

Artificial intelligence for shrimp?

AI learns to detect shrimp in images, shows count events and growth trends. A step to assess the live biomass for the optimum feed quantity = better water quality and shrimp production

UTILIZING CYBER-PHYSICAL-SYSTEMS TO ENABLE SAFE AND SUSTAINABLE AQUACULTURE FARMING

Background

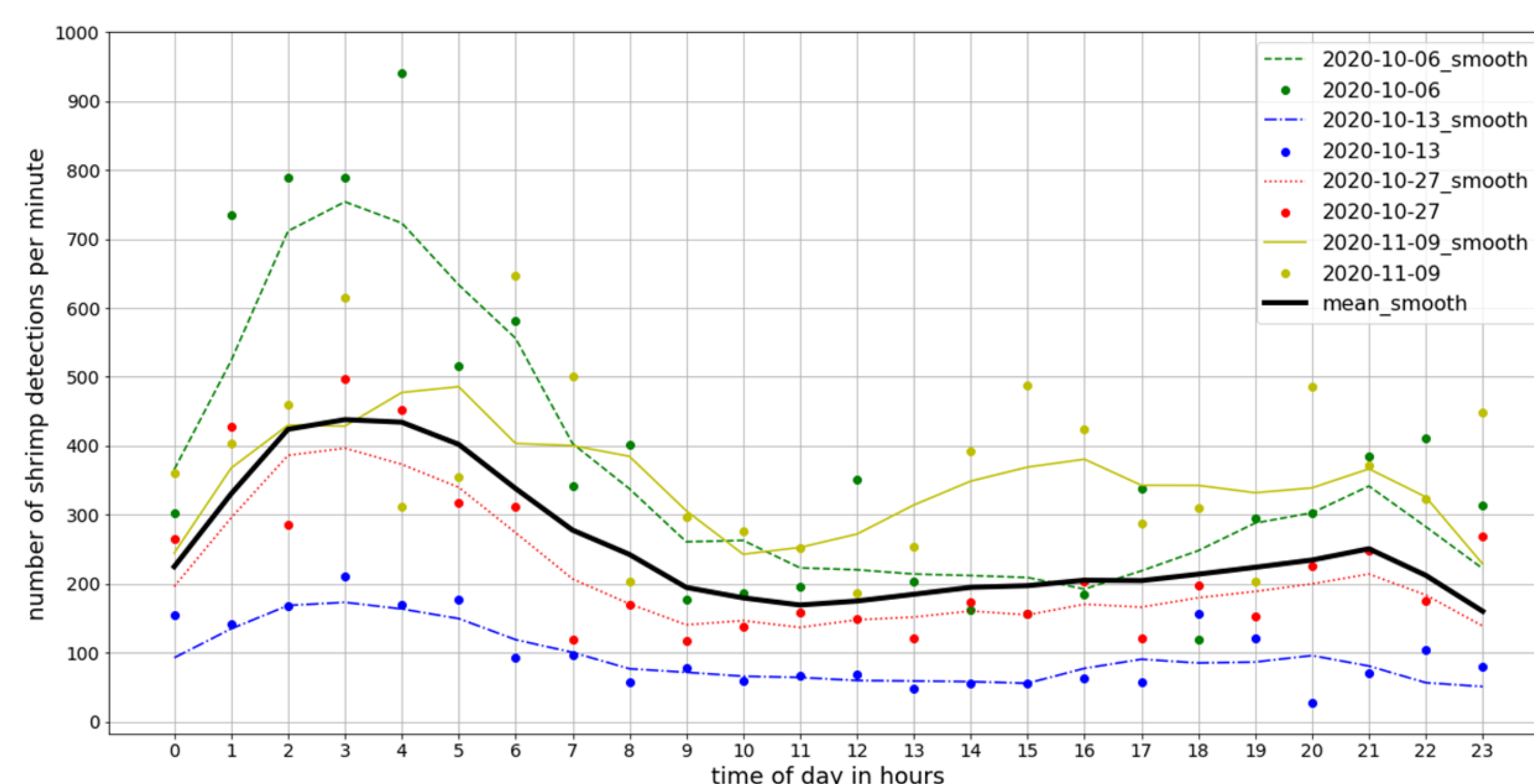
Indoor aquaculture is complex and there still is a lack in real-time monitoring, assessment and control of critical parameters, such as the daily feed dose and water quality.

