CAPSTONE

GENERAL ASSEMBLY

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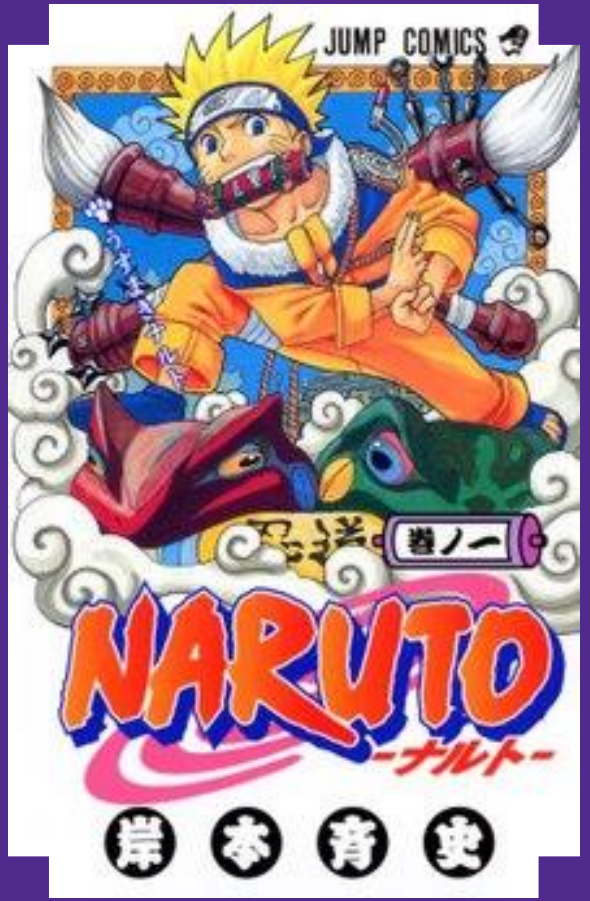
TABLE OF CONTENTS

01.
INTRODUCTION


NARUTO MACHINE LEARNING GAME

WHAT IS NARUTO?



WHAT IS NARUTO?

Authored by Masashi Kishimoto, Naruto is a popular Japanese comic/anime series that follows the tale of young ninja Naruto Uzumaki, who aspires to be recognized by his peers, and become the Hokage (Just as I aspire to be DataGod).

WHO IS SASUKE?

DESCRIPTION

The main character of my game, Sasuke is the last surviving member of his Ninja clan. Dude spent the good-first-half of the series seeking revenge from his brother whom he believes slaughtered his clan and murder their father *#TroubledChildhoodCheck*.

STATUS

Cool	90%
Emo	80%
Daddy Issue	100%

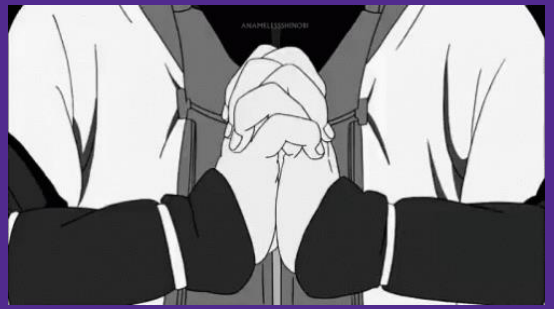
NARUTO OPENCV MACHINE-LEARNING GAME

Plot

This Naruto OpenCV game is a turn-based game which features our best boi Sasuke as the main character. You, as the player, will help Sasuke kick some major bandit butts.

