State of the art of automated activity measuring technologies, and how to accelerate technology development

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Several sensors have been applied for monitoring animal behaviour. Accelerometers, Radio frequency identification (RFID), image and sound analysis are some of the potential techniques that with appropriate models can be used to predict behavioral state of animal. Behaviours such as lying, standing and eating can already be measured from many different species in a reliable way, but more subtle changes, such as resting head postures, tongue rolling or social behaviour, are still difficult to detect.

In battery powered systems there is also a trade-off between the amount of information that can obtained from the sensors and the practical applicability of these systems. However, once enough information about the optimal parameters to measure are identified there is considerable potential in optimizing the energy use of embedded systems.

The number of commercially available research systems and on farm monitoring tools has also considerably increased over the past years, but the information is not yet fully utilized. Many methods show promise in better detection of health problems in practical farming conditions and bring a new useful tool for animal welfare research. However, special care should be taken that the used methods are scientifically validated.

Strong cooperation between experts from different fields is required to turn sensor driven systems to expert systems with validated models providing useful information with proper user interfaces.