**PhD Project Proposal**

School of Electronics, Electrical Engineering and Computer Science

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| **Proposed Project Title:** Edge-based solutions to IoT attacks |
| **Principal Supervisor:** Dr. Sandra Scott-Hayward **Second Supervisor:** |
| **Project Description:**  Millions of Internet of Things (IoT) devices have been compromised and used in a range of network-based attacks. In order to protect the network from vulnerable IoT devices, IoT device classification approaches have been proposed. These methods identify devices based on network traffic and constrain their communications to minimize potential damage if compromised. Similarly, classification techniques can be used to identify IoT attack traffic.  However, the IoT devices are at the edge of the network with the big data security analytics deployed in data centres or on cloud platforms remote from the device. This introduces data processing challenges, response time issues, and privacy, security, and legal implications. The term "intelligence at the edge" describes the useful processing of data as close to the collection point as possible enabling decision-making at that point.  The main goal of this PhD thesis is to investigate and derive techniques and algorithms to provide edge-based network security against attacks launched by vulnerable IoT devices. The ability to apply distributed machine learning techniques in this network environment will be explored.  *The student will have access to a state-of-the-art network testbed in the Centre for Secure Information Technologies (CSIT), Belfast.* |
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