2023-24-001

SLIIT UNI
THE KNOWLEDGE UNIVERSITY

ONTOLOGY-BASED INFORMATION EXTRACTION SYSTEM FOR CATTLE SKIN DISEASE

INTRODUCTION

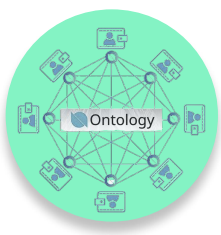
This Project Seeks To Improve The Management Of Cattle Skin Diseases Through A New Platform That Combines Image Analysis, Veterinary Knowledge, And Sentiment Analysis. It Aims To Automate The Analysis And Classification Of Skin Conditions Using User-Provided Photos, Offering Quick And Accurate Diagnoses And Severity Ratings. The Platform Tracks Disease Progression And Treatment Responses Over Time, Providing Detailed Therapy Recommendations Based On Global Veterinary Knowledge. By Incorporating Sentiment Analysis, It Also Addresses Users' Emotional Needs, Enhancing The Overall User Experience. The Ultimate Goal Is To Boost The Productivity And Well-Being Of Sri Lankan Cattle, Benefiting Farmers, Veterinarians, And The Cattle.

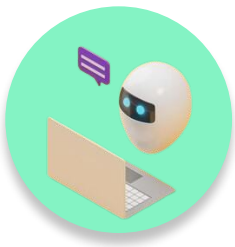
OBJECTIVES

1. Skin Disease Detection And Severity Assessment Using Images
2. Ontology-Based Information Extraction System
3. User-Specific Knowledge Base: Leveraging Reinforcement Learning For Up-To-Date Veterinary Treatment Details
4. AI-Driven Smart Assistant For Cattle Skin Diseases

METHODOLOGY

Farmers Register And Log Into The System To Report Livestock Issues, Particularly Skin Diseases. The System Uses Advanced Image Recognition And Diagnostic Techniques To Automatically Diagnose And Assess Severity. It Retrieves Treatment Information Using Ontology Web Technologies And Consults With Veterinarians For Verification. Detailed Records Are Kept For Trend Analysis, Ensuring Data Privacy And Security. Reinforcement Learning Updates Treatments Based On Feedback. This Comprehensive Approach Improves Disease Management, Supports Farmers Emotionally, And Fosters Trust In Managing Cattle Health.





RESULTS AND DISCUSSION

The Study Evaluated Various Components In Managing Cattle Skin Diseases. The InceptionV3 Model Achieved 86.9% Accuracy In Classification And Severity Assessment. An Ontology-Based System Ensured Semantic Consistency And Informed Decision-Making For Sri Lankan Farmers. A Reinforcement Learning-Enhanced Knowledge Base Provided Accurate Treatments And Facilitated Real-Time Veterinarian Communication, Improving Outcomes And Satisfaction. An AI-Driven Smart Assistant, Using Sentiment Analysis, Effectively Answered Queries, Enhancing User Interaction. These Technologies Collectively Advance Cattle Health Management Significantly.

CONCLUSION

Our Solution Manages Cattle Skin Diseases Using Expert Verification, Ontology Web Technologies, And Automated Identification. Future Enhancements Should Focus On Improving Accuracy, Expanding Diagnostics, Enhancing Telemedicine, And Integrating Data Analytics For Better Disease Control And Farm Productivity. Innovation Is Key To Sustainable Management.

REFERENCES

[1] Al-Tamimi M., Andrade-López J., Alonso-Durán L., LópezGatius F. (2020) Artificial Intelligence In Veterinary Medicine: Applications And Future Perspectives. Animals, 10(5), 842

[2] - Bonfini B., Perricone V., Giusepponi D., Semprini G., Volpi N., Ventrella D., Et Al. (2018) Use Of A Fuzzy Logic-Based Model For Diagnosing Mastitis In Dairy Cows. Italian Journal Of Animal Science, 17(1), 252-261.

[3] Bromley J., Guyon I., LeCun Y., Säckinger E., Shah R. (2018) Signature Verification Using A "Siamese" Time Delay Neural Network. International Journal Of Pattern Recognition And Artificial Intelligence, 7(4), 669-688.

[4]A. Radford, K. Narasimhan, T. Salimans, And I. Sutskever, "Improving Language Understanding By Generative Pretraining," In Proceedings Of The 32nd Conference On Neural Information Processing Systems (NeurIPS), 2018. [Online]