

The Use of Artificial Intelligence in Diagnosis of Mastitis in Cows

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Abstract : In the field of veterinary medicine, there is a growing application of artificial intelligence (AI) for diagnosing bovine mastitis, a prevalent inflammatory disease in dairy cattle. AI technologies, such as automated milking systems, have streamlined the assessment of key metrics crucial for managing cow health during milking and identifying prevalent diseases, including mastitis. These automated milking systems empower farmers to implement automatic mastitis detection by analyzing indicators like milk yield, electrical conductivity, fat, protein, lactose, blood content in the milk, and milk flow rate. Furthermore, reports highlight the integration of somatic cell count (SCC), thermal infrared thermography, and diverse systems utilizing statistical models and machine learning techniques, including artificial neural networks, to enhance the overall efficiency and accuracy of mastitis detection. According to a review of 15 publications, machine learning technology can predict the risk and detect mastitis in cattle with an accuracy ranging from 87.62% to 98.10% and sensitivity and specificity ranging from 84.62% to 99.4% and 81.25% to 98.8%, respectively. Additionally, machine learning algorithms and microarray meta-analysis are utilized to identify mastitis genes in dairy cattle, providing insights into the underlying functional modules of mastitis disease. Moreover, AI applications can assist in developing predictive models that anticipate the likelihood of mastitis outbreaks based on factors such as environmental conditions, herd management practices, and animal health history. This proactive approach supports farmers in implementing preventive measures and optimizing herd health. By harnessing the power of artificial intelligence, the diagnosis of bovine mastitis can be significantly improved, enabling more effective management strategies and ultimately enhancing the health and productivity of dairy cattle. The integration of artificial intelligence presents valuable opportunities for the precise and early detection of mastitis, providing substantial benefits to the dairy industry.

Keywords : artificial insemination, automatic milking system, cattle, machine learning, mastitis

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