MOVECARE

Multiple-actOrs Virtual Empathic CARgiver for the Elder

Project N. 732158

Research & Innovation Action

Call: H2020-ICT-2016-single-stage

Objective: ICT-26b-2016: System abilities, development and pilot installations

MOVECARE DATA MODEL FOR PILOT STUDY DATASETS

In the following paragraphs, for each high priority functionality of the Monitoring System (except Handwriting which is under patent evaluation) a table with information about the data made available, the sensor, the sampling frequency, the JSON format and a description of the format is provided.

1.1 User profiling

Data will be collected longitudinally during a pilot study. Datasets of each single user will be made publicly available together with the following information which can be useful to characterize the user and analyze the data:

- Age
- Gender (male, female, prefer not to say)
- Education level (primary, secondary, tertiary)
- Weight
- Height
- Nationality.

1.2 Physical monitoring

For all functionalities of the Physical monitoring, raw data directly acquired by the sensors will be made available. The general structure of all these data is therefore the same.

Each entry reports:

- *userid*, which is a code associated to each user;
- *sensorid*, which is a code associated to the sensor which collected the data;
- *mcode*, which is a code associated to the specific functionality the data belongs to within MoveCare;
- a field *time*, which describes the temporality, e.g. the temporal nature of an entity (*timestamp* for single time point or *timeinterval* if data are collected within an interval of time) and provides the Unix epoch time when the data was collected.
- a field *data*, where the actual data are stored. More information about this field are provided in the table of each functionality.

1. Body Weight

Functionality	Data	Sensor	Frequency	JSON encoding	Description
Body weight	The weight in kg of the user.	Bluetooth body scale	Intermittent: whenever the user uses the scale	{"userid" : "2c9380846106cd31016369b15cea015a ", "sensorid" : "BLE-cc78ab7f7a86 ", "mcode" : "BWT", "time" : {"temporality": "timestamp", "t" : 1494257770.105}, "data" : {"value" : 81.0, "units" : "kg"} }	The data collected corresponds to the weight of the elder at the time reported by the timestamp.

2. Outdoor Gait

Functionality	Data	Sensor	Frequency	JSON encoding	Description
Outdoor gait	List of walking data acquired per walking session.	Sensorized insoles (FeetMe) integrated in a Mobile app	Whenever the user uses the insoles for walking outside the home. Data are saved for a single stride.	{ "userid": "2c9380846106cd31016369b15cea015a", "mcode":"IOM", "sensorid":"00-50-FC-A0-67-2C", "time":{ "temporality":"timeinterval", "t0":1548773262.207, "t1":1548773286.507 }, "sessionid":"2042ad4f-aa50-4867-85c6-0fd8c9855270", "page":1, "totalpages":1, "processed":true, "data":{ "items":[{ "timestamp":{ "unit":"ms", "value":9.788032E+6 }, "androidTimestamp":{ "unit":"ms", "value":1.548773263011E+12 }, "widthMotion":{ "unit":"m", "value":0.0245021600276232 }, "strideLength":{ "unit":"m", "value":0.294849276542664 }, "strideElevation":{ "unit":"cm", "value":-2 }, "timeHeelStrike_1":{ "unit":"ms", "value":9.779737E+6 }, "timeHeelStrike_2":{ "unit":"ms", "value":9.780918E+6 }, "timeToeOff":{ "unit":"ms", "value":9.780315E+6 }, "COP":{ "COP_0":0, "COP_1":0, "COP_10":24, "COP_11":23, "COP_12":20, "COP_13":16, "COP_14":0, "COP_15":0,	The field *sessionid* is used to identify data belonging the same session but saved separately due to communication issue of big data. The sub-field *page* indicates the portion of the session, while the sub-field *totalpages* indicates the number of portions the session has been divided. In the example reported, the session is made of a single portion; this means that all the data of that session are reported in the field *data*.

In the field *data* a new entry is saved for each stride. Data are reported separately for the right and left foot. In the example, only the items related to the left foot are reported for the sake of space.

