

**Title:** Automated detection of reindeer in aerial photos and film

**Company/Institution:** SLU

**Supervisor:** Anna Skarin, Sven Adler

**Background:** In our research project, aerial pictures and films of reindeer have been collected using drones. Drone usage by herders in reindeer husbandry is increasing as a tool to find and herd reindeer. Being able automatically detect and count reindeer from drone imagery would increase the usability of drones in herders' daily work. So far, we have collected different types of drone photos on reindeer in both snow and snow-free terrain, in open area and in forest. Developing the technique further we want to trace down reindeer trajectories from videos to be able to investigate reindeer behaviour (social interactions, reaction to disturbances etc). This is a pilot study conducted within the innovation project "Utvecklingsprojekt för ökad användning av drönare i rensköteln" financed by the Swedish Rural network and Swedish Board of Agriculture, which run from 2019-2022.

**Goals:** We would like the students of this project in scientific computing to 1) develop a database for drone imagery, 2) train a machine learning algorithm to identify reindeer based on drone imagery to in the end be able to detect and count reindeer using aerial photos and trace and define reindeer continuous trajectories from videos. Earlier work on automatic detection of reindeer from videos is a possible start point (Torney et al. 2018).

### Reference

Torney C J, Lamont M, Debell L, Angohiatok R J, Leclerc L-M and Berdahl A M 2018 Inferring the rules of social interaction in migrating caribou *Philosophical Transactions of the Royal Society of London B: Biological Sciences* **373** Online: <http://rstb.royalsocietypublishing.org/content/373/1746/20170385>