

**PhD Studentship:** Big Data Analytics in Development of Precision Agricultural Database for Future Farming

**Key academic contact:** Professor Chungui Lu, School of Animal, Rural and Environmental Sciences (ARES).

**The project:**

Precision agriculture has become one of the most important research frontiers using agricultural resources to increase crop yields, lower production costs, protect the environment and improve the market competitiveness. Research on the integration of advanced technologies for precision agriculture is vital for increasing agricultural sustainability and is an agricultural revolution for the future of farming, including urban and vertical farming. It promises more targeted agriculture, better use of resources and greater management of a host of complex infrastructures.

Data acquisition, computational intelligence techniques and cloud computing has already been introduced into agricultural research. However, considering recent advances in big data analytics, it introduces some promising results for precision agriculture. Unlike earlier research, which has focused on further intensification and standardisation of production, this offers a new set of computational tools and new scientific insights. In addition, it is likely to that a sustainable research base for innovative analytics will be co-created within these research programmes which are not only about drastically increasing yields, but also about tailoring the cultivation of each square foot: adopting a per plant approach.

The aim of this research project is to develop effective technologies to process massive data sets already generated for precision farming production using "Big Data". In this study, both the sensing process and conversion of data into useful knowledge will be optimised. Unsupervised and supervised learning processes will be applied on a large database of agricultural crop systems. The project will provide a sustainable solution to the inherent problems of the protected cropping industry (e.g. not efficient with regards to water/nutrient use, heavy manual work) by the introduction of advanced systems and means of processing a massive dataset with the state-of-the-art high performance computing systems. The proposed PhD project will facilitate the establishment of industrial and academic collaboration between NTU and LivEco Ltd promoting R&D work on the development of innovative and efficient "big data" technology for precision farming.

**The School of ARES:**

Nottingham Trent University has an outstanding reputation for our commitment to research that shapes lives and society. The School of Animal, Rural and Environmental Sciences is located at the NTU Brackenhurst Campus. It has a growing postgraduate community which benefits from the support of the NTU Doctoral School in addition to the subject specialist expertise within the School.

Further information regarding research within the School can be found at:

<https://www.ntu.ac.uk/research/research-at-ntu/academic-schools/research-at-the-school-of-animal-rural-and-environmental-sciences>

**Specific qualifications/subject areas required of the applicants for this project:**

To be eligible to apply, you must hold, or expect to obtain by 27 June 2017, a first class or upper second class UK BSc (Hons) degree (or equivalent) and a Masters degree in disciplines relating to computer science or agriculture.

Please note that this scholarship is only available for new applicants. Existing PhD students are not eligible to apply.

For informal discussions, please contact [chungui.lu@ntu.ac.uk](mailto:chungui.lu@ntu.ac.uk)

Applicants are required to submit a completed application form and supporting documents.

*Funding Notes*

*This Studentship is partly funded by a commercial third party and is conditional on receipt of funds therefrom.*

*This Studentship is also subject to the condition that the successful candidate enters into a legally binding agreement with Nottingham Trent University and a commercial 3<sup>rd</sup> party.*