For each stride, the following data are provided:
- Timestamp
- Width Motion |

					`    "COP_2":0,`
					`    "COP_3":0,`
					`    "COP_4":33,`
					`    "COP_5":30,`
					`    "COP_6":29,`
					`    "COP_7":28,`
					`    "COP_8":27,`
					`    "COP_9":26,`
					`    "unit":""`
					`    },`
					`    "CAPA":{`
					`    "CAPA_0":0,`
					`    "CAPA_1":9,`
					`    "CAPA_10":9,`
					`    "CAPA_11":13,`
					`    "CAPA_12":0,`
					`    "CAPA_13":12,`
					`    "CAPA_14":12,`
					`    "CAPA_15":0,`
					`    "CAPA_16":34,`
					`    "CAPA_17":5,`
					`    "CAPA_18":8,`
					`    "CAPA_2":32,`
					`    "CAPA_3":0,`
					`    "CAPA_4":30,`
					`    "CAPA_5":30,`
					`    "CAPA_6":0,`
					`    "CAPA_7":21,`
					`    "CAPA_8":23,`
					`    "CAPA_9":0,`
					`    "unit":""`
					`    },`
					`    "flag":3,`
					`    "side":"left"`
					`    }`
					`  ]`
					`  }`
					`}`
						- Stride Length
						- Stride Elevation
						- Time Heel Strike (1 and 2 indicate the beginning and the end of each stride, respectively)
						- Time Toe Off
						- Center of Pressure (COP)*
						- Pressure (for each pressure sensor – 19 values in total, indicated as CAPA values in the JSON)
						
						*The COP is reported in terms of 16 values. Each value corresponds to the position of the COP in a portion of the foot: increasing values indicate a displacement of the COP towards the medial part of the foot.
						
						More information about this dataset are available upon request through the MoveCare website.[1]

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[1] http://www.movecare-project.eu/

3. Grip Force

Functionality	Data	Sensor	Frequency	JSON encoding	Description

Grip force	Raw data acquired from an anti-stress ball by the exergame during a game session	Anti-stress ball equipped instrumented with absolute pressure sensor, 3-axis accelerometer and gyroscope.	Signals are sampled at 50 Hz. Data are saved at the end of the game.	`{`
				`"userid":`
				`"2c9380846106cd31016369b15cea015a",`
				` "mcode":"EXG",`
				` "sensorid":"00-50-FC-A0-67-2C",`
				` "time":{`
				`   "temporality":"timestamp",`
				`   "t0":1548418454.523 },`
				` "sessionid":"1cdb1a30-20a3-11e9-bec9-001a7dda7110",`
				` "page":1,`
				` "totalpages":1,`
				` "processed":true,`
				` "data":{`
				`  "items":{`
				`   "timestamp":{`
				`     "values":[0,20,40],`
				`     "unit":"ms"`
				`   },`
				`   "Pressure":{`
				`     "values":[11003,11003,11003],`
				`     "unit":"hPa"`
				`   },`
				`   "TruePress":{`
				`     "values":[0,11003,11003],`
				`     "unit":"hPa"`
				`   },`
				`   "GameTime":{`
				`     "values":[0,0.002,0.004],`
				`     "unit":"s"`
				`   },`
				`   "GameState":{`
				`     "values":[3,3,3],`
				`     "unit":"GameState"`
				`   },`
				`   "Accel":{`
				`    "values":[`
				`      [-1.03,-0.47,-0.47],`
				`      [-1.03,-0.47,-0.47],`
				`      [-1.03,-0.47,-0.47]`
				`    ],`
				`     "order":["X","Y","Z"],`
				`     "unit":"m/(s^2)"`
				`   },`
				`   "AngVel":{`
				`    "values":[`
				`      [-0.31,1790,-0.35],`
				`      [-0.31,1795,-0.35],`
				`      [-0.31,1800,-0.35]`
				`    ],`
				`     "order":["X","Y","Z"],`
				`     "unit":"deg/s"`
				`   },`
				`   "Battery":{`
				`     "values":[1700,1705,1680],`
				`     "unit":"mV"`
					The field *sessionid* is used to identify data belonging the same session but saved separately due to communication issue of big data. The sub-field *page* indicates the portion of the session, while the sub-field *totalpages* indicates the number of portions the session has been divided. In the example reported, the session is made of a single portion; this means that all the data of that session are reported in the field *data*.
					
					The field *data* consists of the following sub-fields:
					 - Timestamp in ms
					 - Pressure
					 - TruePressure, e.g. the pressure value after calibration
					 - Game time, e.g. the time as reported by the game
					 - Game state, e.g. the state in which the game is
					 - Accel, e.g. the 3D acceleration [X, Y, Z]
					 - AngVal, e.g. the 3D angular velocity [X, Y, Z]
					 - Battery, e.g. the level in mV of

				`},`
				`  "Log":{`
				`    "values": "game log",`
				`    "unit":"string"`
				`  }`
				`  }`
				`  }`
				`}`
					the battery of the ball
					- Log, e.g. a message about how the game is closed.
					