The **project aim** is to develop **AI-based tools** to provide optimal support to the operator and reduce the risks of plant operation.

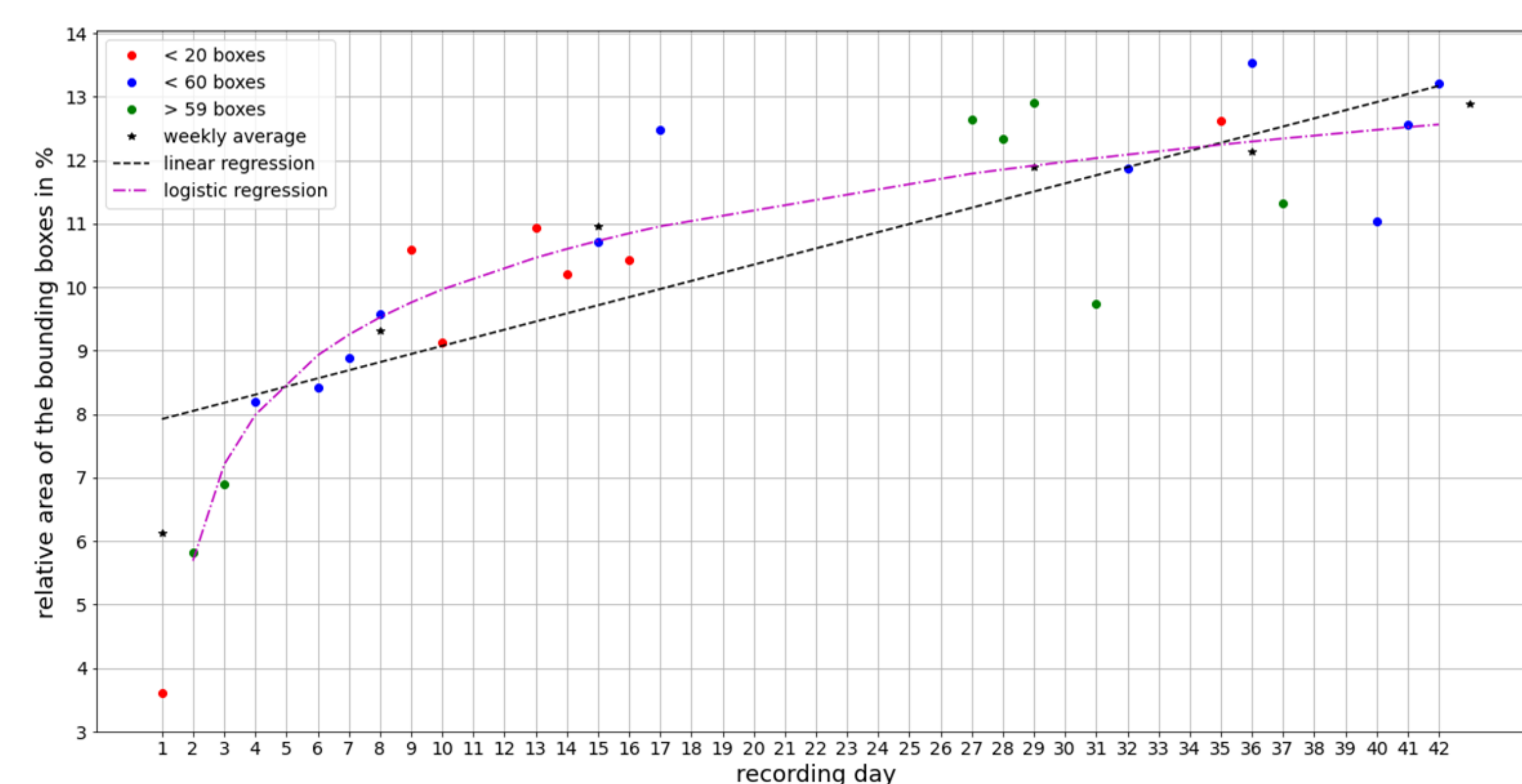
Approach

To assess the living biomass of shrimp we developed a system using machine learning to detect and gauge shrimp in images taken underwater. It is tested and verified at the indoor shrimp farm of "Damm Aquakultur". Data of the image evaluation and plant sensor data are jointly interpreted by an AI as a basis for our new decision support. As a first support we digitized the data documentation and installed a comprehensive data visualization.

