



Creation of Database for 3D Acceleration Data

A subproject of the research project REINFEED investigating reindeer's natural grazing behaviour

UPPSALA
UNIVERSITET

Project in Scientific
Computing, HT2021

Collaboration with:
Swedish University of
Agricultural Sciences
(SLU)

Background



Figure 1: Reindeer's being fed in REINFEED.
<https://slu.se/fakulteter/vh/forskning/forskning/projekt/reinfeed/>

In the far north of Sweden climate change in terms of global warming is happening three times faster than in the rest of the world. Northern Swedish cities see the effect of climate change more than anywhere else in Europe due to this. A striking example is the melting glaciers; in 2018 even leading to the southern glacier peak of Kebnekaise mountain no longer being the nation's tallest point. **Another area hugely affected of rising temperatures is reindeer husbandry with the reindeer's having difficulties finding food. Because of this winter feeding of reindeer's has become more common.**

Crash course database construction

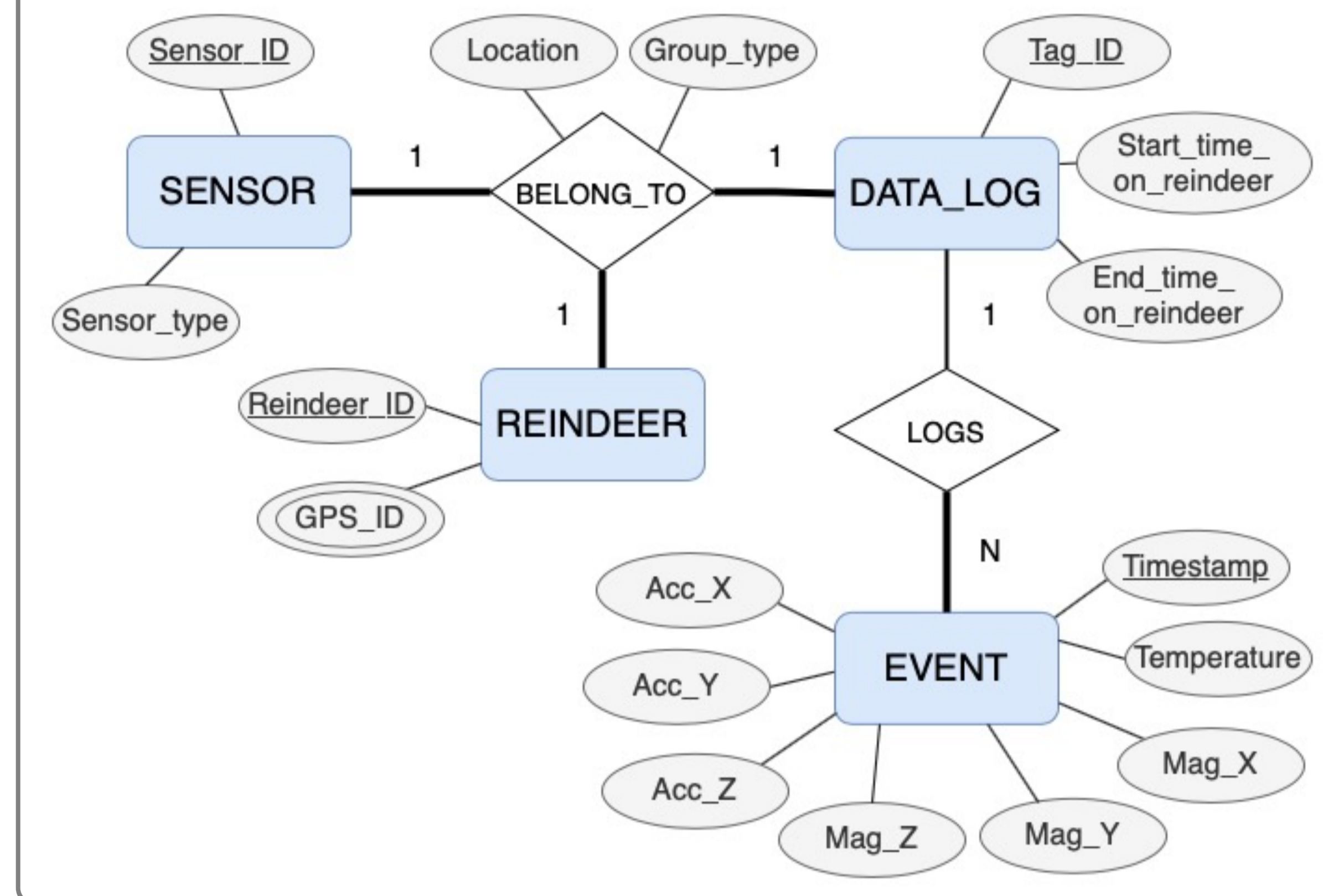
1. Create conceptual database model.
2. Choose programming language and database management system.
3. Implement model and normalize it.
4. Configure storage location & set up database.
5. Import data.
6. USE IT!

2. SQL & PostgreSQL

SQL – "Structured Query Language", a standardised and comprehensive programming language for relational databases.

