
COSE474-2024F: Final Project Proposal

Vocalization-Based MBTI Mapping for Pets

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1 Introduction

The communication gap between pets and their owners often hinders understanding of pets' needs and emotions. This project introduces a novel tool that utilizes deep learning techniques to analyze pet vocalizations and map their MBTI personality traits. By employing models such as CNNs and LSTMs, we aim to classify emotional states from pet sounds, enhancing the bond between pets and their owners while contributing to animal welfare.

2 Problem definition challenges

One of the key challenges faced by pet owners is the communication gap between pets and humans. This gap makes it difficult for us to understand our pets' needs and emotions, which can impact their well-being and our relationship with them.

3 Related Work

Deep Learning Techniques in Audio Signal Processing: In pet vocalization analysis, models like CNNs and LSTMs classify audio signals and recognize sound patterns. Mel-spectrograms and other audio features serve as inputs to detect emotional and behavioral states, forming the basis for personality mapping.

4 Datasets

The first one being the basis of the project. In this first one, we will gather a dataset of dog and cat vocalizations. This dataset should include recordings of pet sounds made in various environments and should capture a range of emotional states (e.g., happiness, sadness, excitement, fear).

5 State-of-the-art methods

State-of-the-Art Models for Emotion Detection and Classification: Advanced models for emotion detection use transformers and self-supervised learning to derive robust representations from large datasets. These approaches significantly enhance performance in analyzing non-verbal cues such as tone, pitch, and frequency, which are crucial for interpreting emotional content in pet sounds.

6 Schedule

Week 1-2: Data Collection and Preprocessing. Week 3-4: Feature Extraction and Model Design. Week 5-6: Training and Evaluation. Week 7-8: Iterative Improvement and Testing. Final Week: Documentation and Final Evaluation.

7 References

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3. Mr. Saurabh Gupta, Dr. Amrapali S. Chavan, A. Deepak, Dr. Anil Kumar C., Dr. Sumit Pundir, Dr. Ram Bajaj and Dr. Anurag Shrivastava. Speech Emotion Recognition of Animal Vocals Using Deep Learning, 2024.
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