Results



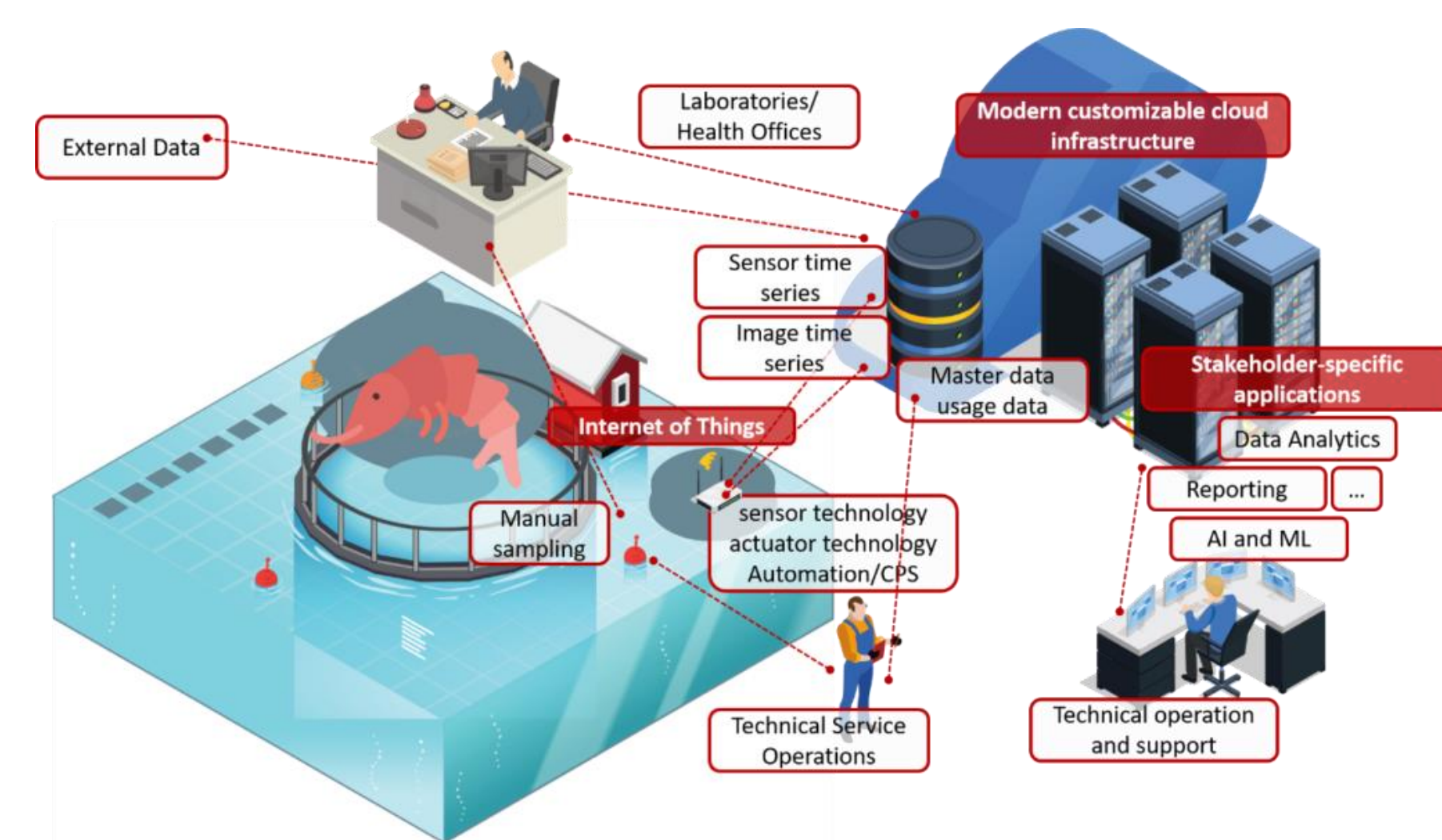
The pattern of counting events indicates a diurnal rhythm of activity as only swimming shrimp are detected.



