Newcastle University PhD Studentship award

Title:
Using the Cloud to tame the turbulence over aircraft and around ships

Value of award:
100% of International tuition fees paid

Number of awards:
1

Start date and duration:
September 2019 for 3 years

Application closing date:
8th February 2019

Overview:
The aim of this project is to reduce the turbulent skin-friction drag force experienced by aircraft and ships by developing state-of-the-art cloud-based machine learning algorithms which will be used to detect and destroy wall-turbulence.

The need to reduce the skin-friction drag of aircraft and ships is of paramount importance. Nominally 50% of the total drag of a commercial aircraft or ship is due to turbulent skin-friction. Reducing skin-friction drag reduces energy consumption, which in turn reduces transport emissions, leading to economic savings and wider health and environmental benefits through improved air quality. To place this into context, just a 3% reduction in the turbulent skin-friction of a long-range commercial aircraft would save £1.2m in jet fuel per year per aircraft and prevent the annual release of 3,000 tonnes of carbon dioxide. This is equally as important for marine transport which has an estimated 90,000 ships operating worldwide, together consuming 5 – 7 million barrels of oil per day (8% of the world’s production).

The successful applicant will develop high technical proficiency in state-of-the-art laser-based fluid flow diagnostics, control and instrumentation, data-driven machine learning including cloud-computing, and statistical methodology. Training courses on machine learning and advanced statistical methods will be provided. The applicant will be supported to develop their own portfolio to demonstrate significant professional development in order for them to obtain chartered engineer and chartered scientist status.

A link to the full project proposal can be found here.

Sponsor: Faculty of Science Agriculture and Engineering and Chinese Scholarship Council (CSC)

Name of supervisor(s):
Dr Richard Whalley (School of Engineering), Dr Kevin Wilson (School of Maths, Stats & Physics) & Dr Yu Guan (School of Computing)
Eligibility Criteria:
You must be a citizen and permanent resident of the People’s Republic of China at the time of application. The applicant is expected to have a degree in either Mechanical Engineering, Computer Science or Mathematics at a grade of at least 80% from ‘985 Universities’, or 85% from ‘211 Universities’. It would be desirable for the applicant to have a sound understanding of either fluid dynamics, machine learning or Bayesian statistics, depending on their degree.

How to apply:
You must apply through the University’s online postgraduate application system. Apply here. To do this please ‘Create a new account’. All relevant fields marked with a red asterisk must to be completed.

The following information will help us to process your application. You will need to:
• Insert the programme code 8090F in the programme of study section
• Select PhD Mechanical Engineering (full time) - Mechanical and Systems Engineering as the programme of study
• Insert the studentship code CSC1806 in the studentship/partnership reference field
• Attach a covering letter and CV. The covering letter must state the title of the studentship, quote reference code CSC1806 and state how your interests and experience relate to the project
• Attach degree transcripts and certificates and, if English is not your first language, a copy of your English language qualifications

Contact:
Dr Richard Whalley (Richard.Whalley@newcastle.ac.uk), Dr Kevin Wilson (Kevin.Wilson@newcastle.ac.uk) or Dr Yu Guan (Yu.Guan@newcastle.ac.uk)