

Maker Project: Voyager and littleBits™ Pet Monitor

Introduction

Have you ever wondered what your dog does all day long while you are at work? Is resting the major “activity” or is there some occasional wandering? Is there silence or periodic barking, such as when the mailman comes or a squirrel is seen through a window? The author of this lesson has a couple of schnauzers, known for their predisposition for barking. “Welcome to the Bark Side” is a frequent phrase voiced to passersby while I am taking the schnauzers for a walk. But how much do they bark when cooped up in the house and I am out someplace? And do they move around a lot or mostly nap?

In this maker project, Voyager and littleBits are blended to make a pet monitor. This project will allow producing graphs of precisely when your dog is moving and when he or she is barking while you are out of the house at work or on errands. Figure 1 shows such graphs obtained from Voyager while the author was on errands for fifty minutes (3000 seconds). The vertical red lines indicate barking, and the vertical blue lines indicate movement. The long barking spells after 2000 seconds were likely caused by seeing a squirrel or perhaps a suspicious looking plastic bag blowing through the yard! The frequency of movement suggests that they are bit antsy while I am gone, particularly during the first fifteen minutes or so after I leave the house.

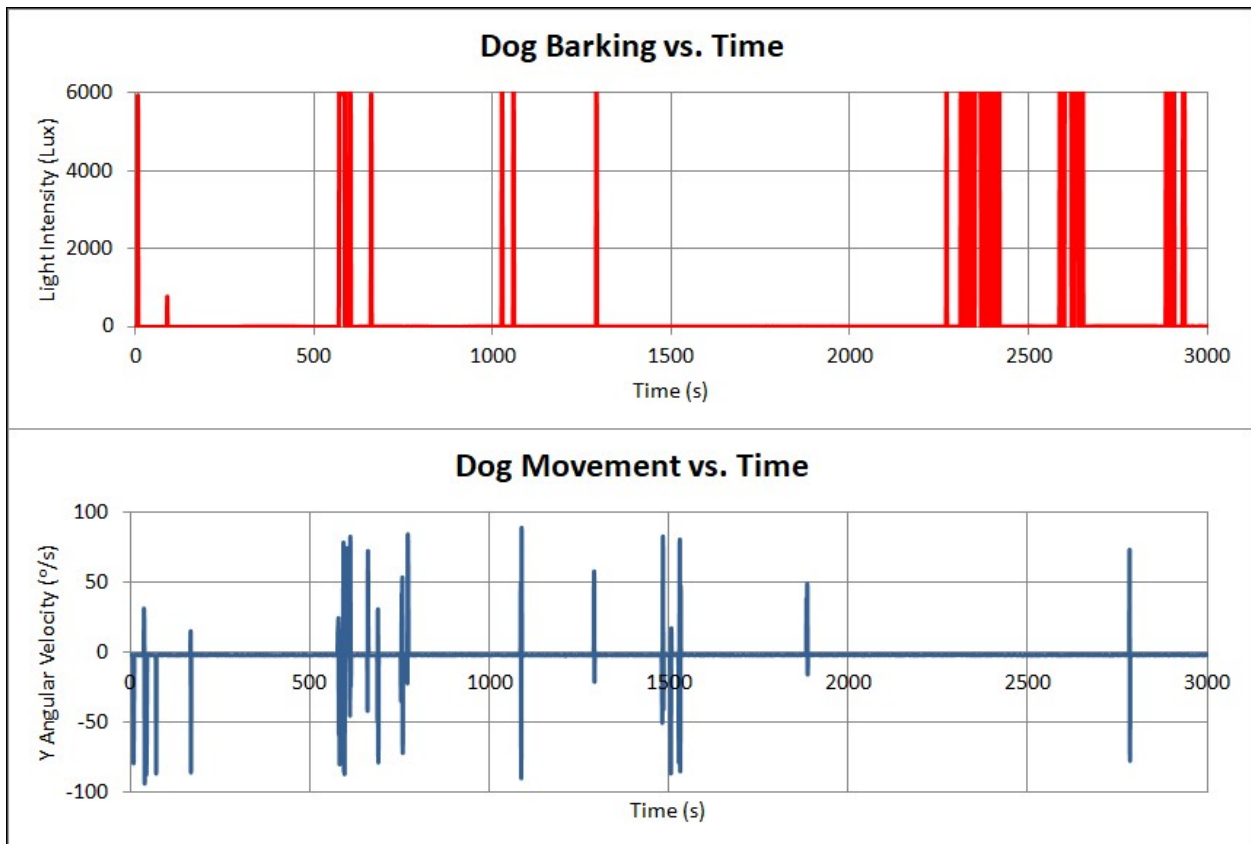