PostgreSQL – open source relational database management system, expandable and flexible, scalable. Compatible with R.

1. ER-diagram



3.



ER-to-Relational
Mapping

4.



'localhost'
SLU016387

5.



Import data files
and info

REINFEED

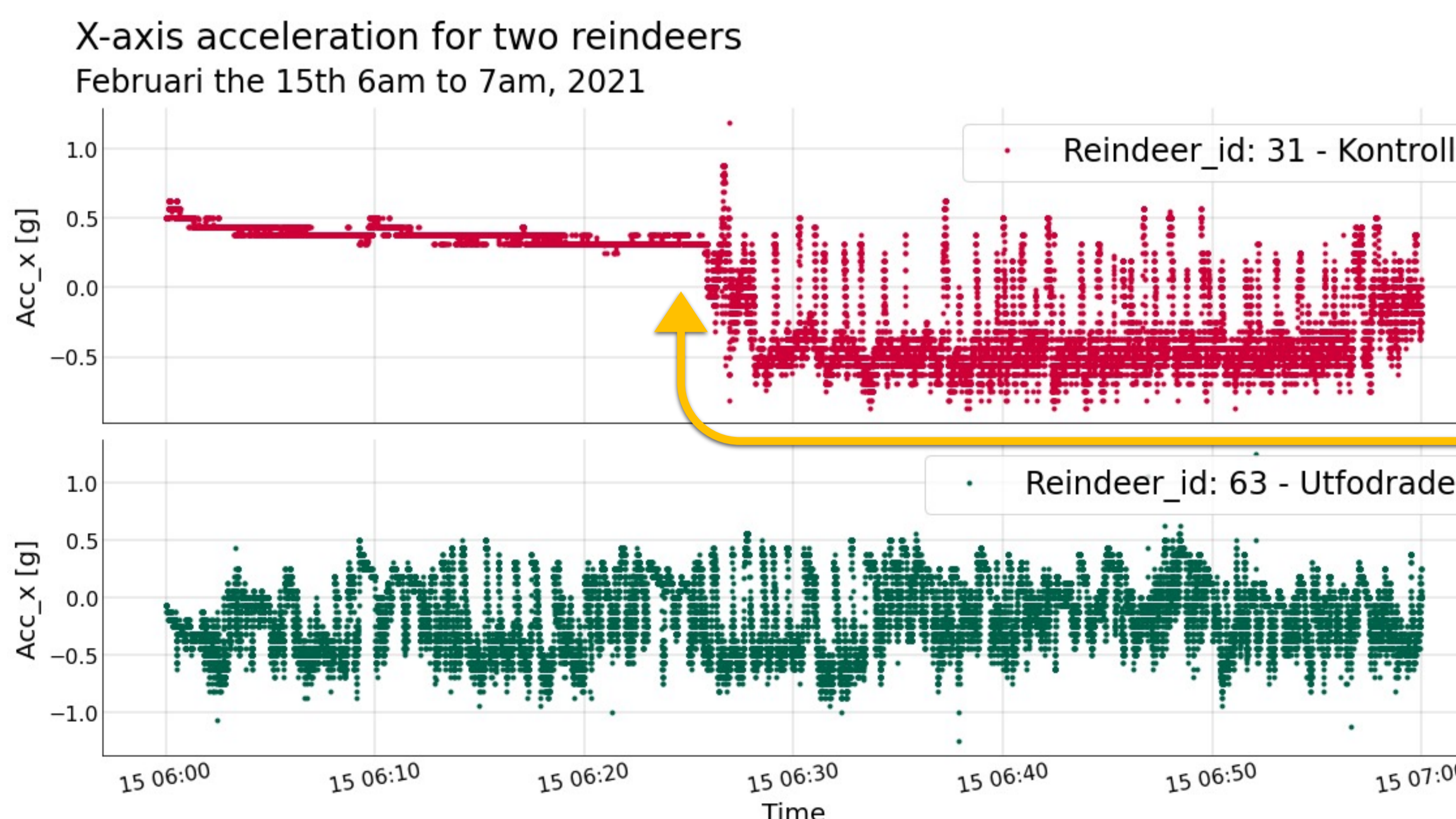
In REINFEED, carried out at SLU, it is investigated if reindeer's natural grazing behaviour differs if the animals have been fed or not during their first winter. In doing this both short and long-terms effects of the reindeer's future abilities to utilise natural pasture grounds can be examined, in relation to winter feeding.

Purpose & Goals this project

Help REINFEED with construction and set up of database for 3D acceleration data. Specific goals:

- ❖ Data can be easily accessible for analysis.
- ❖ Methodology and interface for detecting the time period of data collection for each sensor developed.

6. Resulting usage



Conclusion

Hopefully in the REINFEED project they can find out more about the reindeer's behaviour than we have managed to; all we have seen so far is if they are awake or **asleep** 😊

For future findings we have in this project set the foundation of how data from the reindeer's is stored and retrieved in a useful manner!

Supervisors:
Anna Skarin, SLU
Heidi Rautiainen, SLU

Project participants:
Jakob Edberger Persson,
Emil Danielsson &
Göran Iliev