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**TEMPLATE ETHICS APPLICATION FORM**

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| **Important Notes:**  **1.** Please also upload an information sheet and a consent form as supporting documentation.  **2.** If you intend to conduct a study with UNDERAGED (under 16 years of age) participants you MUST fill in the Children Research Ethical Plan form and ensure that you obtain all the necessary permissions described in that form. Please fill in the form and submit it as PDF together with your ethics proposal. |
| 1. DESCRIBE THE BASIC PURPOSES OF THE PROPOSED RESEARCH.  The project, “3D Radar Metal Detection” is a project undertaken by the Extreme Light Group (School of Physics and Astronomy), and the Inference Dynamics and Interaction Group (School of Computing Science), to design and test several portable devices which have the potential to replace large static metal detection scanners in public places. Our research is required to test the capabilities of several commercial radar transceivers (and accompanying 3D depth cameras) in an indoor/outdoor setting, including large open spaces, thoroughfares, outdoors.  The proposed research, “3D Face Recognition from RGB Camera and Radar Sensor”, is a project undertaken by a Level 5 MSci Computing Science student under supervision. The research aims to investigate the effectiveness of using colour cameras in combination with Radar sensors for the purposes of identifying human faces. The mmWave Radar transceivers will be used to capture 3D depth information with the added benefits of being able to penetrate cloth and hair for potentially better facial recognition compared to traditional RGB-D cameras.  Our research will test the capabilities of the system accompanied by deep learning-based neural networks to recognise human faces subject to differing lighting conditions, poses and occlusion. |
| 2. INDICATE WHO IS FUNDING THE RESEARCH (IF COMMERCIALLY FUNDED, ENSURE THAT PARTICIPANTS ARE INFORMED).  The project is mainly funded by the QuantIC Quantum Imaging Hub Phase 2: project code 305567-15.  Funding from Google is also being used in the experiments. |
| 3. DESCRIBE THE DESIGN OF YOUR EXPERIMENT (E.G. CONDITIONS, NUMBER OF PARTICIPANTS, PROCEDURE AND EQUIPMENT WHERE APPROPRIATE).  Our experiment involves placing these devices (Radar+3D Depth Camera)on a tripod in an open space, and 1 or more participant (1-3 e.g.) walking in front of these devices for 1-10mins at a time, back and forth, covering the full field of view. The subject will conceal a metallic object (metal sheet, metal bread knife, plastic gun wrapped in aluminium foil). The data collected may include the 3D Depth map, the RGB webcam image, the Radar raw data (can be calculated as angle-range doppler plots, range histograms).  Our experiment involves using the devices (Radar + 3D Depth Camera) to capture the face of a single participant at a distance of 20cm. The experiment will be repeated at 5 different poses/angles subject to 2 types of lighting conditions (dim and daylight). The participant will be asked to wear 3 different objects in order to cover parts of their face (hat, glasses and mask). The data collected may include the 3D Depth map, the RGB webcam image, the Radar raw data (can be calculated as angle-range Doppler plots, range histograms). |
| 4. DESCRIBE HOW THE PROCEDURES AFFECT THE PARTICIPANTS.  The mmWave technology (24-77GHz) is absorbed by the skin and is supplied in a very weak power- this does not pose a safety issue.  The 3D Depth Cameras use an 860nm laser source, and as it is <1mW it is deemed eye safe. |
| 5. STATE WHAT IN YOUR OPINION ARE THE ETHICAL ISSUES INVOLVED IN THE PROPOSAL.  The data collection may rarely include saving the RGB webcam data which can include the full body of the individuals. There is very low risk of harm to the participant (no more than might be expected from walking in the building hallways)  The data collection will include saving the RGB webcam including 3D depth data of the faces of individuals. This is personally identifying information, but individuals will be explicitly informed about the experiment and what is collected and must provide consent in order to proceed with their involvement. |
| 6. SPECIFY THE NATURE OF THE PARTICIPANTS. INDICATE IF THE RESEARCH INVOLVES CHILDREN OR THOSE WITH MENTAL DISABILITIES OR HANDICAP. IF SO, EXPLAIN THE STEPS TAKEN TO OBTAIN PERMISSION FROM L.E.A.s, HEADTEACHERS, PARENTS, ETC. GIVE A BRIEF DESCRIPTION HERE AND FILL IN THE CHILDREN RESEARCH ETHICAL PLAN. THE FORM MUST BE UPLOADED TOGETHER WITH THE CONSENT AND INFORMATION FORMS.  The participants will all be over 18. This is the only qualifier for our study. |

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| 7. STATE IF PAYMENT WILL BE MADE TO SUBJECT.  No payment will be made to any subjects. |
| 8. DESCRIBE THE PROCEDURES FOR ADVERTISING, FOR RECRUITING PARTICIPANTS, AND FOR OBTAINING CONSENT FROM PARTICIPANTS. PROVIDE ADVERTISING LEAFLETS AS SUPPORTING DOCUMENTS IF POSSIBLE (NOTE THAT FINANCIAL INCENTIVES SHOULD NOT BE THE PRIMARY MOTIVATION FOR TAKING PART).   * No advertising necessary, as the number of participants required matches the size of the research team. * Each test subject will be asked to give their written consent via an online form which we will keep for our records and provide as evidence willingly on request.   The call for recruiting participants will be advertised on platforms regulated by the University of Glasgow (Email, Teams, Discord). The recruitment process will be generally aimed at university students.  Each subject will be asked to give their written consent by signing a form which will be kept for our records and provide as evidence willingly on request. |
| 9. STATE WHETHER THE PROPOSAL IS IN ACCORD WITH THE BPS CODE OF CONDUCT OR THE ESRC FRAMEWORK OF RESEARCH ETHICS.  The proposal is in accordance with both. |
| 10. DESCRIBE HOW THE PARTICIPANTS' ANONYMITY AND CONFIDENTIALITY WILL BE MAINTAINED.  Each participant will be labelled with a lettered identifier, such that any saved data will be labelled with this identifier and not the subject’s true details. Whilst we will save the RGB webcam data on rare occasions, our main motivation is to present our results with only the 3D depth videos, with a metal/no-metal label. We believe that this protects the identity of the test subjects sufficiently for publication and presentation of the results to peer academics.  Each participant will be labelled with an identifier (letter/number) such that any saved data will not use the subject’s true details. Any RGB webcam or 3D depth data of participant faces will not be used in the presentation or publication of results to peer academics unless explicitly consented to in written form. |
| 11. DATE ON WHICH PROJECT WILL BEGIN AND END.  December 2022 to December 2024  September 2023 to April 2024 |
| 12. LOCATION AT WHICH THE PROJECT WILL BE CARRIED OUT.  The Advanced Research Centre, 11 Chapel Lane, University of Glasgow |
| 13. DESCRIBE HOW PARTICIPANTS WILL BE DEBRIEFED AT THE END OF THE EXPERIMENT (THIS MUST INCLUDE THE OPPORTUNITY TO CONTACT THE EXPERIMENTER - OR SUPERVISOR - FOR FEEDBACK ON THE GENERAL OUTCOME OF THE EXPERIMENT).  The participants will be able to access their saved data, and the results video will be shared with them. The participants will be provided with the email and contact details of the research team.  The participants will be able to access their saved data, and the resulting images/3D depth information will be shared with them. The participants will be provided with the email and contact details of the project supervisor. |