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SIC Scientific Days

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Automatic detection of animal circadian rhythm anomalies with wavelets

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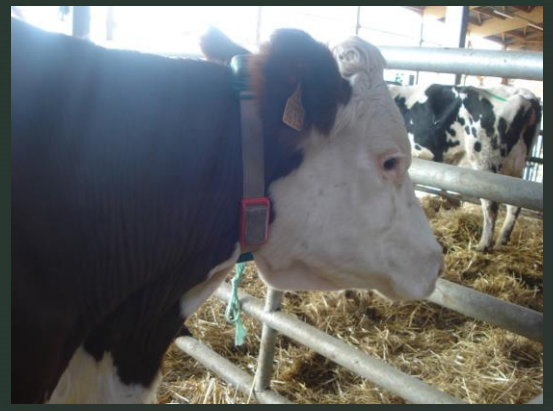
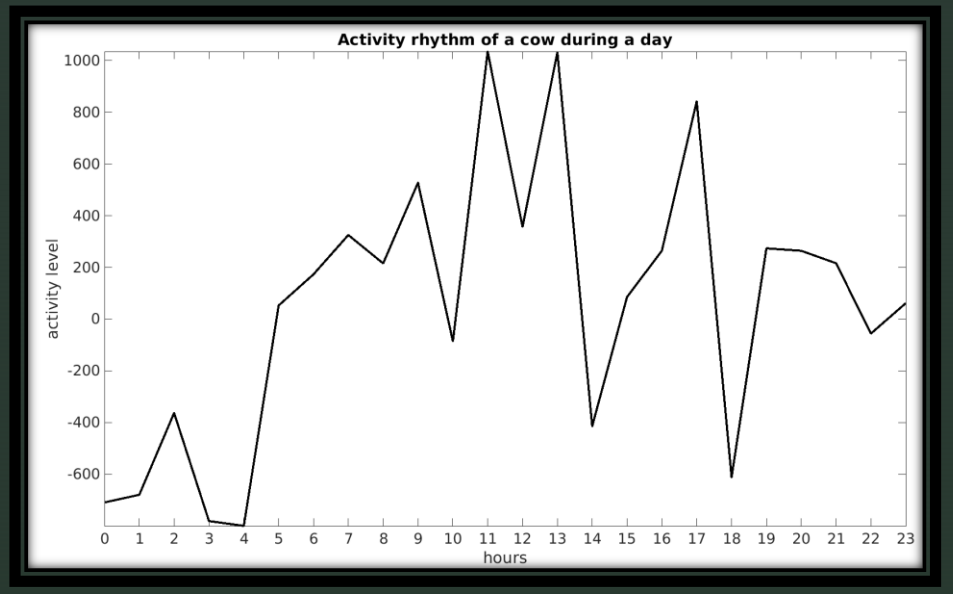
Context

Cow equipped with CowView sensor to monitor its activity





Behavioural changes in dairy cows occur before the first clinical signs

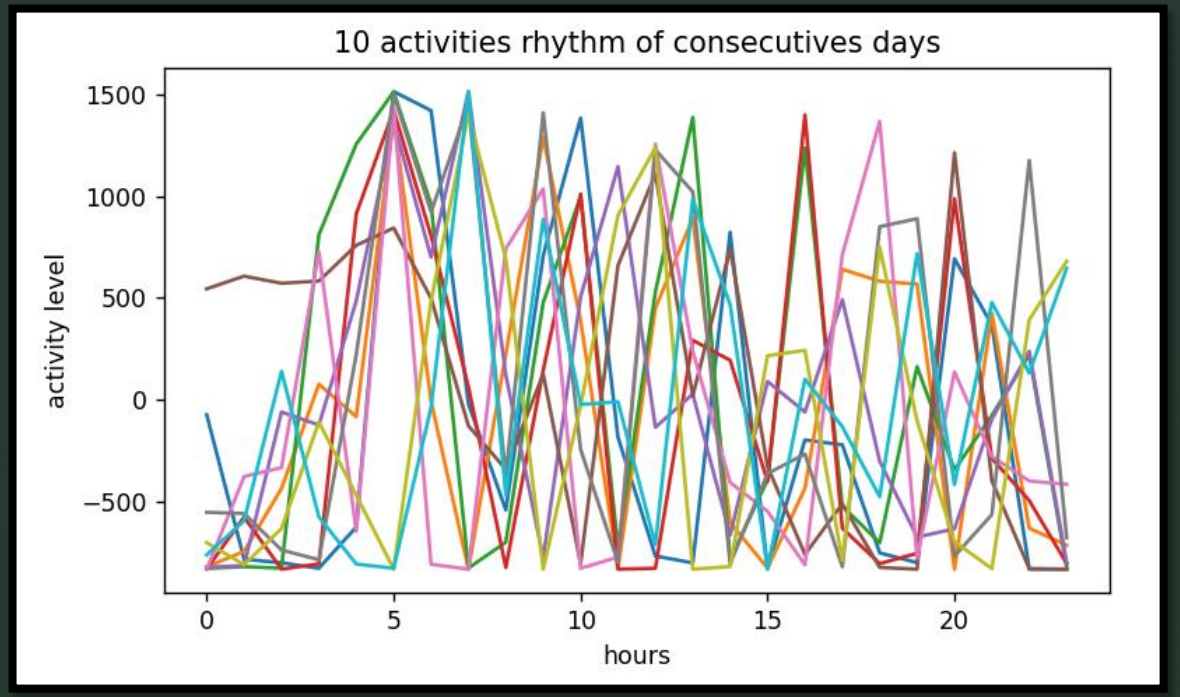
Use of activity measures to monitor their behaviour

Anomaly in these rhythms: possible behavioural disorder and possible stress/disease

Objective: Find a method to detect these anomalies in real time

Complexity of the data

- Significant inter-individual and intra-individual variations
- Wide range of possible perturbations
- Possible errors in the annotation of the internal state by the farmer

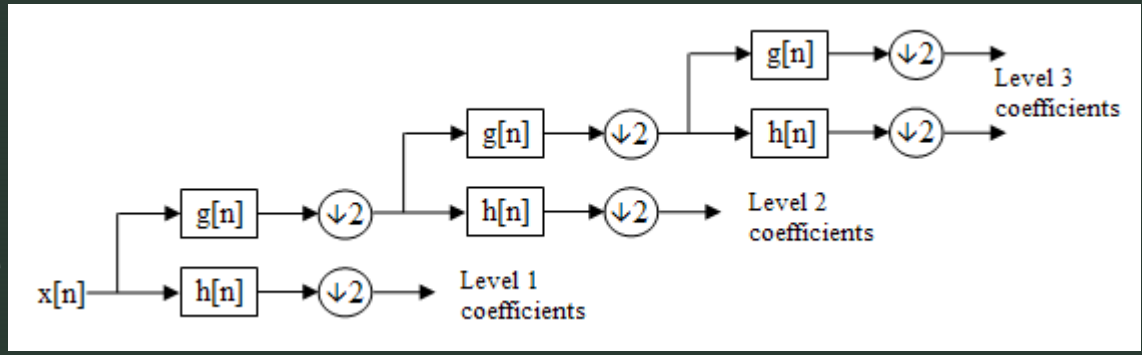


A model can quickly produce many false positives

Wavelet transform

Discrete Wavelet Transform to denoise a signal by passing it through filters

→ The coefficients of different levels can be used to reconstruct partially the signal



Obtention of the endogenous rhythm where we do features extraction