

# *Building an accuracy calculating algorithm for*

# **THE DISPENSING OF MEDICATION FOR THE MOBILI DISPENSER**

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## **INTRODUCTION**

*Mobili is a mobile medicine dispenser that alerts you when it is time to take your medication, and dispenses the correct dosage. Additionally, it verifies that the medication is delivered. By providing secure and faultless medication, the dispenser aims to decrease medication errors.*



We have developed an algorithm to verify that the dispenser actually dispenses the correct medications. The algorithm can be used to determine how accurate the medication dispensing is before the dispenser is administered to real patients. Additionally, it enables us to run thousands of dispensations without causing risks to patients. This allows us to evaluate the accuracy of the dispenser much quicker than with traditional methods.

Our algorithms make sure that the dispenser reaches the correct chamber, and we have also explored the possibility of developing an algorithm to verify that each slot is fully open.

## **THRESHOLDING**

*Thresholding is a method of segmenting images by transforming them into binary images. We began by assigning and attaching digital numbers to every chamber before creating a Python algorithm to identify them. We chose a different approach because the results from this method were unsatisfactory.*



## **QR-CODES**



*Instead of number recognition, we opted to use QR-codes. In order to differentiate between the chambers, we developed a Python algorithm that extracted the numbers from the QR-codes. The code analyzes each chamber using the computer's webcam and determines whether it is the same as specified in the medication plan.*

## **EDGE DETECTION**

*Edge detection allowed us to differentiate the slot from the rest of the cassette. This can be used to ensure that each slot is fully open to prevent pills from getting stuck.*

## **RESULTS & DISCUSSION**

*Our chamber detection algorithm was run multiple times with the same result every time. The Mobili dispenser reaches the correct chamber without exception, resulting in an accuracy rate of 100%. As for our algorithm, the chambers detected by the algorithm were correct in all tests. The results might have been different if we had time to run thousands of dispensations.*



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