**Name:**

Stephen Brandon

**Title of Degree:**

MSc in Computer Science (Networks & Distributed Systems)

**Title of Dissertation:**

Estimating Passenger Flow & Occupancy on Board Public Transport Buses Through Mobile Participatory and Opportunistic Sensing.

**Name of Supervisor:**

Siobhán Clarke

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**Abstract:**

Estimating passenger flow and occupancy on public transport buses usually involves dedicated hardware or conducting surveys, both of which can be expensive and time consuming. Bus occupancy data is useful for a variety of reasons. Bus operators can reduce running costs and environmental impact by understanding how to optimise the way they use their fleet. Passengers feel more comfortable and are more likely to use public transport when it is not congested.

Recent research has addressed various methods of collecting bus occupancy data. Much of this research has focused on hardware that needs to be installed on board the bus such as cameras and Wi-Fi Scanners. Crowdsensing applications have proved successful in other smart city projects including public transport applications such as estimating bus arrival time.

In this project we propose a novel solution to estimate passenger occupancy and flow on board buses. A mobile crowdsensing application capable of detecting other mobile devices through Bluetooth and Wi-Fi was created. Using a binary classification model we found that it is possible to differentiate if a bus is full or not based on the number of Wi-Fi users.