Figure 1

The Author's Approach to this Maker Project

littleBits™ are reusable color-coded electronic building blocks that can snap together to form a plethora of unique circuits. Blue is for power bits, pink is for input bits, orange is for wire bits, and green is for output bits. Figure 2 shows the setup used by the author to make the pet monitor. The idea is pretty straight forward. The littleBits *sound trigger* bit, when activated by a barking dog, sends a signal turning on the littleBits *LED* bit that is mounted directly above the *light sensor* on Voyager. The sound trigger bit has a microphone as well as a sensitivity adjustment dial. When the sound reaches the selected level the signal is sent for about three seconds. The littleBits *motion detector* bit, when activated by the dog moving about the room, sends a signal to the littleBits *vibration motor*, which has been mounted to Voyager. When the dog moves around, the *vibration motor* shakes Voyager. This random shaking can be identified with either the *acceleration sensor* or the *angular velocity sensor*. The author found any one of the X, Y, or Z angular velocity sensors to be the best indicators. In summary, Voyager's light sensor then provides an indication of barking, and Voyager's angular velocity sensor indicates dog movement. The Voyager data was collected at a rate of 1 point/second.

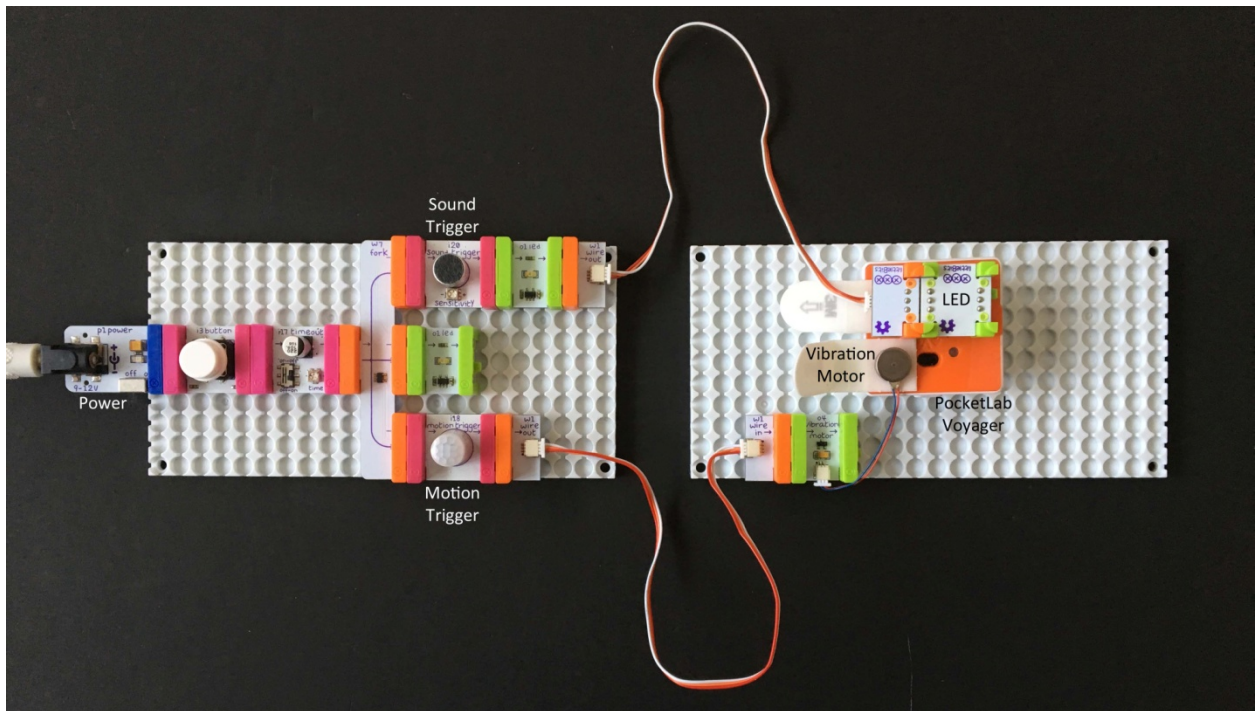


Figure 2