Trash Sorting AI

By Winston and Evan

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1. Introduction

ABOUT PROJECT

Our trash sorting AI aims to distinguish items into categories such as glass, metal, trash, plastic when the item is presented on the camera or when a picture file is given.

01

Gathering Data

Gathering data

- Used online images and placed them in their respective categories

- Brought our own recyclables and took photos of them from as many angles and backgrounds as possible

02

Processing Data

Processing Data

- Tried to take as much data as possible for each category
- Our current model was giving us outputs mainly due to the background instead of the item itself
- Placed them in different angles and backgrounds to prevent external factors from influencing the result

03

Machine Learning Model

Model

- Supervised learning

04

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Precision	Accuracy

Deployment

Design Thinking Factors

- Empathise :
- Define :
- Ideate :
- Prototype:
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Face Detection AI

By Winston and Evan

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1. Introduction

ABOUT PROJECT

Detect suspicious looking individual through analyzing facial features to get face shapes

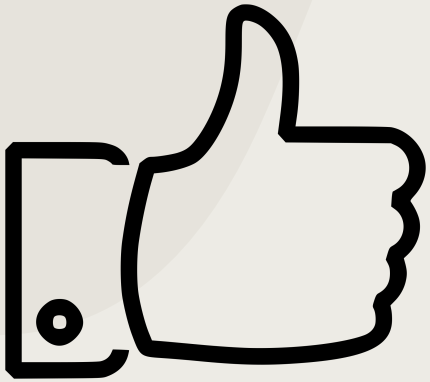
SUS

01

Gathering Data

Gathering data

Data courtesy of our instructor



faces_data.csv

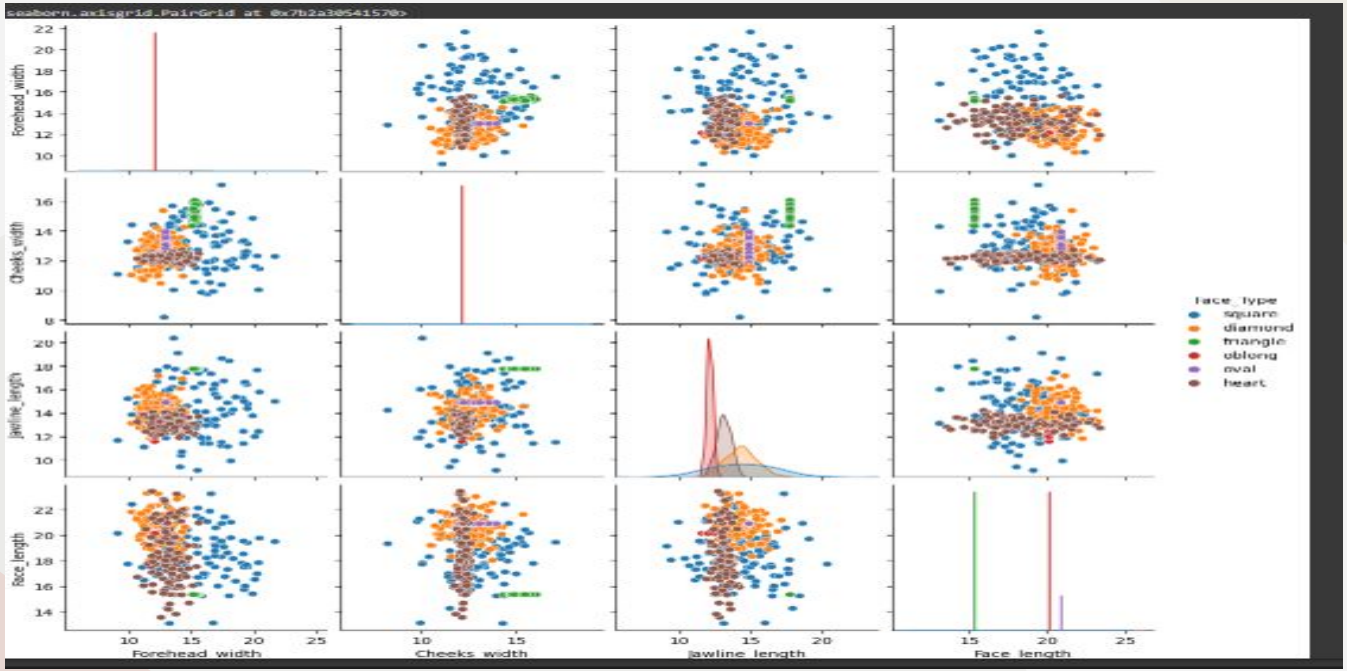
	A	B	C	D	E
1	13.73441195	12.36739676	17.72773215	18.04450358	square
2	20.4229389	11.44961025	15.77486689	19.75084346	square
3	13.16905473	11.89880124	13.91685181	22.16355559	square
4	12.27053293	11.92314658	16.64858662	16.81685383	square
5	15.84874822	14.38136636	16.51341438	15.23172798	square
6	15.49522251	12.71139161	12.05933596	18.56892399	square
7	14.60470552	13.31321399	17.45017028	20.54086882	square
8	19.48417331	13.13606569	14.77795324	17.492472	square
9	12.99635349	13.03545469	11.86708943	19.52395594	square
10	13.93008491	14.66934759	14.42873127	18.6352384	square
11	14.32592146	15.29397099	16.58310407	19.38736198	square
12	18.01855992	13.95299187	18.4305347	15.24346708	square
13	15.25240571	10.54211133	16.16061584	19.17812566	square
14	19.01642984	13.28130113	15.26890062	17.80481608	square
15	11.13894438	12.48268513	16.01402783	17.46803658	square

