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Oceanloop pilots AI for land-based shrimp farming

In a bid to foster the development of land-based shrimp farming across Europe, the Alfred Wegener Institute, alongside Oceanloop, has launched a project to integrate AI for improved farm performance.

The project aims to increase the viability of land-based shrimp farm

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Throughout the shrimp farming process, operators must regularly remove the animals from the water to weigh them and check their condition. Such handling causes stress and reduces animal welfare. Additionally, due to water turbidity, it can be almost impossible to detect symptoms of stress or disease in farmed shrimp.

Seeking to provide a remedy to these challenges is the ShrimpWiz project. Led by the Alfred Wegener Institute (AWI), and in cooperation with Oceanloop - a pioneer in European indoor shrimp farming - a team of researchers have developed a system that can count shrimp in images using AI-based computer vision software. Under realistic farming conditions and in real time, the system can also determine the length of the animals with 95 percent accuracy.

The first prototype has been tested at Oceanloop's research and development farm in Kiel, Germany. An advanced smartphone installed above the water surface automatically photographs the shrimp once a minute and transmits the data to a local server. Here, computer vision algorithms count individual shrimp in each image and measure their length. By improving the image quality and using the latest generation of AI-based image processing models, the team was even able to detect visual signs of stress in the animals.

Unlike pond farming, Oceanloop's systems use clear water for farming. These systems are therefore ideal for computer vision, as the consortium demonstrated in previous research. Due to the high turbidity of the water in traditional pond systems, it is virtually impossible to visually monitor the welfare of the animals, either with the naked eye or with computer vision. Dr Stephan Ende, coordinator of the project at the AWI, is convinced that clear water technology is the key to animal welfare in intensive aquaculture.

"The use of computer vision software to measure shrimp enables accurate and non-invasive monitoring of animal welfare and productivity in shrimp farming - 24 hours a day, 7 days a week. The clear water technology combined with our Early Welfare Alert software can be the starting point for more objective welfare labelling in the shrimp industry of tomorrow," Ende said, in a press release.

The consortium sees the development of AI-based software as an opportunity not only to improve animal welfare, but also to increase farming e
technology can help drive the digitalisation of indoor shrimp fa
necessary to achieve today's retail price levels.

"Proving the technical feasibility of alternative solutions is crucial to meet the growing awareness of customers and stakeholders for more sustainable and welfare compliant shrimp farming," Ende concluded.

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