Our AI-based image evaluation identifies a continuous growth trend.

Outlook

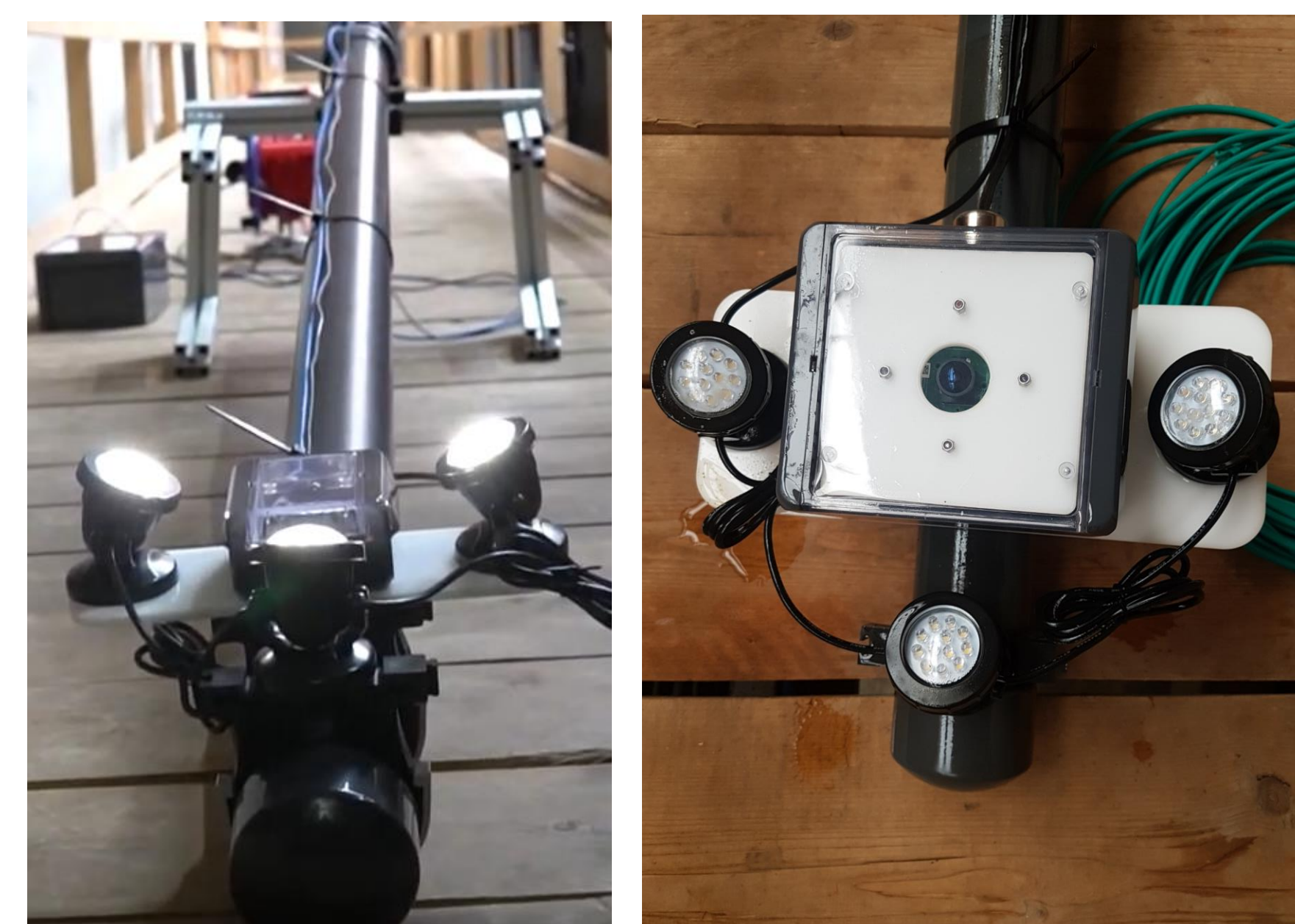
Digital support will be enhanced by an IoT-platform, not only merging all data on the farm operation, but using AI for rapid and reliable evaluation to ease decision-finding and control of the complex system.



