant dispersion in urban environments.

At Newcastle University, the CFD component (3 years) will focus on Detached Eddy Simulation (DES) under the guidance of Dr. Amir Fard and Dr. Francesco Zonta. To complement this, wind tunnel experiments (1 year) will be conducted at Durham University with Dr. Lian Gan, using scaled urban topology models. Finally, Data Assimilation (DA) techniques will enhance low-cost RANS models by tuning their parameters using high-fidelity results from DES and experiments, improving the accuracy of eddy viscosity-based RANS simulations for urban flows.

[Visit here for more project details](https://www.ncl.ac.uk/sage/study/postgraduate-research/phd-opportunities/epsrc-doctoral-landscape-awards/).

Eligibility Criteria

A minimum 2:1 Honours degree or international equivalent in a subject relevant to the proposed PhD project (such as mathematics or theoretical physics) is our standard entry, however we place value on prior experience, enthusiasm for research, and the ability to think and work independently. Excellent Analytical skills and strong verbal and written communication skills are also essential requirements. A Masters qualification is not required if you have a minimum 2:1 degree or can evidence alternative experience in a work or research-based project. If you have alternative qualifications or experience, please contact us to discuss.

Applicants whose first language is not English require an IELTS score of 6.5 overall with a minimum of 5.5 in all sub-skills. International applicants may require an ATAS ([Academic Technology Approval Scheme](https://www.gov.uk/guidance/academic-technology-approval-scheme)) clearance certificate prior to obtaining their visa and to study on this programme.

Application enquiries:

[Dr. Amir E. Fard](https://www.ncl.ac.uk/engineering/staff/profile/amirfard.html) (Lecturer in Mechanical Engineering), [amir.fard@newcastle.ac.uk](mailto:amir.fard@newcastle.ac.uk)