					Each sub-field is saved as a vector.

1.3   Gesture Monitoring

For all functionalities of the Gesture monitoring (except Handwriting which is under patent evaluation), raw data directly acquired by the sensors will be made available. The general structure of all these data is therefore the same as the one reported for data of the Physical Monitoring (please refer to Section 5.2).

1.   Stand-alone Use of Smart Objects

Functionality	Data	Sensor	Frequency	JSON encoding	Description

Standalone use of anti-stress ball	Raw data acquired by the anti-stress ball during standalone use.	Anti-stress ball equipped instrumented with absolute pressure sensor, 3-axis accelerometer and gyroscope.	Signals are saved on board at 50 Hz – maximum 10 minutes per day are saved. Data are transferred once a day to the database.	`{"userid":`
				`"2c9380846106cd31016369b15cea015a",`
				`"mcode":"STB",`
				`"sensorid":"00-50-FC-A0-67-2C",`
				`"time":{`
				`  "temporality":"timeinterval",`
				`  "t0":1525879051.0,`
				`  "t1":1525879085.340`
				`},`
				`"sessionid":"d0125e61-18ae-11e9-b2e0-acde48001122",`
				`"page":1,`
				`"totalpages":1,`
				`"processed":true,`
				`"data":{`
				`  "items":{`
				`    "timestamp":{`
				`      "values":[0,20,40],`
				`      "unit":"ms"`
				`    },`
				`    "Accel":{`
				`     "values":[`
				`       [-337,0,0],`
				`       [-358,0,0],`
				`       [-256,0,0]`
				`     ],`
				`     "order":["X","Y","Z"],`
				`     "unit":"m/(s^2)"`
				`    },`
				`    "AngVel":{`
				`     "values":[`
				`       [1.78,-6.04,-2.56],`
				`       [3.51,-4.01,-3.52],`
				`       [2.88,-2.02,-4.59]`
				`     ],`
				`     "order":["X","Y","Z"],`
					The field *sessionid* is used to identify data belonging the same session but saved separately due to communication issue of big data. The sub-field *page* indicates the portion of the session, while the sub-field *totalpages* indicates the number of portions the session has been divided. In the example reported, the session is made of a single portion; this means that all the data of that session are reported in the field *data*.
					
					The field *data* consists of the following sub-field:
					- Timestamp in ms
					- Pressure
					- Accel, e.g. the 3D acceleration [X, Y, Z]
					- AngVal, e.g. the 3D angular velocity [X, Y, Z]
					- Pressure.

	"unit":"deg/s"
	},
	"Pressure":{
	"values":[9923,9923,9923],
	"unit":"dPa"
	}
	}
	}
	}
		Each sub-field is
		saved as a vector.

1.4 Cognitive Monitoring

For all functionalities of the Cognitive monitoring, pre-processed data will be made available. The structure of these datasets therefore slightly differs from the one presented so far and is reported hereafter.

Each entry reports:

- *userid*, which is a code associated to a single user;
- *icode*, which is a code associated to the functionality within MoveCare;
- a field *time*, which describes the temporality, e.g. the temporal nature of an entity (*timestamp* for single time point or *timeinterval* if data are collected within an interval of time) and provides the Unix epoch time when the data is collected.
- a field *data*, where the actual data are stored. More information about this field are provided in the table of each functionality.

