



## **Garage Door Monitor**

### **Justification**

Many of us experienced the feeling of being halfway to work and wondering if we left the garage door open. The house has deadbolts and a security system, but there are times when we forget to lock the pedestrian door between the garage and the house, and then forget to shut the garage door – leaving our home exposed.

I want a system that lets me know when I have left the garage door open. I want a system that will allow me to visually inspect and verify for myself that the garage door is shut, without needing to drive back home, or even get out of bed.

### **User Actions:**

User can use app to query device to verify security status of garage door.

### **User Interface**

Users query this system through an app. The user can perform an instantaneous query for FullyClosedStatus, as well as view the image of the garage door space (which will display either a closed garage door ... or the view to the street through the open garage door).

In addition to the interactive app, the system communicates with the users by sending an SMS to the enrolled vehicle owner in the case that the garage door has been opened, one of the vehicles exited/entered the garage, yet the garage door is not shut after an elapsed period of time.

### **Product Actions**

- 1) When queried, system provides a report as to the FullyClosedStatus to the user (either the door is fully closed or it isn't). Upon receipt of this query, system uploads a picture of the closed garage door (or the open space to the street, viewable through the open garage door) to allow user to visually verify garage door status.
- 2) In the case where the garage door is opened and a vehicle leaves and the door remains open for a (programmable) period of time after the vehicle left, the system sends an SMS message to the owner of the vehicle informing them that they left the garage door open.

### **System Setup:**

System enrollment will include images of the shut garage door and the open garage door at the particular location, so that an instantaneous image can be compared to determine security status of garage door. System enrollment will require SMS phone number of system users.

**Design Constraints:**

Device requires power and connection to the Internet.

Device needs to be small and self-contained so that it can be easily located to provide a good view of the garage door.

System requires a camera that can function in low-light.

Security will be handled by creating a tunnel to an Internet edge device (e.g., Cloudflare workers).

Note: device is not connected to the garage door opener.

**Future Features:**

Monitor and report if trunk left open, interior lights left on, or doors not fully shut.