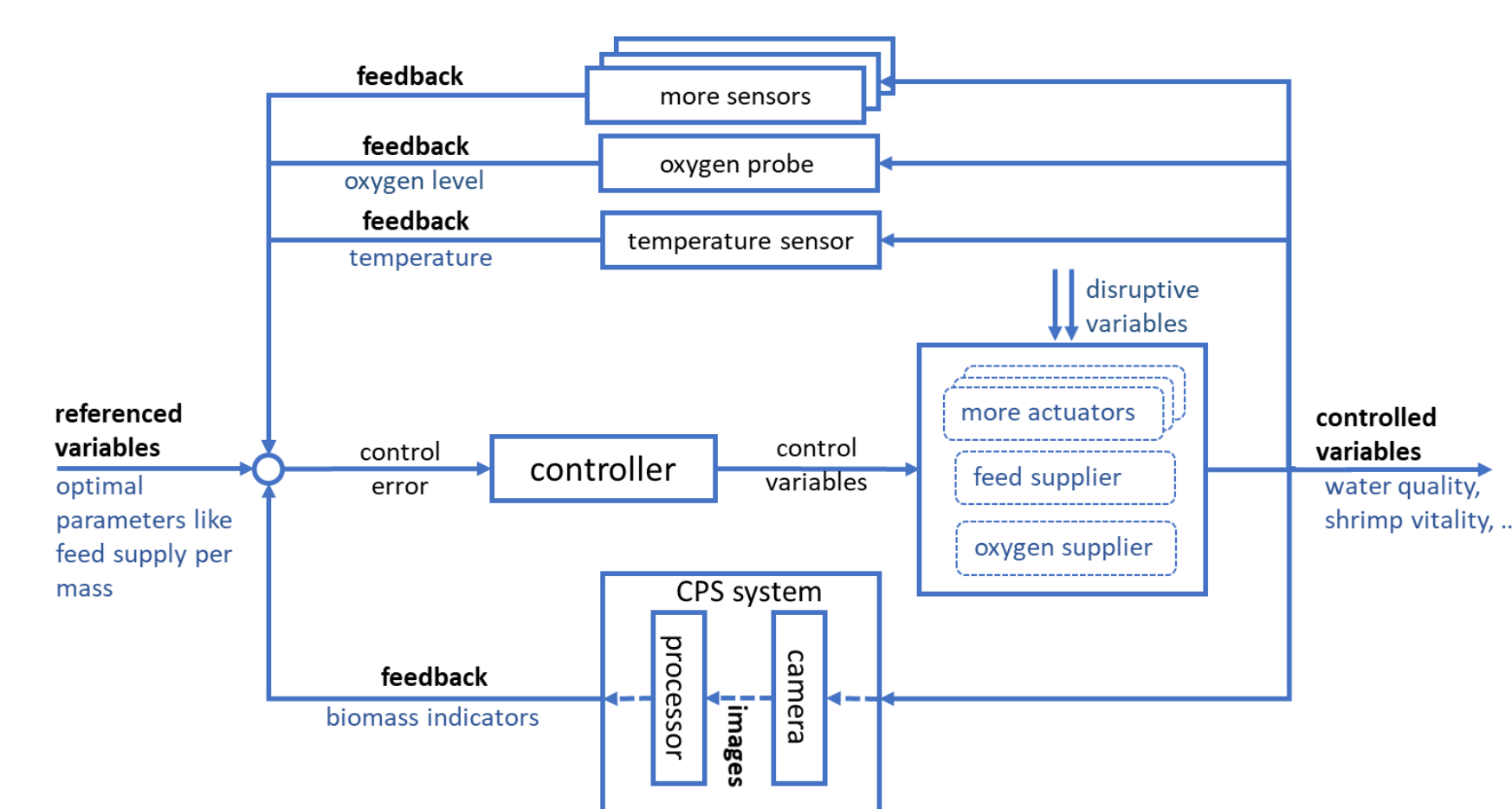
Project Concept of AI-supported Aquaculture



The Indoor Shrimp Farm of Damm Aquakultur: www.die-landgarnele.de



The AI-enhanced camera system for shrimp detection and gauging



Advanced Control and Feedback Loop

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