1. Neuropsychological Tests

Functionality	Data	Sensor	Frequency	JSON encoding	Description

Neuro-psychological test TMT-A	Results obtained from the execution of the digital version of the TMT-A test	The test is performed on a tablet and the results are stored in a database.	Twice in the pilot, in the first and last week	{ "userid": "12345",
				  "icode" : "TMTA",
				  "time" : {
				      "temporality" : "timestamp",
				      "t" : "1494257770105"},
				  "data" : {
				    "items" : [
				      { "name" : "Duration", "value" : 130, "units" : "s" },
				      { "name" : "Errors", "value" : 2, "units" : "count" },
				      { "name" : "Pauses", "value" : 3, "units" : "count" },
				      { "name" : "Omissions", "value" : 2, "units" : "count"},
				      { "name" : "Repetitions", "value" : 3, "units" : "count"},
				      { "name" : "Average_Pause_Duration", "value" : 5, "units" : "s" },
				      { "name" : "Variability_Pause_Duration", "value" : 3, "units" : "s" },
				      { "name" : "Average_Time_In_Target", "value" : 0.5, "units" : "s" },
				      { "name" : "Variability_Time_In_Target",
					Each entry reports:
					- Time to complete the test (*Duration*)
					- Number of errors, e.g. targets not connected in the correct order (*Errors*)
					- Number of pauses (*Pauses*)
					- Number of omitted items (*Omissions*)
					- Number of repeated items (*Repetitions*)
					- Mean and standard deviation of pauses duration (*Average_Pause_Duration*, *Variability_Pause_Duration*)
					- Mean and standard deviation of the time inside each target (*Average_Time_In_Target*, *Variability_Time_In_Target*)
					- Number of lifts (*count*)
					- Average duration of lifts (*Pen_Lifts*)
					- Mean and standard deviation of the time between two successive circles (*Average_Between_Target_Time*, *Variability_Between_Target_Time*)

				```json "value" : 0.3, "units" : "s" }, { "name" : "Pen_Lifts", "value" : 2, "units" : "count" }, { "name" : "Average_Between_Target_Time", "value" : 6, "units" : "s" }, { "name" : " Variability_Between_Target_Time", "value" : 2, "units" : "s" }] } } ```	
Neuro-psychological test TMT-B	Results obtained from the execution of the digital version of the TMT-B test	The test is performed on a tablet and the results are stored in a database.	Twice in the pilot, in the first and last week	```json { "userid" : "12345", "icode" : "TMTB", "time" : { "temporality" : "timestamp", "t" : "1494257770105" }, "data" : { "items" : [{ "name" : "Duration", "value" : 130, "units" : "s" }, { "name" : "Errors", "value" : 2, "units" : "count" }, { "name" : "Pauses", "value" : 3, "units" : "count" }, { "name" : "Omissions", "value" : 2, "units" : "count"}, { "name" : "Repetitions", "value" : 3, "units" : "count"}, { "name" : "Average_Pause_Duration", "value" : 5, "units" : "s" }, { "name" : "Variability_Pause_Duration", "value" : 3, "units" : "s" }, { "name" : "Average_Time_In_Target", "value" : 0.5, "units" : "s" }, { "name" : "Pen_Lifts", "value" : 2, "units" : "count" }, { "name" : "Average_Between_Target_Time", "value" : 6, "units" : "s" }, { "name" : "Variability_Between_Target_Time", "value" : 2, "units" : "s" }] } } ```	Each entry reports: - Time to complete the test (*Duration*) - Number of errors, e.g. targets not connected in the correct order (*Errors*) - Number of pauses (*Pauses*) - Number of omitted items (*Omissions*) - Number of repeated items (*Repetitions*) - Mean and standard deviation of pauses duration (*Average_Pause_Duration, Variability_Pause_Duration*) - Mean and standard deviation of the time inside each target (*Average_Time_In_Target, Variability_Time_In_Target*) - Number of lifts (*count*) - Average duration of lifts (*Pen_Lifts*) - Mean and standard deviation of the time between two successive circles (*Average_Between_Target_Time, Variability_Between_Target_Time*)
Neuro-psychological test Bell test	Results obtained from the execution of the digital version of the BELL test	The test is performed on a tablet and the results are stored in a database.	Twice in the pilot, in the first and last week	```json { "userid" : "12345", "icode" : "BELL", "time" : { "temporality" : "timestamp", "t" : "1494257770105" }, "data" : { "items" : [{ "name": "Duration", "value": 300, "units" : "s" }, { "name": "Omissions_Left", ```	Each entry reports: - Time to complete the test (*Duration*) - Numer of omissions, left, center and right (*Omissions_Left, Omissions_Center, Omissions_Right*) - Numer of target, left, center and right (*Target_Left, Target_Center, Target_Right*)

				JSON encoding	Description

				"value": 2, "units" : "count" },
				        { "name":
				"Omissions_Center", "value": 1,
				"units" : "count" },
				        { "name":
				"Omissions_Right", "value": 0,
				"units" : "count" },
				        { "name": "Targets_Left",
				"value": 9, "units" : "count" },
				        { "name": "Targets_Center",
				"value": 11, "units" : "count" },
				        { "name": "Targets_Right",
				"value": 12, "units" : "count" },
				