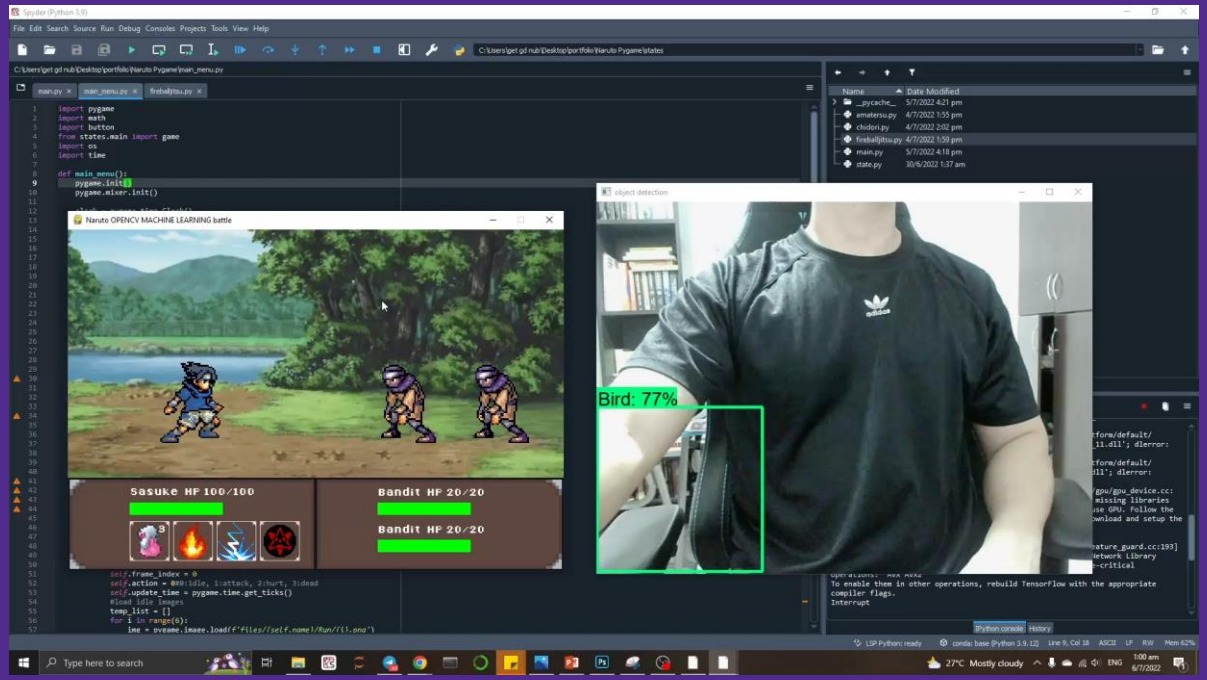
Main Feature

The game uses OpenCV and Machine Learning to allow players to wave ninja handsigns in real life, infront of their webcam, in order to use some of Sasuke's signature ninjitsu in-game.



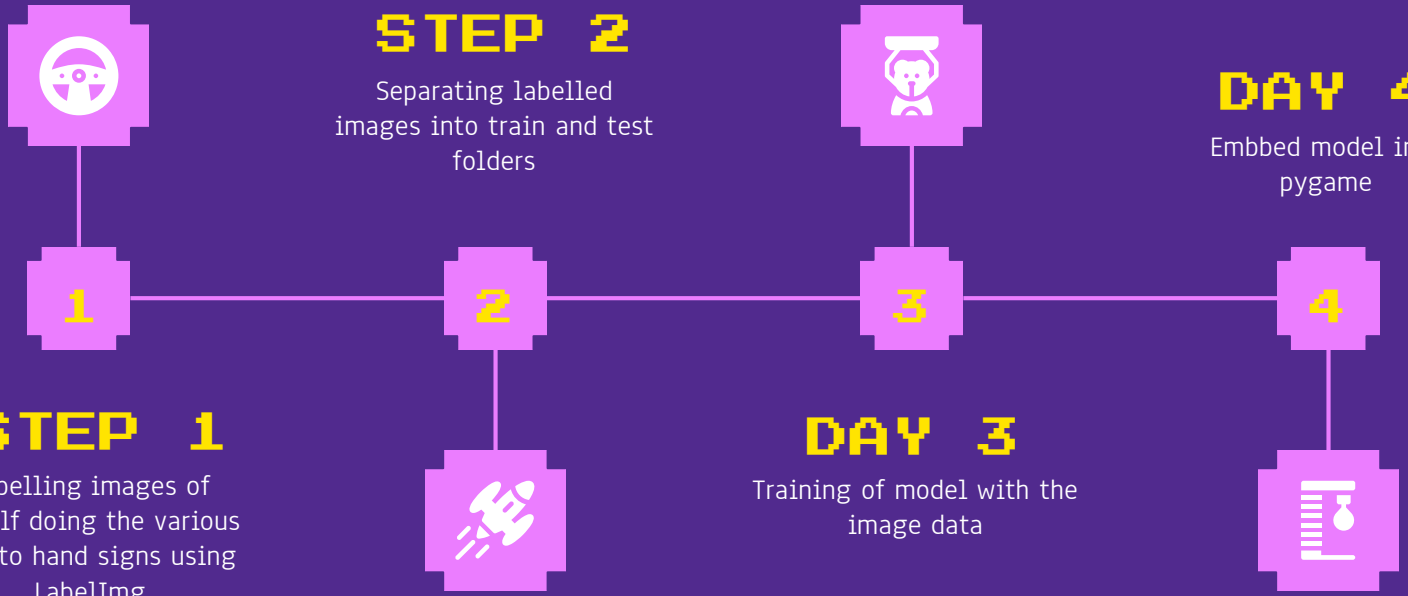
02.
DEMO

VIDEO DEMO


Naruto OPENCV MACHINE LEARNING battle
Sasuke HP 100/100
Bandit HP 20/20
Bandit HP 20/20
object detection
Bird: 77%