02

Processing Data

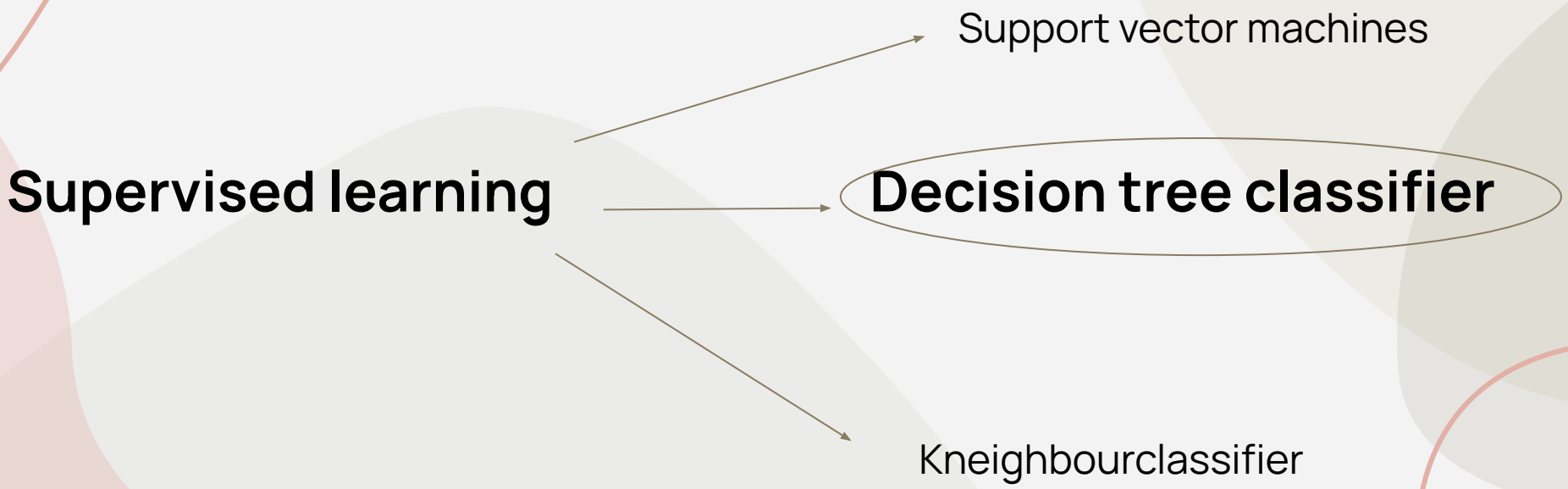
Processing Data

Using seaborn to visualise the data



03 Machine Learning Model

Model


Support vector machines
Supervised learning
Decision tree classifier
Kneighbourclassifier