				{ "name":"False_Positive_Left",
				"value": 0, "units" : "count" },
				        {
				"name":"False_Positive_Center",
				"value": 0, "units" : "count" },
				   { "name":"False_Positive_Right",
				"value": 0, "units" : "count" }
				        ]
				    }
				}
					- Numer of false positives, left,
					  center and right
					  (*False_Positive_Left,*
					  False_Positive_Center,
					  False_Positive_Right)

2. Interface-driven Spot Questions

Functionality	Data	Sensor	Frequency	JSON encoding	Description

Interface-driven Spot Questions	Results obtained from answering some spot questions.	The question is asked by the Giraff robot. The answer is captured by one of the microphones of the ORBBEC cameras and stored in a database.	The frequency varies with respect to the week of the pilot:
			- Week 1: 1 question per day [excluding night time] for 4 consecutive days.
			- Week 2: day 1 and 3: 2 questions; day 5: 1 question
			- Week 3: 4 questions on the same day
				{
				    "id": {
				        "timestamp": 1557473534,
				        "machineIdentifier": 5188325,
				        "processIdentifier": 7803,
				        "counter": 8358345,
				        "time": 1557473534000,
				        "date": "2019-05-10T07:32:14.000+0000",
				        "timeSecond": 1557473534
				    },
				    "userid":
				"2c938084683d9f8701684baf118e000e",
				    "icode": "SQ",
				    "time": {
				        "temporality": "timestamp",
				        "t": 1557473534
				    },
				    "data": {
				        "questioncode":"EM121",
				        "questiontext": "Did you play cards yesterday?",
					The data that are stored in the database consist of a string containing the speech-to-text transcription of the answer captured by one of the microphones.

			- Week 5: 1 question per day [excluding night time] for 5 consecutive days.	"answer":"Yes I did" } }	

3. Voice Analysis

Functionality	Data	Sensor	Frequency	JSON encoding	Description

Voice Analysis	Voice Features estimated on the fly during a phone call.	Smartphone and a custom mobile app.	The mobile app estimates the voice features from 5-second segments of speech. The features are transmitted to the database soon after estimation if WiFi connection is available or stored temporarily on board and sent to the databased when WiFi is available.	{"id": {
				    "timestamp": 1554721797,
				    "machineIdentifier": 2143555,
				    "processIdentifier": 1,
				    "counter": 7619161,
				    "time": 1554721797000,
				    "date": "2019-04-08T11:09:57.000+0000",
				    "timeSecond": 1554721797
				  },
				  "userid": "2c9380846106cd31016369b15cea015a",
				  "key": "1_F0Mean",
				  "value": "153.87012987012986",
				  "time": {
				    "temporality": "timeinterval",
				    "t0": 1554721759,
				    "t1": 1554721764
				  },
				  "code": "VoiceAnalysis"
				},
				{
				  "id": {
				    "timestamp": 1554721797,
				    "machineIdentifier": 2143555,
				    "processIdentifier": 1,
				    "counter": 7619162,
				    "time": 1554721797000,
				    "date": "2019-04-08T11:09:57.000+0000",
				    "timeSecond": 1554721797
				  },
				  "userid": "2c9380846106cd31016369b15cea015a",
				  "key": "2_PitchFloor",
				  "value": "73.0",
				  "time": {
				    "temporality": "timeinterval",
				    "t0": 1554721759,
				    "t1": 1554721764
				  },
				  "code": "VoiceAnalysis"
				},
					Each entry includes a total of 22 voice features computed on the fly over a 5-second speech signal:
					- 1_F0Mean: mean pitch
					- 2_PitchFloor: minimum possible values of the pitch
					- 3_UnvoicedPercentage: percentage of segments without harmonic nature (periodicity) in the speech signal
					- 4_time: total duration of the recordings from which the features were estimated
					- 5_MeanVoicedParts: mean of the duration of voiced segments
					- 6_MeanUnvoicedParts: mean of the duration of unvoiced segments
					- 7_MedianVoicedParts: median of the duration of voiced segments
					- 8_MedianUnvoicedParts: mean of the duration of unvoiced segments
					- 9_Prctile15VoicedParts: 15th percentile of the duration of voiced segments
					- 10_Prctile15UnvoicedParts: 15th percentile of the duration of unvoiced segments
					- 11_Prctile85VoicedParts: 85th percentile of the duration of voiced segments
					12_Prctile85UnvoicedParts: 85th percentile of the duration of unvoiced segments

