

Project Title: **Doorbell Camera Notification System**
Team: *Daniel Rolandi, Kelly Peng*
EECS 149/249A Project Charter, Fall, 2014

Project Goal

This project will create a smart doorbell notification system so that when a guest clicks on the button, it makes a ring, a camera takes a picture and the microcontroller sends a notification with some message to notify that a guest has arrived.

Project Approach

The project has the microcontroller as the brain of the notification system. A state machine is used to control when the bell should ring and how often a picture is taken and a notification sent. The microcontroller handles bundling a text message with the picture and sending them to a designated email address or phone number. As a stretch goal, we could implement a face detection and recognition algorithm to say who exactly has arrived based on a training data set.

Resources

Our plan is to use the Raspberry Pi board since it can run Linux, C, and Python for sending the email notification. We can do that using C and Unix's sendmail function or, if it does not work, we can use Python's smtplib. For the bell ring, we are planning to use a speaker coupled with a audio amplifier (for example, <http://www.instructables.com/id/Simple-LM386-audio-amplifier/>). For the camera, we will use a webcam or a CMOS camera module. To connect to the Internet, we will obtain a WiFi module for Rapsberry (such as this one <http://www.adafruit.com/product/814>). The button, battery, and voltage regulator can be obtained from Makerspace or the Invention Lab.

Schedule

- October 21: Project charter (this document).
- October 23: Gather parts and try the Linux on Raspberry Pi. Try out stuff.
- October 30: Gather the remaining parts and try out stuff.
- November 6: Tell the camera to take picture by pressing the button.
- November 13: Test WiFi and write code to send email or text notification.
- November 20: Mini project update.
- November 27: Connect to speaker and audio amp to create bell ringing.
- December 4: If have time, implement face detection and recognition.
- December 11: Testing. Revise and continue working on face detection and recognition.
- December 16: Demonstration video made, powerpoint prepared.
- December 17: Final presentation and demo.
- December 19: Project report and video turned in.

Risk and Feasibility

There are many unknowns because we have not have our hands on the hardware yet. Some parts such as the button might introduce electric shock if not taken care of. Maybe the WiFi module does not work well. If there is no Internet connection, then the system cannot send notification. We do not have good experience working with audio amplifier. Face detection and recognition might take a lot of time. Maybe we are unable to find a face recognition library. The training data set is limited to our group members' pictures.

