## Appendix 3: Project Proposal Form

**COM748 MSc Research Project Proposal**

|  |  |
| --- | --- |
| **Student Name:** | **Seán Ó Fithcheallaigh** |
| **Student Number:** | **B00830189** |
| **Supervisor Name:** | **Dr Ian Cleland** |

|  |
| --- |
| **Problem Statement (100 words):**  People with visual impairments are far less likely to go into an environment they are not familiar with, and this can have serious impacts on their health and wellbeing.  Guide dogs are a common helper for people with visual impairment, however, not all dogs have the correct behavioural characteristics which allow them to be selected as guide dogs. This means that getting a guide dog can be a long process, and with almost 340,000 people registered as blind or partially sighted, according to the NHS, the waiting list for a dog is likely to be long.  With his in mind, I propose using Deep Learning or Machine Learning methods to develop a system which would be trained to detect objects in the path of a user, this would then be deployed to a constrained device to access the feasibility of such a system being useful in the real-world. The hope would be that such a system could work as a kind of electronic guide dog, helping visually impaired people navigate new environments. |
| **Summary of Literature (500 words):** |
| **Description of Data/ Hardware to be used (100 word) please include links where possible:**  The data will likely have to be gathered during this project. A reasonable system for doing this would be the Arduino micro-controller, paired with an ultrasonic sensor, or something.  The data which will to be gathered for a few situations, such as a hallway with no obstacles in it as well as a hallway with an obstacle placed on the left-hand side of the hallway, more data with an obstacle in the centre of the hallway, and then on the right-hand side of the hallway. Data will also need to be gathered for obstacles of different shapes and sizes, because, while an obstacle is an obstacle, we will want the model to train on as wide a dataset as the timeline will allow us to gather. |
| **Description of development to be undertaken including tools to be used (300 words):** |
| **Risk Factors/Health and Safety Issues/Ethical Issues**:  When gathering the data, it would be best to either use an area that members of the public do not have access to, or to tape off the area we are using because items will be placed in the hallways, and we would want to make sure no one trips or harms themselves  I do not believe there are any ethical issues. |
| **References (recommended number 3):** |