03.
PYGAME

HOW IT'S MADE



STEP 1

Labelling images of myself doing the various Naruto hand signs using LabelImg

STEP 2

Separating labelled images into train and test folders

DAY 3

Training of model with the image data

DAY 4

Embbed model into pygame

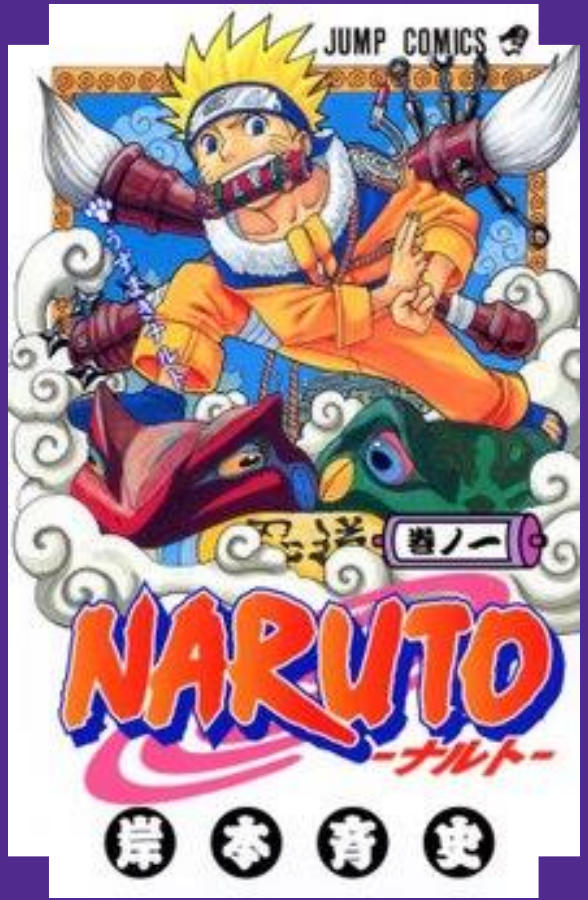
CODING ON PYGAME

1. `def main_menu()`
2. `def main_game()`
3. `def jitsu_mode1()`
   `def jitsu_mode2()`
   `def jitsu_mode3()`

04.
MODEL

SSD MOBILENET V2

Single-stage object detection mobilenet V2 is a one-stage object detection model that uses image pixels and bunding box coordinates to class proabilities. It is a widely used model with great accuracy performance on low compute machines, such as mobile phones, and thus the name Mobilenet.



MODELLING PROCESS

Train Data

Test Data

Model Training

Train model with train data using transfer learning

Prediction in OpenCV

Embbed trained model into OpenCV for Realtime Object-dection

05.
LIMITATIONS & FUTUREWORK

LIMITATIONS & FUTUREWORK

CURRENT LIMITATIONS

Accuracy of object_detection drops when wearing shirt other then white and black

S

W

FUTURE FIX

Webcam feed can be masked with background subtraction to feed only black and white images for model training

CURRENT LIMITATIONS

Accuracy of object_detection drops when face is shown on the webcam feed

O

T

FUTURE FIX

google mediapipe line can be used to track poses on hand, extract them, and identify different hand gestures with simple logics codes

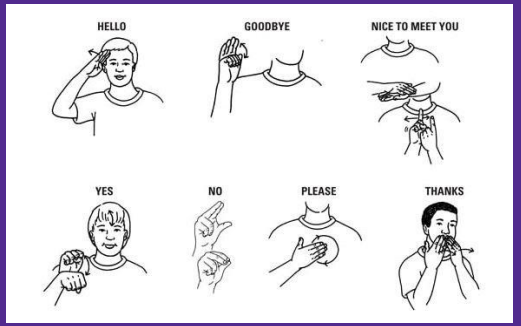
06.

