Facial Recognition Door Lock

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## Introduction

With the introduction of facial recognition into the IoT devices, a lot of improvements have been made. One of the sections that we believe still lacks usage of modern technology is the main entrance of residential area. Around the world, we still see usage of traditional key-style doors. According to *The conference board of Canada*, Canada has over 500 burglaries/100k population in a year. So, having usage of facial recognition door locks shall increase security of property as it cannot be tempered with. These locks shall be connected to a database that stores all the occupants faces. Once a person is in proximity of the lock, it would scan the person’s face and compare with database and decide to either unlock or keep the door locked. The benefits of this lock are as follows: first, it would eliminate the use of a key to unlock. Second, it cannot be tempered with, thus extra security and finally, very easy to use and configure.

## Objectives

The objective of this project is to build a facial recognition door lock that either unlocks when authorized occupant’s face is scanned.

## solution & validation

To achieve the scope of the project, following are the tools/programs we shall use:

* Arduino
* Motor (acts like latch)
* Python programming language to build the AI

Steps:

* Program the Arduino to control the lock’s motor
* Build Facial Recognition PoC
* Train the AI for accuracy and efficiency
* Build the prototype
* Validation

## Validation strategy

Accuracy (False Positive, False Negative, True Positive, and True Negative)

Efficiency (Avg Time needed to return the result)

Convenience (Avg configuration time needed)

## timeline

|  |  |  |
| --- | --- | --- |
| No. | Activity | Week # |
| 1 | Identify group members and finalize project scope | 1 |
| 2 | Create design document for peer review | 2 |
| 3 | Review feedback, incorporate agreed changes | 3 |
| 4 | Start basic implementation of the final design | 4 |
| 5 |  |  |
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## progress

## work cited

* https://www.conferenceboard.ca/hcp/Details/society/burglaries.aspx?AspxAutoDetectCookieSupport=1