



Wireless Pet Containment System

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Abstract

As the Internet of Things continues to push the barriers of technology in 2016, it is time to reimagine the approach of a seemingly simple problem: pet containment. Traditionally, dogs and other pets have been confined by physical fences, or even electrical fences, which administer shocks to prevent pets from crossing a given boundary. Lately, wireless pet containment systems have begun to hit the market. These systems allow owners to train their pets by sending radio signals to the receiving collar; when the pet reaches the boundaries of a yard, the pet will receive a mild static correction as a reminder to stay within the yard. However, these systems are expensive, have limited portability, and take some time to set up.

To address some of the aforementioned issues, we propose to build upon this wireless containment system by adding an Android application component. The app will allow owners to not only track their pet, but also draw an imaginary fence within which they wish to contain their pet. This app works in conjunction with three other components, each, an area of work. A collar, which contains a GPS sensor, is responsible for sending the pet's current coordinates to the control unit. The control unit receives the GPS coordinates from the collar and the fence parameters from the Android app, and runs an algorithm to ensure that the pet is within the given parameters. Finally, a buzzer piece is responsible for producing a "beeping" noise when the pet approaches the boundaries of the fence parameters. The primary challenge lies in finding an appropriate algorithm for determining whether a point lies within a given polygon and fine-tuning an acceptable order of precision for the GPS sensor on the pet collar.