FUTURE IMPLICATION

COMPUTER VISION & MACHINE LEARNING

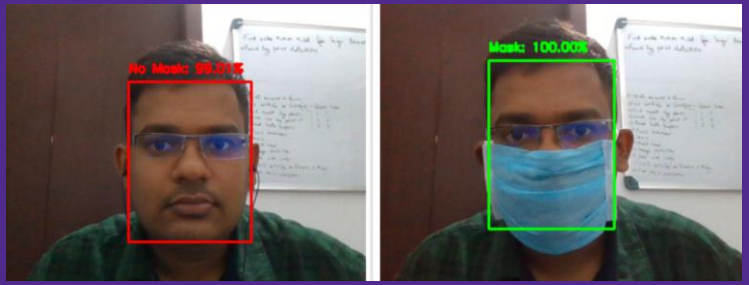
SIGN LANGUAGE TRANSLATION

Detect sign language input and translate them into english

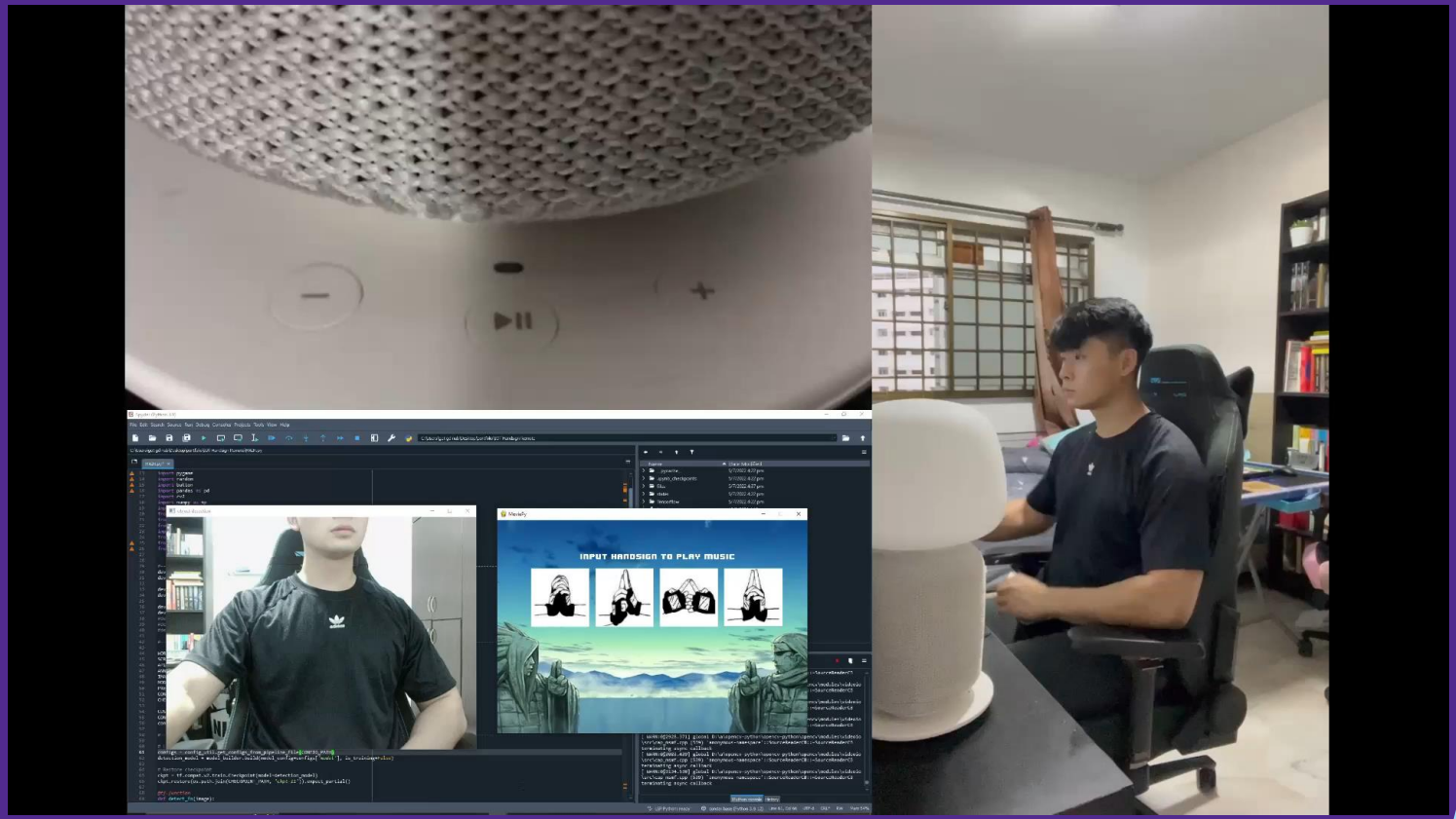


MASK DETECTION

Detect whether someone is wearing a mask or not



IOT HAND GESTURE REMOTE CONTROL



THANKS!

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Acknowledgements:

1. Nicholas Renotte - Tensorflow Object Detection in 5 hours
2. Learning with Rev - Transfer Learning Mobilenet V2
3. Khush Patel - Custom Object Detection using TensorFlow
4. Jon Fincher - Pygame A Primer on Game
5. CodersLegacy - Python pygame The Full Tutorial
6. Ronald - @seerlight

CREDITS: This presentation template was created by Slidesgo, including icons by Flaticon, infographics and images by Freepik