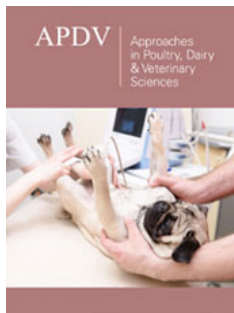


# Welfare & Behavior Monitoring with AI Cameras in Poultry Farming

**Umer Farooq Kallue\*, Amber Naeem and Abdul Tawaab**

UAF Constituent College Toba Tek Singh, Pakistan

ISSN: 2576-9162



**\*Corresponding authors:** Umer Farooq Kallue, UAF Constituent College Toba Tek Singh, Pakistan

**Submission:**  March 02, 2026

**Published:**  April 08, 2026

Volume 10 - Issue 2

**How to cite this article:** Umer Farooq Kallue\*, Amber Naeem and Abdul Tawaab. Welfare & Behavior Monitoring with AI Cameras in Poultry Farming. *Appro Poultry Dairy & Vet Sci* 10(2). APDV. 000734. 2026.

DOI: [10.31031/APDV.2026.10.000734](https://doi.org/10.31031/APDV.2026.10.000734)

**Copyright@:** Umer Farooq Kallue, This article is distributed under the terms of the Creative Commons Attribution 4.0 International License, which permits unrestricted use and redistribution provided that the original author and source are credited.

## Introduction

As global demand for poultry products increases, so does the challenge of ensuring optimal animal welfare and efficient production. In traditional poultry farming, welfare assessments often rely on manual inspections by farm workers. However, this process is labor-intensive, subjective, and prone to errors, making it difficult to scale in large commercial farms. The rise of AI-driven solutions, specifically camera-based monitoring systems using computer vision, promises to revolutionize poultry welfare monitoring, offering continuous, real-time insights into flock behavior, health, and well-being.

## AI-Powered Camera Systems for Welfare Monitoring

AI-powered camera systems, such as FlockFocus, use high-resolution cameras combined with deep learning algorithms to monitor poultry flocks 24/7. These cameras are capable of capturing intricate details about bird movement, posture, clustering, and feeding behavior, while analyzing activity levels in real-time. For example, if a flock of birds exhibits reduced movement or clustering in a particular area, it could indicate overcrowding or environmental discomfort. The system detects these patterns and alerts farmers, who can then adjust the environment accordingly, such as improving ventilation or adjusting space within the barn to reduce stress.

One of the key benefits of these systems is their ability to monitor feeding behavior. In a commercial poultry farm, it can be challenging to determine if all birds are feeding adequately, which can affect growth rates and health. The AI system detects feeding activity and flags birds that show signs of not feeding, indicating potential health issues. For instance, if a bird is consistently seen at the feeder but not consuming food, it could point to illness or injury. This allows farmers to intervene early and provide care to individual birds before issues escalate.

## Non-Invasive Monitoring and Early Disease Detection

The non-invasive nature of AI camera systems means that birds are not disturbed during monitoring, which is crucial for maintaining their welfare. The cameras work unobtrusively, capturing and analyzing behavior without the stress associated with human intervention. This feature makes AI-based systems particularly advantageous in environments like broiler houses, where birds are kept in high-density conditions.

For example, these AI systems can detect subtle changes in a bird's posture or activity level that may not be immediately noticeable to the human eye. A bird that starts to exhibit signs of lethargy or abnormal behavior--such as a hunched posture or isolation from the rest of the flock--can be flagged for early intervention. AI can also detect signs of disease before clinical symptoms appear. For instance, if a bird starts to show irregular movement patterns or avoids certain areas of the pen, it could be a precursor to a disease outbreak. Early detection allows farmers to isolate sick birds, implement preventive measures, and avoid the spread of diseases such as avian influenza or coccidiosis.

Example: Growth Patterns and Environmental Adjustments

AI systems not only monitor individual bird health but also provide valuable insights into flock-wide health and growth trends. The system tracks the development of each bird and can estimate

their growth rate based on behavior, such as feeding and activity levels. If a group of birds shows slower growth patterns compared to others, the system can highlight potential issues like suboptimal feeding practices or environmental factors such as temperature or humidity imbalances (Figure 1).

