

**Title:** Detecting and measuring synchronized behaviour in a dairy herd

**Company/Institution:** SLU in collaboration with RISE Institute.

**Supervisor:** Lars Rönnegård, SLU

**Background:** In our research project, data from dairy cattle in free-stall barns have been collected since the beginning of 2020 using an ultra-wide band location system where each individual cow's position in the barn is updated every second. We collect data from two herds, one in Sweden and one in The Netherlands with around 250 dairy cows on each farm. The activities (sleeping, eating, walking, standing) of all cows are registered continuously.

The overall aims of the research project are:

- To develop tools for summarizing animal movement and social interactions in dairy farms.
- To develop decision-support tools for minimizing disease transmission within dairy farms based on knowledge gained from animal movement and social interactions.
- To develop methodology for breeding on indirect genetic effects, ie inherited social effects.

The research project will run from 2020 to 2022 and is a collaboration between SLU in Uppsala, RISE, Växa Sverige and University of Copenhagen. Seven senior researchers, four postdocs and two PhD students are currently involved in the project. For more information see <https://www.slu.se/en/faculties/vh/research/forskningsprojekt/not/precision-livestock-breeding/>

**Goals:** Your task is to investigate which animals have synchronized behaviour and how this synchrony develops over time. A possible approach is to find subgroups of animals using clustering techniques using individual activity data and to analyze how these group develop over time. This is important for the farmer because for instance high lying synchrony could be an indicator of good welfare due to enough resources/space for all cows, and simply because cows showing synchronized behaviour tend to be less stressed.

#### **Literature:**

Stoye, S., Porter, M. A., & Stamp Dawkins, M. (2012). Synchronized lying in cattle in relation to time of day. *Livestock Science*, vol. 149(1-2), pp. 70–73.