04

Evaluation

Evaluation Process

We tested the model against a new set of data and obtained readings

```
# add comments here
column = ['Forehead_width','Cheeks_width','Jawline_length','Face_length']


X_new = np.array([[13.73, 12.36, 17.24,18],[11, 11, 13,18],[15, 15, 17.24,15],[12.92,12.43, 14.88,20.88],[11.81, 12.93, 12.82,17.47]])
test = pd.read_csv('/content/drive/MyDrive/Dataface.csv')



prediction = dt.predict(test)
print("Prediction of Face type: {}".format(prediction))
```

```
Prediction of Face type: ['triangle' 'square' 'diamond' 'square' 'square' 'square' 'square'
 'square' 'square' 'square' 'square' 'diamond' 'diamond' 'diamond'
 'diamond' 'diamond' 'diamond' 'square' 'diamond' 'diamond' 'diamond'
 'diamond' 'diamond' 'diamond' 'diamond' 'triangle' 'triangle' 'triangle'
 'triangle' 'triangle' 'triangle' 'triangle' 'triangle' 'triangle'
 'triangle' 'oblong' 'oblong' 'oblong' 'oblong' 'oblong' 'oblong' 'oblong'
 'oblong' 'oblong' 'oblong' 'oblong' 'oblong' 'oblong' 'oblong' 'oblong'
 'oblong' 'oblong' 'oval' 'oval' 'oval' 'oval' 'oval' 'oval' 'oval' 'oval'
 'oval' 'oval' 'oval' 'oval' 'oval' 'oval' 'oval' 'heart' 'heart' 'heart'
 'heart' 'heart' 'heart' 'heart' 'heart' 'heart' 'heart' 'heart' 'heart'
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/usr/local/lib/python3.10/dist-packages/sklearn/base.py:432: UserWarning: X has feature names, but DecisionTreeClassifier was fitted without feature names
  warnings.warn(
```

Results

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 'triangle' 'triangle' 'triangle' 'triangle' 'triangle' 'triangle'
 'triangle' 'oblong' 'oblong' 'oblong' 'oblong' 'oblong' 'oblong' 'oblong'
 'oblong' 'oblong' 'oblong' 'oblong' 'oblong' 'oblong' 'oblong' 'oblong'
 'oblong' 'oblong' 'oval' 'oval' 'oval' 'oval' 'oval' 'oval' 'oval' 'oval'
 'oval' 'oval' 'oval' 'oval' 'oval' 'oval' 'oval' 'heart' 'heart' 'heart'
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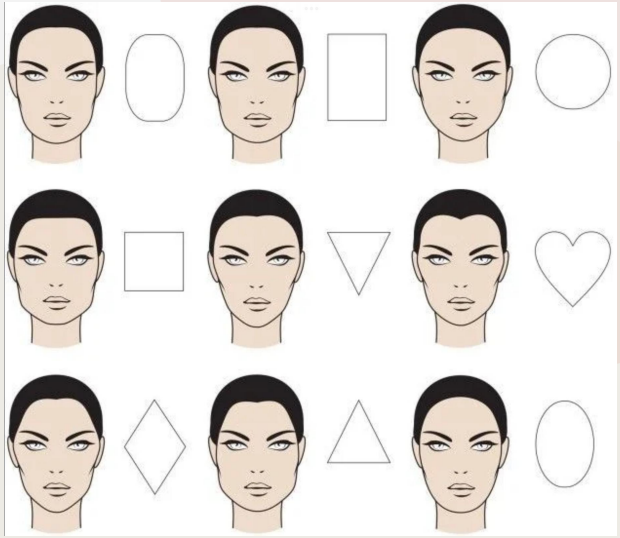
We unfortunately do not know true accuracy as no shape was given for the the new set of data

