**PhD Project Proposal**

School of Electronics, Electrical Engineering and Computer Science

& ECIT Global Research Institute

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| **Proposed Project Title: Smart Grid Data Analytics for Security of Energy Supply**  |
| **Principal Supervisor: Dr Amy (Xueqin) Liu Industrial Supervisor: Dr J Kennedy** |
| **Project Description:** Ireland has adopted a renewable power generation target stipulating that 40% of electricity will be produced from renewable sources by 2020. In order to achieve such ambitious targets Ireland is expected to have 6000 MW of wind power generation installed by 2020, with about 4000 MW installed at present. With an all-island peak system demand of circa 7000 MW and min load of circa 2000 MW wind could,at times, theoretically supply all of system demand. However, the variability and uncertainty associated with wind power generation and the nature of the technology create operational challenges. In such an environment, new, more intelligent tools are needed by the power system operator to deal with the increased challenges. The project intends to investigate an intelligent big data approach to improve the reliability and security of future energy networks, at the transmission level as well as the distribution level. The objectives of the project are:1. To become familiar with smart grid with distributed renewable generation
2. To become familiar with various system scenarios, models and software to increase employability
3. Big data analytics using real time measurements
4. Investigate a methodology to compile and reports for operational presentation
5. Develop graphical user interface for displaying results/findings
6. Real-time visualization of power systems/smart grid to assist decision making

**Academic Requirements:**A 2.1 honours degree or equivalent in Computer Science or Electrical and Electronic Engineering or relevant degree is required.**GENERAL INFORMATION**This 3 year PhD studentship, funded by the Department for Employment and Learning (DEL), commences on 1 October 2018, covers approved tuition fees and a maintenance grant is approximately £14,777. The successful candidate has the privilege to work closely with industry and potential visit our university partners in China and US.Applicants should apply electronically through the Queen’s online application portal at: https://dap.qub.ac.uk/portal/ |
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