Commentary
Volume 13:9, 2022

Journal of Biometrics & Biostatistics

ISSN: 2155-6180 Open Access

Non-Invasive Computer Vision is Effective Predictors of Dairy Cow Welfare and Age

Ruffle Sinnie*

Department of Biostatistics, University of Dhaka, Dhaka, Bangladesh

Description

Contributing to the development of automated veterinary support systems in the future, digitally extracted biometrics from visible videos of farm animals could be used to automatically assess animal welfare.In a robotic dairy farm (RDF) on the Dookie campus of The University of Melbourne in Australia, this study suggested using non-invasive video acquisition and biometric analysis on dairy cows.Two machine learning models were created using data from dairy cows:a classification model (Model 2) that uses features from the face of a dairy cow to predict an animal's age and a biometrics regression model that targets (i) somatic cell count, (ii) weight, (iii) rumination, and (iv) feed intake.Model 1 had a high correlation coefficient (R = 0.96), slope (b = 0.96), and performance, while Model 2 had high performance, high accuracy (98 percent), low error (2%) and no signs of under or overfitting.

This study's models can be used in conjunction with other models to evaluate RDF and conventional dairy farms' milk productivity, quality characteristics, and welfare.The agricultural industries, continuous food production, the upkeep of food quality characteristics, and ultimate food security all depend on effective animal welfare assessments. However, many robotic dairy farms (RDFs) still rely on veterinarians for welfare assessment and treatment of illness or production-related complications, such as mastitis, and other diseases detected using proxy measures, such as animal feed intake, weight, body temperature, and rumination activity. Although significant advancements have been made in the automation of animal-based food production, such as robotic dairy farms (RDFs), The use of short-range remote sensing and non-invasive technologies like visible video (VisV) and infrared thermal imagery (IRTI) has made it possible to monitor farm animals thanks to recent advancements in digital tools for evaluating biometrics and physiological parameters from the animals.

A comprehensive review of these technologies for farm animals like cattle, pigs, sheep, and dairy cows was recently published by our research group.In particular, fruitful uses of computerized devices to evaluate creature biometrics have been made to survey the early identification of respiratory illnesses in pigs and biometrics for sheep, dairy cows, and steers .With these advancements, direct contact sensors can produce monitoring parameters like heart rate (HR), respiration rate (RR), and skin/eye temperature readings automatically and more effectively without putting animals under additional stress.However, for welfare evaluation or illness detection based on more invasive tools like handling animals and blood work, they still rely on the interpretation of professional veterinarians. Somatic cell count (SCC), animal weight, luminance, and feed intake are some important well-being parameters to keep an eye on in the dairy cows analyzed in this paper.The SCC is a mastitis-related infection of the udder and a sign of milk quality. In contrast, rumination is the process of regurgitating feed, followed by remastication to break down the particles so they can be swallowed and pass through the reticulo-omasal orifice; however, animal weight is an important indicator of health, welfare, and milk production. This makes it possible to improve the digestion of fiber.Feed intake is the amount of feed the cow consumed from the robotic milker's total supply in this study.This could be influenced by a number of things, like stress; As a result, the robot can measure it and change it.In the past, machine learning (ML) models aimed at indirect milk production and quality traits were developed using artificial intelligence (AI) techniques based on automated computer vision algorithms for animal recognition and feature extraction.

Following the most recent advances in artificial intelligence utilizing VisV to evaluate fam creature biometrics, this paper proposed progressed demonstrating procedures in view of ML involving biometrics as contributions to target complex information like SCC, creature weight, rumination, and feed consumption (Model 1) and utilizing highlight extraction (utilizing profound learning) from creature faces as contributions to target cow age as an objective utilizing grouping ML displaying techniques. This paper's findings may make it easier to automate RDF for evaluating milk productivity, quality, animal welfare, and the early detection of diseases like mastitis. The robotic dairy facilities at Dookie College served as the setting for the study. All protocols were approved by The University of Melbourne's Animal Ethics Committee. There are three Lely Astronaut milking machines in the robotic facilities, each of which can milk up to 180 cows per day.Cows are identified and their information, activity, and production data are recorded by wearing a transponder neck collar. Cows that voluntarily approached the facilities for milking were directed to the crush for video recording either before or after milking to avoid bias and stress caused by the milking effect. Data were collected on July 14–15 and August 4–5, 2021, from 9 a.m. to 4 p.m. Using a FLIR DUO PRO, which can simultaneously capture infrared thermal videos (IRTV) and visible red, green, and blue (RGB) videos, each cow was recorded for one minute each day [1-5].

Acknowledgement

We thank the anonymous reviewers for their constructive criticisms of the manuscript. The support from ROMA (Research Optimization and recovery in the Manufacturing industry), of the Research Council of Norway is highly appreciated by the authors.

Conflict of Interest

The Author declares there is no conflict of interest associated with this manuscript.

References

1. Chalasani, Satvika. "Understanding wealth-based inequalities in child health in India: A decomposition approach." *Soc Sci Med* 75 (2012): 2160-2169.
2. Naoke Watanabe. "Socioeconomic inequalities in child malnutrition in the developing world." *World Bank policy Res Work Pap* 2434 (2000).
3. Shaw, Caroline, Tony Blakely, Peter Crampton and June Atkinson. "The contribution of causes of death to socioeconomic inequalities in child mortality: New Zealand 1981-1999." *N Z Medi J* 118 (2005).

***Address for Correspondence:** Ruffle Sinnie, Department of Biostatistics, University of Dhaka, Dhaka, Bangladesh, E-mail: sinnie381@edu.in*

Date of Submission: 05 September, 2022, Manuscript No. jbmbs-22-81522; **Editor assigned:** 06 September, 2022, PreQC No. P-81522; **Reviewed:** 17 September, 2022, QC No. Q-81522; **Revised:** 22 September, 2022, Manuscript No. R-81522; **Published:** 29 September, 2022, DOI: 10.37421/2155-6180.2022.13.127

4. Deng, Hongtao. "Real-Time monitoring of Athletes' training data based on wireless sensors." *Microprocess Microsyst.* 81 (2021): 103697.

5. Chen, Wanrui and Yidan Yuan. "Design and development of mobile internet control system for embedded fitness training cycling device." *Microprocess Microsyst* (2021): 103668.

How to cite this article: Sinnie, Ruffle. "Non-Invasive Computer Vision is Effective Predictors of Dairy Cow Welfare and Age." J Biom Biosta 13 (2022): 127.