					<machine_data_cell>	<text_cell>

<table>

					JSON	Description
					(machine data)	(body text)

</table>

Left content column (JSON data):

```json
{
    "id": {
        "timestamp": 1554721797,
        "machineIdentifier": 2143555,
        "processIdentifier": 1,
        "counter": 7619163,
        "time": 1554721797000,
        "date": "2019-04-08T11:09:57.000+0000",
        "timeSecond": 1554721797
    },
    "userid": "2c9380846106cd31016369b15cea015a",
    "key": "3_UnvoicedPercentage",
    "value": "46.5277777777778",
    "time": {
        "temporality": "timeinterval",
        "t0": 1554721759,
        "t1": 1554721764
    },
    "code": "VoiceAnalysis"
},
{
    "id": {
        "timestamp": 1554721797,
        "machineIdentifier": 2143555,
        "processIdentifier": 1,
        "counter": 7619164,
        "time": 1554721797000,
        "date": "2019-04-08T11:09:57.000+0000",
        "timeSecond": 1554721797
    },
    "userid": "2c9380846106cd31016369b15cea015a",
    "key": "4_time",
    "value": "4.32",
    "time": {
        "temporality": "timeinterval",
        "t0": 1554721759,
        "t1": 1554721764
    },
    "code": "VoiceAnalysis"
},
{
    "id": {
        "timestamp": 1554721797,
        "machineIdentifier": 2143555,
        "processIdentifier": 1,
        "counter": 7619165,
        "time": 1554721797000,
        "date": "2019-04-08T11:09:57.000+0000",
        "timeSecond": 1554721797
    },
```

Right content column (description):

- 13_Shimmer: average absolute difference between the amplitudes of consecutive periods divided by the average amplitude
- 14_VoiceBrakesTotal: percentage of voice breaks, estimated as the number of distances between consecutive glottal pulses longer 18ms
- 15_VoiceBrakesOV: percentage of voice breaks within the voiced signal
- 16_F3Mean: mean of the third formant
- 17_F3Std: standard deviation of the third formant
- 18_SpeechRate: number of syllabes per time
- 19_ArticulationRate: number of syllabes per phonation time, i.e. speech time without pauses
- 20_PhonationPercentage: percentage of the phonation time
- 21_MeanIntraSyll: mean duration of syllabes
- 22_MeanInterSyll: mean duration of pauses.

Each feature is sent together with the timestamp and the data of collection as well as the user id.

More information about this dataset are available upon request through the MoveCare website.[2]

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[2] http://www.movecare-project.eu/

"userid":
"2c9380846106cd31016369b15cea015a
",
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",
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        "code": "VoiceAnalysis"
      },
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        },
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      "counter": 7619175,
      "time": 1554721797000,
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      "timeSecond": 1554721797
    },
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",
    "key": "15_VoiceBrakesOV",
    "value": "2.4091880341880345",
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      "t0": 1554721759,
      "t1": 1554721764
    },
    "code": "VoiceAnalysis"
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        "time": {
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            "t0": 1554721759,
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            "time": 1554721797000,
            "date": "2019-04-
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            "timeSecond": 1554721797
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"2c9380846106cd31016369b15cea015a
",
        "key": "17_F3Std",
        "value": "531.1843709988697",
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        "code": "VoiceAnalysis"
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",
        "key": "18_SpeechRate",
        "value": "0.44150110375275936",
        "time": {
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```

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          },
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          "key": "19_ArticulationRate",
          "value": "12.27464518603759",
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            "timeSecond": 1554721797
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          "key": "20_PhonationPercentage",
          "value": "3.596854304635762",
          "time": {
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            "t0": 1554721759,
            "t1": 1554721764
          },
          "code": "VoiceAnalysis"
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          "id": {
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            "processIdentifier": 1,
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            "time": 1554721797000,
            "date": "2019-04-08T11:09:57.000+0000",
            "timeSecond": 1554721797
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```

