

IMPERIAL COLLEGE OF SCIENCE,
TECHNOLOGY AND MEDICINE

DEPARTMENT OF ELECTRICAL AND ELECTRONIC
ENGINEERING

FINAL YEAR PROJECT

**Safety Assessment:
Augmented Reality for Human
Robotic Interaction**

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Chapter 1

Ethical, Legal & Safety Plan

1.1 Safety

1.1.1 Physical Safety

For safety reasons, the user operating the wheelchair should be physically capable of taking control of the joystick. This is especially important when conducting some of the advanced tests (Section ??). These tests involve the use of people walking in vicinity of the powered wheelchair. The user should have access to a kill switch to stop the wheelchair instantaneously, should a collision be imminent and the system fail to stop the wheelchair autonomously.

Furthermore, the speed of the wheelchair should be limited to a slow pace, since the wheelchair will be operated indoors and around other people. It is important to make sure that any human participants in the test are aware of the hazards of the wheelchair so they can take appropriate action, such as being ready to step out of the way should the wheelchair not stop.

The corridors used for testing the wheelchair must be clear of all non-test obstacles, and must be cordoned off so that unknowing passer-bys do not enter the testing area and be in danger of collision.

1.2 Legal

1.2.1 Recording People for Test Data

In order to test the Human Detection System, video recordings of people walking along walkways will need to be taken. To avoid any breaches of GDPR, the following precautions must be taken:

- Before recording, inform people in the area that we will be recording. People who do not wish to be recorded will be given time to leave.
- Ensure there are alternative routes to the paths being recorded, so people can avoid being recorded.
- Should no one want to be recorded, enlist the help of willing students as actors, who will recreate the scene of people walking in and out of the shot.
- Avoid recording in areas where minors frequent. The Queens Tower Lawn often has schoolchildren on their lunch break, so efforts will be made to avoid that location.

If people do not consent to recording after a recording has been completed, effort will be made to blur out the faces of that individual.