

A RESEARCH ON AI-BASED ANIMAL VOCALIZATION ANALYSIS AND INTERSPECIES COMMUNICATION SYSTEMS

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ABSTRACT

Understanding animal sounds interpreting their meaning has always been and challenging task due to the absence of a structured communication system similar to human language. This research presents an artificial intelligence-based system designed to analyze and translate animal vocalizations into human-understandable interpretations. The proposed approach combines audio preprocessing techniques with feature extraction using Mel-Frequency Cepstral Coefficients (MFCC) and classification through a Convolutional Neural Network (CNN). Unlike traditional systems that only identify sound types, this model focuses on associating sounds with behavioral or emotional states such as hunger, distress, or alertness. The system is trained on ensure adaptability across diverse audio datasets different conditions. The results demonstrate that the model is capable of accurately classifying sounds while providing meaningful interpretations, making it useful for applications in pet care, animal behavior analysis, and wildlife monitoring. This work contributes toward bridging the communication gap between humans and animals through intelligent and interpretable AI systems.

KEYWORDS: *Animal Communication, Audio Signal Processing, MFCC, Convolutional Neural Network (CNN), Deep Learning, Sound Classification, Behavior Analysis, Artificial Intelligence, Bioacoustics, Human-Animal Interaction.*

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