**PhD Project Proposal**

School of Electronics, Electrical Engineering and Computer Science

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| **Proposed Project Title: Internet of Things based Calibrated Low Cost Pollution Monitoring Sensor Network** |
| **Principal Supervisor: Dr Hamza Shakeel Second Supervisor: Dr Emi Garcia** |
| **Project Description:**  According to a recent report by World Health Organization, 9 out of 10 people on the planet breathe dangerous air and every year air pollution causes 7 million premature deaths. Nitrogen dioxide (NO2), sulfur dioxide, ammonia (NH3) and particulate matter (PM) are the main pollutants. There has been significant increase in low-cost (<£50) air quality monitoring sensors in the market in recent years. These sensors can dramatically improve our quality of life provided they produce highly reliable data. Currently, we rely on highly sophisticated and expensive instruments installed at specific locations for pollution monitoring.  The project aims to use microcontroller-based boards and several low cost sensors (NO2, PM, NH3) for development of a sensor network capable of monitoring air quality and pollution levels. Current research to calibrate these sensors mainly rely on either one-to-one comparisons with expensive sensors requiring extensive statistical modelling or using traditional bench-top based calibration instruments. The major part of the project will comprise of devising a smart low-cost real-time calibration mechanism for these sensors to ensure reliability of the data. The project will be first of its kind effort for improving data reliability of low-cost sensors.  **Research Areas**: Sensor Networks, data analytics, embedded systems, Sensors |
| **Contact details**  Supervisor Name: Hamza Shakeel Tel: +44 (0)28 9097 4083  QUB Address: 07.010 Ashby Building, Stranmillis Road Email: [h.shakeel@qub.ac.uk](mailto:h.shakeel@qub.ac.uk) |