Title: Creation of data base for three-dimensional acceleration data

Company/Institution: SLU

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Background: In our research project REINFEED we want to find out if reindeer natural grazing behaviour differs if the animals have been fed or not during their first winter. We have collected three-dimensional acceleration data from individual free - ranging reindeer since April 2020 with a resolution of 10 hz (10 samples each second). For each device, data on acceleration (X, Y and Z), temperature and timestamp are collected continuously for up to four months. We have a total of 60 sensors of which data is downloaded after recapture of a reindeer and the sensor is mounted back on the individual again for further data collection. Acceleration data from each individual is saved in a separate file (up to 535 MB). Raw data is downloaded as ArtiosCAD Workspace files (.ard) and converted to comma separated values (.csv) for processing.

The overall aims of the research project are:

- To develop methodology for classify reindeer behaviour based on three-dimensional acceleration data
- Evaluate if reindeer grazing behaviour differs later in life if the reindeer have been fed or not during their first winter

Goals: We would like the students of this project in scientific computing to: 1) assist in the construction of a data base such that the data can be easily accessible for analysis, and 2) to develop methodology and an interface for detecting the time period of data collection for each device. The main goal is to efficiently store (possibly in the database www.movebank.org) the data and have easy access to the data for analysis in R, and it should be easy to trace the amount of data and time period of data collection from each device.