Databook

This package accompanies the paper "Self-Attribution of Distorted Reaching Movements in Immersive Virtual Reality" published in the Computer and Graphics journal from Elsevier. It contains 3 datasets related to the experiments described in the paper. All datasets are in ".csv" format and can be easily loaded by statistical analysis tools (e.g. a dataset can be loaded in **r** using the command **read.csv("filename.csv")**). It also contains the C# Unity implementation of the distortion function presented in the paper.

A short description of the content of each file is presented below:

characterization.csv

Contains the answer to the pre-experiment characterization questionnaire and measured arm length for each subject.

- **subject** - numerical identification of the subject;
- **timestamp** - when the data was collected;
- **height** - height of the subject in centimeters;
- **weight** - weight of the subject in kilograms;
- **age** - age of the subject;
- **gender** - gender fo the subject;
- **vr.exp** - answer to "How often do you participate on experiments using Virtual Reality equipment?";
- **hmd.exp** - answer to "How often do you use head mounted displays?";
- **games.exp** - answer to "How often do you play video games?";
- **kinect.wii.move.exp** - answer to "How often do use the Microsoft Kinect, Nintendo Wii or Playstation move?";
- **handedness** - answer to "Hand of preference";
- **field** - answer to "Area of expertise/study/work/interest";
- **student** - whether the subject is a student;
- **arm.length** - sum of the measured right upper and lower arm lengths of the subject.

experiment_1.csv

Contains the staircase data, distortion setting, and answer for every trial in experiment 1.

- **subject** - numerical identification of the subject;
- **block** - block number;
- **staircase** - staircase count within a block;
- **trial** - trial count within a staircase;
- **direction** - movement direction;
- **distortion.type** - whether the distortion was set to "hinder" or "help" the movement for this particular staircase;
- **staircase.type** - whether a particular staircase started from a no distortion condition and "ascending" the distortion magnitude, or a high distortion condition and "descending" the distortion magnitude.
- **speed.gain** - distortion magnitude in speed gain scale;
- **speed.gain.dB** - distortion magnitude in speed gain decibel scale;
- **distance.gain** - distortion magnitude in distance gain scale;
- **answer** - answer to the question "Did the movement you saw exactly correspond to the movement you made?";
- **staircase.turn** - whether the subject changed from a "no" answer to a "yes" answer and vice versa.

experiment_2.csv

Contains the data collected in experiment 2.

- **subject** - numerical identification of the subject;
- **block** - block number;
- **trial** - trial count within a block;
- **direction** - movement direction;
- **distortion.type** - whether the movement was distorted, and whether the distortion was set to "hinder" or "help" the movement;
- **speed.gain** - distortion magnitude in speed gain scale;
- **speed.gain.dB** - distortion magnitude in speed gain decibel scale;
- **distance.gain** - distortion magnitude in distance gain scale;
- **answer** - answer to the question "Did the distortion made the task easier or harder?", where "-" indicates harder and "+" easier.

DistortionModel.cs

Contains a Unity C# class implementation of the movement distortion model.

ApplyDistortion.cs

Contains a Unity behavior demonstrating the use of the DistortionModel.cs class.