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| ITU Logo | INTERNATIONAL TELECOMMUNICATION UNION**TELECOMMUNICATIONSTANDARDIZATION SECTOR**STUDY PERIOD 2017-2020 | FG-AI4H-C-014 |
| **ITU-T Focus Group on AI for Health** |
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| **DOCUMENT** |
| **Source:** | Fraunhofer AICOS |
| **Title:** | Status Report of: Reducing risk of falling among elderly |
| **Purpose:** | Choose a purpose: Discussion |
| **Contact:** | Inês SousaFraunhofer AICOSPortugal | Tel: + 351 220430326Email: ines.sousa@fraunhofer.pt |
| **Contact:** | Maria VasconcelosFraunhofer AICOSPortugal | Tel: + 351 220430353Email: maria.vasconcelos@fraunhofer.pt |

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| **Abstract:** | Database of 403 subjects who were evaluated for multiple fall risk factors and 12-months prospective falls. The database aims at contributing to standardize fall risk assessment and creating tools to easily implement it in the clinical practice. |

1. **Relevance** - How relevant is the health problem to be addressed?

Falls are one of the most common health problems in the elderly population, about a third of community-dwelling adults aged 65 years or older fall each year [1], and these events represent more than 50% of the hospitalizations due to lesions in this age group. Falls are also considered one of the main causes for loss of independence and institutionalization. In 10% of cases falls result in fractures, thus contributing to significant increases in morbidity and mortality. Direct health care costs associated with this phenomenon are high, reaching yearly costs of 25 billion euros in the European Union [2] and 31 billion dollars in the United States of America [3].

1. **Impact** - What level of impact will a benchmark in the context of the proposed project have?

Raise awareness for multifactorial assessment of fall risk factors, contribute to standardize fall risk assessment and create tools to easily implement it in the clinical practice.

Artificial Intelligence (AI) techniques can be of great value in generating models that combine multiple sources of data and enable the implementation and standardization of a multifactorial assessment of the risk of falling. This would enable the creation of a meaningful scale that is able to differentiate those who are more likely to fall in one year after the assessment.

1. **Existing work** - Does the project start from scratch, or are there preliminary experiences?

There is previous work developed under the project FallSensing [www.fallsensing.com](http://www.fallsensing.com) where Fraunhofer AICOS, Coimbra Health School and Sensing Future Technologies, have collected a dataset of 537 test subjects, to whom a multifactorial assessment of fall risk factors was applied following the [protocol](https://www.researchprotocols.org/2018/8/e10304/) described in [7].

After the assessment, the 403 of the participants received monthly phone calls over a 12-month period to record the rate of falls in this period. The dataset is thus annotated with the rate of reported falls in the period of 12 months following the assessment.

The screening includes questions about demographic and anthropometric data, health and lifestyle behaviours, a detailed explanation about procedures to accomplish 6 functional tests (grip strength, Timed Up and Go, 30 seconds sit to stand, step test, 4-Stage Balance test “modified,” and 10-meter walking speed), 3 questionnaires concerning environmental home hazards, and an activity and participation profile related to mobility and self-efficacy for exercise.

1. **Feasibility** - Is the project feasible, based on the current state of the art?

Preliminary data analysis shows promising results.

1. **Data Availability** - Is there sufficient data available? How much of it can be openly available? How much of it as part of the non-disclosed data set?

There are 403 data samples annotated. All of the data is currently a non-disclosed data set. A small part of it can be openly available (1 ou 2%).

However since the data acquisition [protocol](https://www.researchprotocols.org/2018/8/e10304/) is published in an open access journal, it can be easily replicated by peers.

1. **Data Quality** - Is the available data of high quality?

Data was acquired by health professionals trained to the effect in a prospective longitudinal study, following a convenience sampling method. Data was collected solely on the Portuguese population.

1. **Annotation / Label Quality** - Are the annotations / labels of the data of high quality?

The health professionals called each participate every month for one year after the assessment in order to record the rate of falls. This procedure follows similar studies in the literature.

1. **Data Provenance** - Has the data been obtained in a professional and ethically correct way?

Ethical approval was obtained from the Research Ethics Committee of Polytechnic Institute of Coimbra (Nº6/2017). All participants gave written informed consent before data collection begins as per the Declaration of Helsinki.

1. **Benchmarking** - Do the applicants have a clear proposal about what exactly should be evaluated / measured?

There is a proposal, however it can be further discussed.

1. **Organizers** - Can the Focus Group work with the applicants, and do they have the time / resources to work with the Focus Group on the problem?

If the time needed is significant, the applicants can allocate the needed resources upon availability of funding.

1. In which specific form will you provide the data (which file format, how is the database structured)?

The database is a comma-separated values file.

1. How will you provide the labels/annotations of the single samples in your data set? What output variables are possible?

The dataset is annotated with the rate of reported falls in the period of 12 months following the assessment. Output variable is occurrence of falls in the 12 months after the data collection / fall risk assessment.

1. Are you ready to show a few labeled samples, as actual files on your computer, in Lausanne?

Yes

1. How many labeled samples can you actually provide?

403

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