Deployment

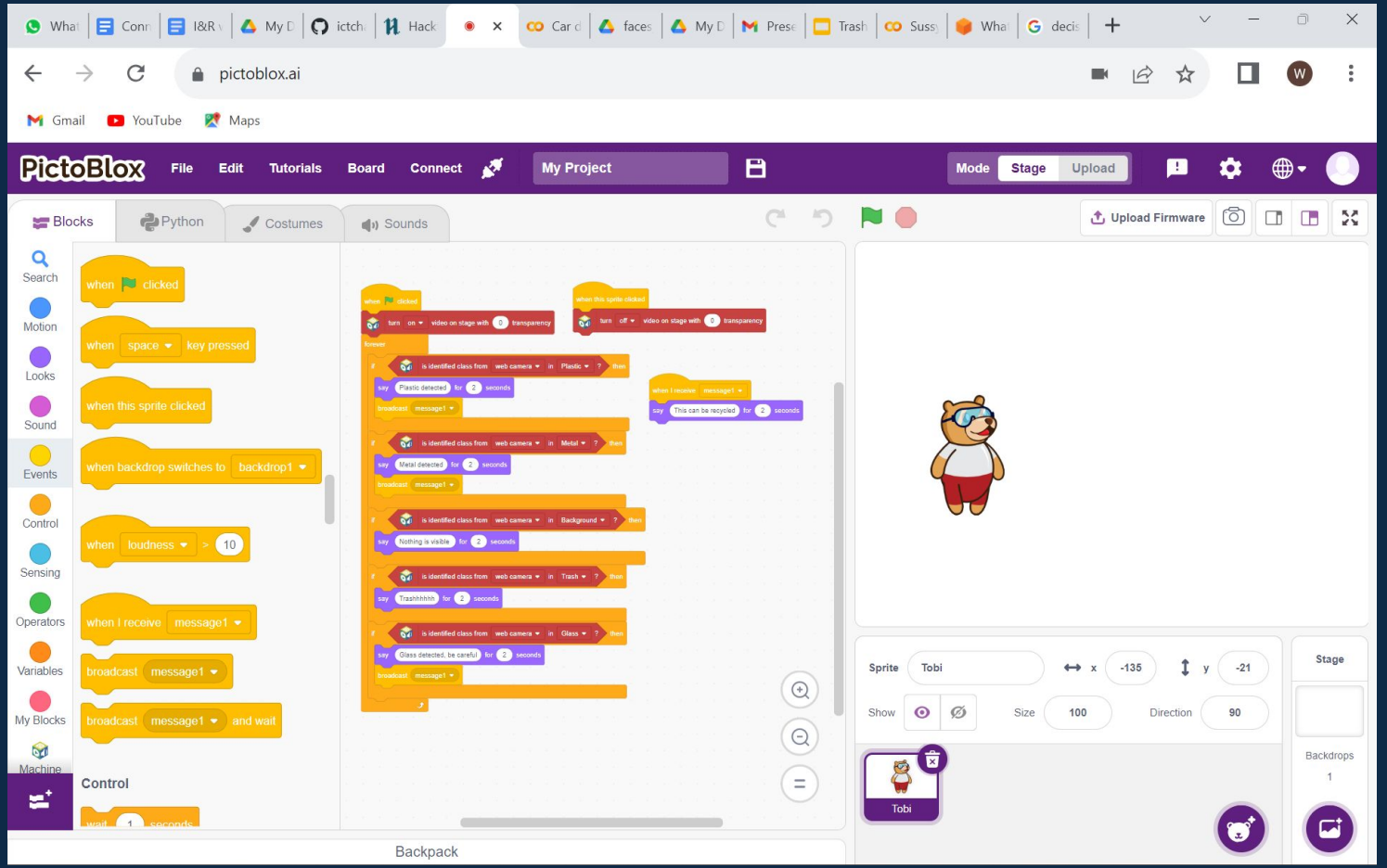
- Detect sus people on our home security
- Allow people to find out their face shape



Design Thinking Factors

- Empathise : It is difficult to tell our own face shape accurately using our eyes
- Define : Design an app that is able to take measurements of your facial features and tell you your face shape , Aesthetics, beauty
- Ideate : Computer vision to take measurements of special facial features
- Prototype: Model can be improved by gathering more data
- Test: Feedback can be given by its accuracy

Thank You!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Upload
Blocks
Python
Costumes
Sounds
Upload Firmware
Search
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Machine
when clicked
when space key pressed
when this sprite clicked
when backdrop switches to backdrop1
when loudness > 10
when I receive message1
broadcast message1
broadcast message1 and wait
Control
wait 1 seconds
Sprite
Tobi
x
-135
y
-21
Show
Size
100
Direction
90
Stage
Backdrops
1
Backpack