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            "timeSecond": 1554721797
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"2c9380846106cd31016369b15cea015a
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        "key": "22_MeanInterSyll",
        "value": "0.299",
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            "t0": 1554721759,
            "t1": 1554721764
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        "code": "VoiceAnalysis"
    },]
```

1.5 ADL Monitoring

For all functionalities of the ADL monitoring, pre-processed data will be made available. The structure of these datasets therefore is the same as the one described in Section 5.4.

1. Resting on the couch and watching TV

In this functionality we are using two different environmental sensors: a triaxial accelerometer placed on the couch and a power meter connected to the appliance (TV) to check if the TV is ON or OFF.

Functionality	Data	Sensor	Frequency	JSON encoding	Description
Resting on the couch	Power of the perturbation (sum of squared acceleration data in all three directions).	Accelero-meter	Configurable max 100Hz + depending on the configured threshold	{ "userid" : "2c9380846106cd31016369b15cea015a ", "sensorid" : "BLE-cc78ab7f7a86 ", "mcode" : "PTB", "time" : {"temporality" : "timestamp", "t" : 100}, "data" : {"value" : 181.0, "units" : ""}	Each entry contains power of the perturbation – unitless measurement of the movement detected on the couch.

| Watching TV | Power of the connected appliance in Watts. | Power meter | Configurable - but at least once every 10 seconds and/or on a change of more than 3 watts | `{`
 `"userid" :`
 `"2c9380846106cd31016369b15cea015",`
 `"sensorid" : "ZB-000d6f00110887cc "`
 `"mcode" : "PWR",`
 `"time" : {"temporality" : "timestamp",`
 `"t" : 101},`
 `"data" : {"value" : 81.0, "units" : "W"}`
 `}` | Each entry contains measurement of the power of the connected appliance in Watts. |

2. Lying in bed

Functionality	Data	Sensor	Frequency	JSON encoding	Description

Lying in bed	Power of the perturbation (sum of squared acceleration data in all three directions).	Accelero-meter	Configurable max 100Hz + depending on the configured threshold	`{`
				 `"userid" :`
				 `"2c9380846106cd31016369b15cea015a",`
				 `"sensorid" : "BLE-cc78ab7f7a86 ",`
				 `"mcode" : "PTB",`
				 `"time" : {"temporality" : "timestamp",`
				 `"t" : 100},`
				 `"data" : {"value" : 181.0, "units" : ""}`
				 `}`
					Each entry contains power of the perturbation – unitless measurement of the movement detected on the bed.

3. Mobile Use

Functionality	Data	Sensor	Frequency	JSON encoding	Description

Mobile use	Daily summary of calls and SMS	Smartphone and a custom mobile app	Daily, at a specific time	`{`
				 `"userid":`
				 `"2c9380846106cd31016369b02ce60157",`
				 `  "icode":"SMP",`
				 `  "time":{`
				 `    "temporality":"timestamp",`
				 `    "t0":1548633600.0`
				 `  },`
				 `  "sessionid": [`
				 `    "f78cd534-3e45-4365-a4f7-1b653f8ca403",`
					Each entry is divided into call items and messages items.
					 Call items include:
					 - *total*: number of incoming and outgoing calls;
					 - *totalDuration*: total duration of incoming and outcoming calls;

					`"f78cd534-3e45-4365-a4f7-1b653f8ca404"`
					`],`
					`"data":{`
					`"call_items":{`
					`"total":{`
					`"values":1,`
					`"unit":"#"`
					`},`
					`"totalDuration":{`
					`"values":54,`
					`"unit":"s"`
					`},`
					`"in":{`
					`"values":1,`
					`"unit":"#"`
					`},`
					`"inDuration":{`
					`"values":54,`
					`"unit":"s"`
					`},`
					`"out":{`
					`"values":0,`
					`"unit":"#"`
					`},`
					`"outDuration":{`
					`"values":0,`
					`"unit":"s"`
					`},`
					`"missed":{`
					`"values":0,`
					`"unit":"#"`
					`}`
					`},`
					`"message_items":{`
					`"total":{`
					`"values":0,`
					`"unit":"#"`
					`},`
					`"in":{`
					`"values":0,`
					`"unit":"#"`
					`},`
					`"out":{`
					`"values":0,`
					`"unit":"#"`
					`}`
					`}`
					`}`
					`}`
						- *in*: number of incoming calls;
						- *induration*: duration of incoming calls;
						- *out*: number of outgoing calls;
						- *outDuration*: duration of outgoing calls;
						- *missed*: number of missed calls;
						Message items include:
						- *total*: number of sent and received messages;
						- *in*: number of received messages;
						- *out*: number of sent messages.