Digital Livestock Management

Name of the Organisations Involved

- Fraunhofer Institute for Computer Graphics Smart Farming (Public Applied R&D Organisation)

Challenges Identified

In practice, due to the high complexity of multisensory systems, extensive and systematic measurements, and evaluations of animal welfare parameters in herd management are rarely carried out. In many cases, the effort is reduced by using conductivity measurement sensors.
A high level of technical planning and configuration effort is required for the continuous recording of animal welfare parameters in different environments (stable, pasture). Using cow animal welfare as an example, a sensor and data platform is being developed for practice based on the plug & play principle to close the gap between available solutions and practical application.
Together with the FBN Dummerstorf, digital concepts for the stable are to be developed in a practical manner.

Goals and Solution

We use advanced computer vision technologies to address specific problems in the livestock industry. By using image processing algorithms and machine learning, we can extract valuable information from images and videos and use this to optimize livestock management.

Actions Taken

- Animal health: Computer vision allows detecting signs of various disease symptoms or behavioural abnormalities in animals. By analysing images and videos, pet owners can provide early warning of potential health problems and take appropriate measures to limit the spread of disease.
- Behaviour monitoring: Computer vision can monitor animal behaviour and detect abnormal behaviour. By analysing movements and interactions in real time, we can identify changes in behaviour that may indicate stress, pain or other problems. This allows pet owners to intervene in a timely manner and improve the well-being of their animals.
- Nutrition optimization: By monitoring animals' eating behaviour using computer vision, pet owners can monitor and optimize feed intake. By analysing data such as eating times and quantities, they can create individual feeding plans to ensure a balanced diet and minimize feed waste.
- Inventory management: Computer vision can help with automatic counting and identification of animals. By using camera systems and image recognition algorithms, livestock owners can accurately monitor animal populations without having to perform manual counts. This makes inventory management easier and enables efficient planning.
- Animal welfare: By combining computer vision with other technologies such as temperature and humidity sensors, animal owners can monitor and optimize the microclimate in stables. This allows

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them to ensure that environmental conditions meet the animals' needs and maximize their well-being.

Benefits and Impact

Our solutions give us detailed insights into animal behaviour, health and nutrition. By automating monitoring and analysis processes, we help livestock producers make better management decisions, improve animal health and welfare, and increase the efficiency of their operations.

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Application Area

☒ Livestock ☒ Conditions of Assets

Digital Technology in the Value Chain

☒ Agronomic Services

Digital Technologies

☒ IoT ☒ Artificial Intelligence (AI)

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