



Information Sheet – February 2019

Title of the study: *Human Activities Classification and Fall Detection with Wearable Sensors and Radar*

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- **What is the purpose of this research?** The purpose of the research is to classify different human activities and identify critical events such as falls. This can help to develop systems for automatic monitoring of vulnerable people, for example those suffering from physical and/or cognitive conditions related to aging.
- **What am I supposed to do if I decide to be involved?** Participants are required to perform daily human activities. These can include for example:
 1. Walking
 2. Walking while moving objects from one side to another in the room
 3. Sitting on a chair
 4. Standing up from a chair
 5. Kneeling or bending down to pick up an object from the floor
 6. Kneeling or bending down to tie shoelaces
 7. Pouring and drinking a glass of water
 8. Pretending to answer a call on a mobile phone
 9. Washing hands
 10. Eating from a plate

Depending on the experiment design, we may ask you to repeat the actions mentioned above several times individually, typically 3 times each, or to perform sequences of different actions (for example standing up from a chair, walking, then pouring and drinking a glass of water, and walk back to the chair to sit).

Members of the team will be present near you in the room to provide information, help, and support as needed while performing the activities and assist in case of any inconvenience.

We expect the total duration of the experiment to be between 30 minutes and one hour. You will not perform activities all the time, and you can take any break you need and withdraw from the experiment at any time if you wish to do so.

Only if you are performing the experiments in our laboratory at the University of Glasgow, you may be asked to perform other two types of activities

11. Simulating a trip event followed by a fall
 12. Crouching down pretending to look for something under a piece of furniture and coming back up
- **Tell me more about the simulated fall at the University of Glasgow.** You will be asked to simulate a tripping event followed by a fall on a soft gym mat provided. The fall will not be caused by external factors in the environment or triggered by members of the team, and you can perform the action in your own manner and speed. You may think of simulating to lose balance and leaning forward to land on the mat with your hands, or simulating to lock one foot with another and lean forward. The soft mat provided is large enough for participants to fall onto this (sizes

approximately 200x60x12cm), with adequate width and thickness to prevent any injuries. Table and chairs in the room will be positioned in order not to be a hazard while performing the activities. Two members of the team will be always present in the room, about three or four steps away from you during the experiments to intervene and help in case of any problem – they can help you stand back up if you need to and assist in case of any inconvenience.

- **Do I have to take part and is there any risk?** Your participation to this study is fully voluntary, and you may withdraw at any time from this study, without giving any reason. We expect the activities mentioned above to be fairly innocuous to perform and not related to any specific risk. You can refuse to perform any of the activities mentioned above if you feel uncomfortable. If you have experienced serious previous fractures, you may want to consider whether not performing some of the proposed activities, such as the simulated fall; feel free to discuss with the researchers any concern on this matter.
- **What sensors will be used? Are they dangerous?** In the experiments you may be asked to wear a small 6x4x2cm sensor (*X-IMU* brand) on a wristband or in your pocket, and there will be radar sensors working at different frequencies recording at a distance of about 1 to 5-6 m from you, depending on the size of the room. Both sensors are not expected to cause any harm or discomfort, or pose any risk to your health.
- **What data will be stored about you?** We will ask you to provide your age to estimate the average age across all participants, but all the data will be stored in an anonymised manner and your name or individual age will not be disclosed in any academic publications or other dissemination material arising from this study.
- **Who do I contact to know more about this study and its results, or if I have a complaint about any aspect of this study?** You may contact the PhD students conducting this experiment (Haobo Li h.li.4@research.gla.ac.uk and Aman Shrestha a.shrestha.1@research.gla.ac.uk), and the academic staff (Dr Syed Aziz Shah, Syed.A.Shah@glasgow.ac.uk, and Dr Francesco Fioranelli, 01413304301, francesco.fioranelli@glasgow.ac.uk).