**The Summer Undergraduate Research Fellowship (SURF) Symposium**
**3 August 2017**
**Purdue University, West Lafayette, Indiana, USA**

# Acoustic Analysis of Vocalizations for Detecting Separation Anxiety in Dogs

Karina Sequera, Nan Kong, and Niwako Ogata,
Department of Biomedical Engineering, Florida International University
Weldon School of Biomedical Engineering, Purdue University
College of Veterinary Medicine, Purdue University

## ABSTRACT

Separation anxiety in dogs is a clinical condition in which a dog develops an intense dependence on their caretaker. It manifests itself in maladaptive physical and psychological behaviors that are similar to that of panic attacks in humans when the dog is isolated from its owner. These include excessive vocalizations, destructive behaviors, and in more extreme cases, self-mutilation. Currently, there are no direct ways to diagnose separation anxiety without the aid an owner's report. To ease this diagnostic process, it would be useful to utilize a tool that can distinguish between certain vocalization patterns in dogs. Literature suggests that some vocalizations, such as whining, reveals information about the dogs wellbeing. The purpose of this study is to initiate steps to build and implement a classifier that will distinguish between different dog vocalizations. This process involved meticulously preparing the data by extracting, labeling, and separating the vocalizations in a sound editing software. Mathematical models of several acoustic parameters were constructed to obtain critical information from each file. With this information, a classifier can be built and could ultimately aid in understanding the underlying emotions in dogs suffering from separation anxiety.

## KEYWORDS

Acoustic Analysis, Dogs, Separation Anxiety, Vocalizations