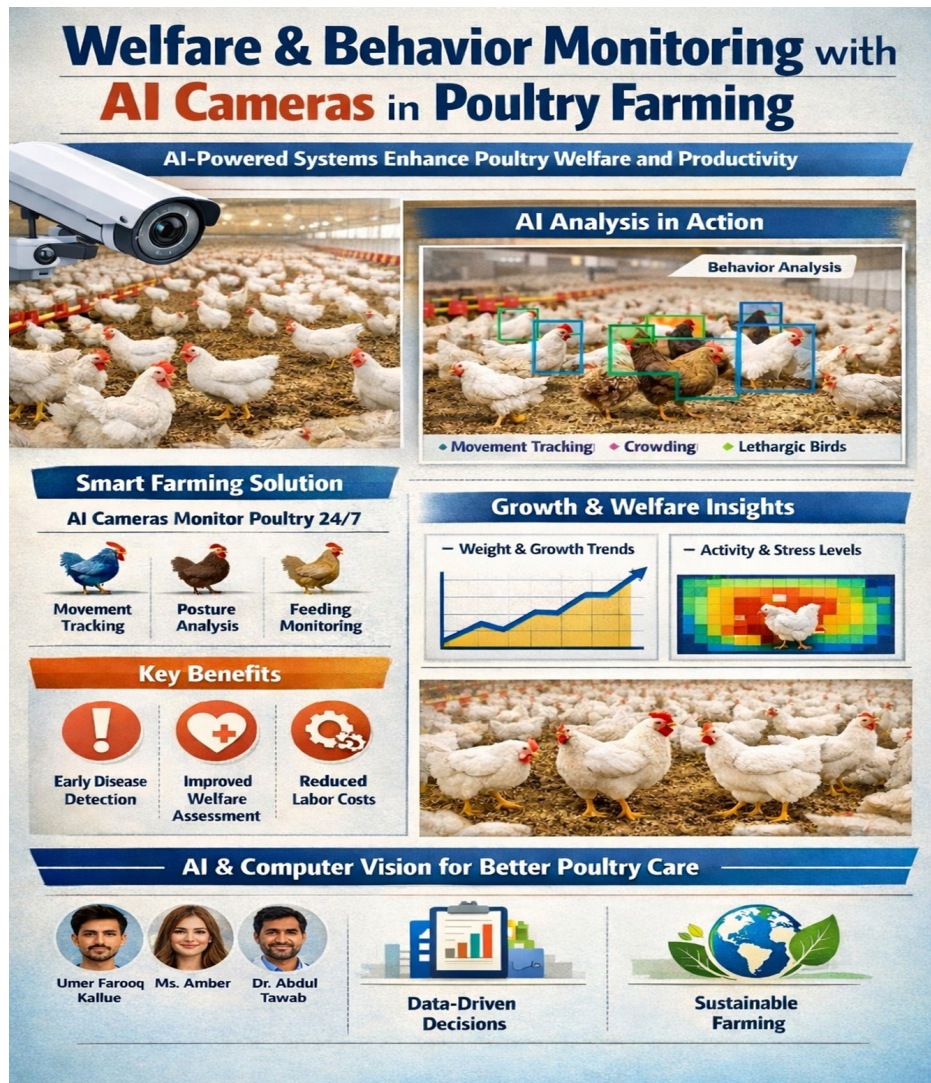


Figure 1

For instance, if the system notices a drop in feeding activity or increased resting behavior in a specific area of the barn, it could indicate environmental issues such as inadequate lighting or temperature fluctuations. The system can automatically alert the farmer, who can then adjust the barn’s conditions to ensure that the birds are comfortable and healthy.

### Improved Labor Efficiency and Consistency

The use of AI systems also results in a significant reduction in labor dependency, while improving the consistency of welfare assessments across large-scale farms. Traditional monitoring often requires farm workers to spend long hours inspecting flocks and manually recording observations, which is not only time-consuming but can also lead to inconsistent results due to human

error. AI systems eliminate this variability by providing continuous, real-time data that is consistently analyzed and reported.

For example, a large poultry farm may have hundreds of thousands of birds, making manual inspections unfeasible. AI systems ensure that each bird is constantly monitored without the need for physical checks, freeing up workers to focus on other tasks, such as managing feed distribution or conducting veterinary checks for flagged birds. As the system collects and processes data over time, it learns to recognize patterns in bird behavior, providing farmers with insights that were previously unavailable.

### Sustainability and Ethical Farming

Beyond improving animal welfare and productivity, AI-powered camera systems support sustainable and ethical farming

practices. By reducing the need for constant human intervention and optimizing resource use, these technologies help farmers make more informed decisions that lead to reduced environmental impact. For instance, by detecting behavioral patterns associated with overcrowding or discomfort, AI systems can alert farmers to make adjustments to living conditions, ensuring that birds have enough space and access to food and water.

Furthermore, AI platforms like FlockFocus align with ethical farming practices by minimizing the use of antibiotics. With early detection of illness and stress, farmers can address health issues before they escalate, reducing the need for antibiotic treatments and promoting healthier, more sustainable poultry production. This contributes to the growing movement toward antibiotic-free farming, which is essential for both animal welfare and public health.

## Conclusion

AI-based camera systems represent a transformative shift in poultry farming, offering a scalable, cost-effective solution to monitor bird welfare, improve health, and increase productivity. These systems provide farmers with real-time, actionable insights into bird behavior and health, enabling early intervention and better decision-making. By reducing labor dependency, improving welfare assessments, and contributing to more sustainable farming practices, AI technologies like FlockFocus are paving the way for smarter, more ethical poultry farming operations that prioritize both animal welfare and farm efficiency. This technological advancement not only improves the quality of life for poultry but also supports the broader goals of sustainability, productivity, and ethical farming.