Intelligent Sorting Hat

Team 21

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Contents

01

Problem

Problem

Problem

Given a **drawing**, the sorting hat will assign you to a Hogwarts House !!

- Lions, tigers to Gryffindor
- Snakes, snails to Slytherin
- Birds, owls, parrots to Ravenclaw
- Raccoons, squirrels to Hufflepuff
- Skulls to ?

Dataset :
https://quickdraw.withgoogle.com/data

Gryffindor

Slytherin

Ravenclaw

Hufflepuff

?

02

Data Deformation

Data Deformation

```
affine = transforms.Compose(
    [transforms.RandomAffine(degrees=(-50, 50), translate=(0.3, 0.3), scale=(0.8, 1.2), fillcolor=(255, 255, 255))])
```

Affine :

1. Rotate
2. Translate
3. Scale

3 datasets, 3 CNNs

290 291 292 293 294 295 296 297 298

94 93 92 91 90

190 191 192 193 194

Before

After

390 391 392 393 394 395 396 397 398

03

Model

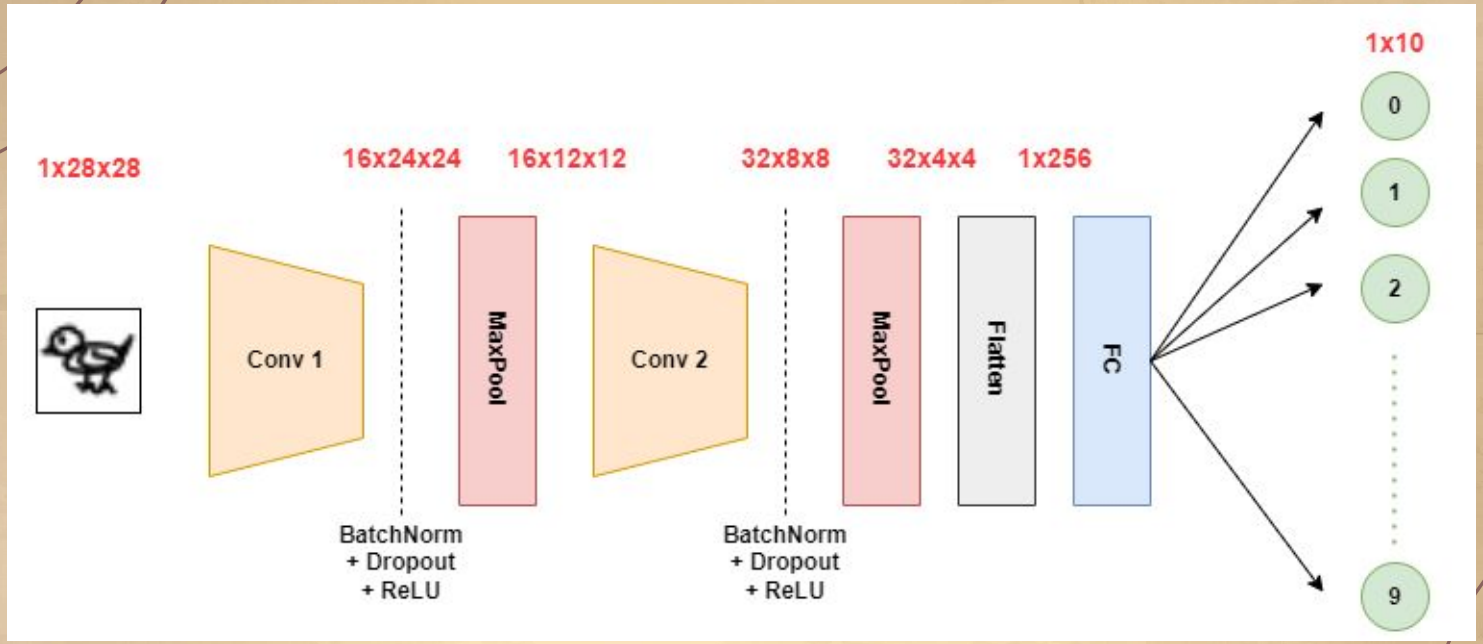
Experiments

1. CNN
2. DNN
3. ResNet-18

Experiments

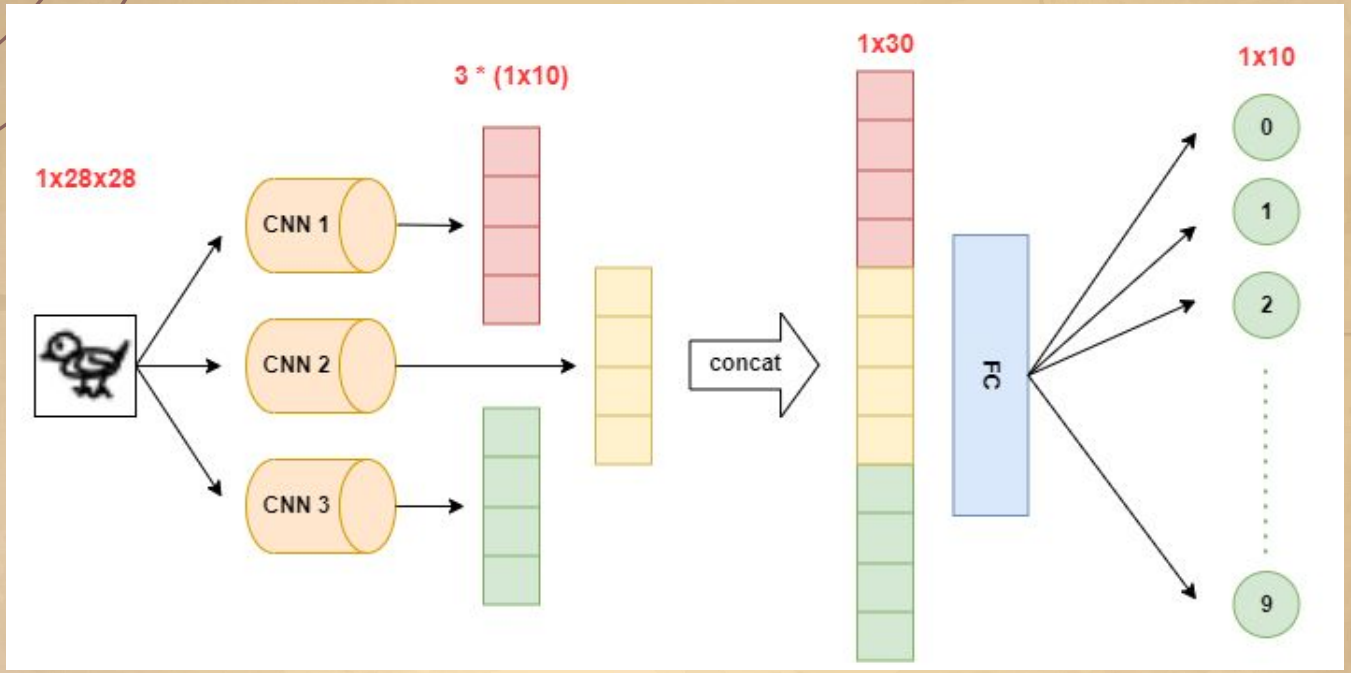
1. CNN
2. DNN
3. ResNet-18

CNN



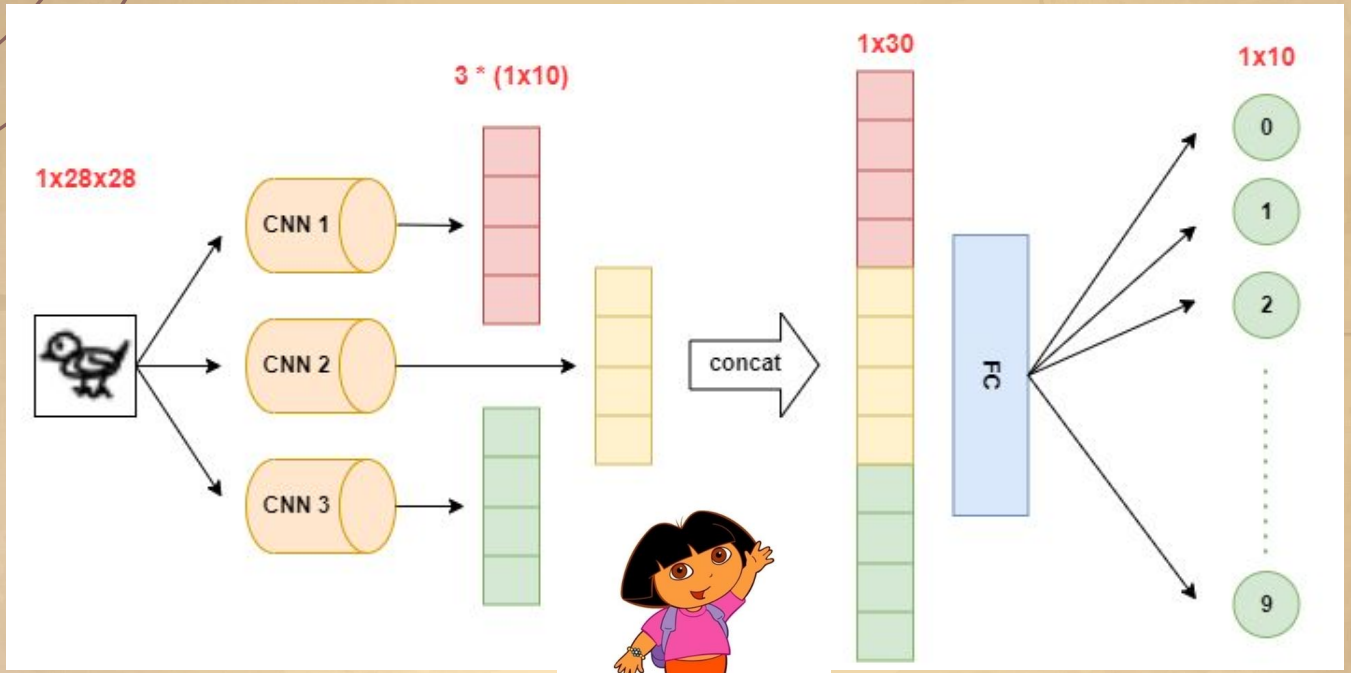
Validation Acc : 85.44%

Ensemble



Validation Acc : 88.94%

Ensemble

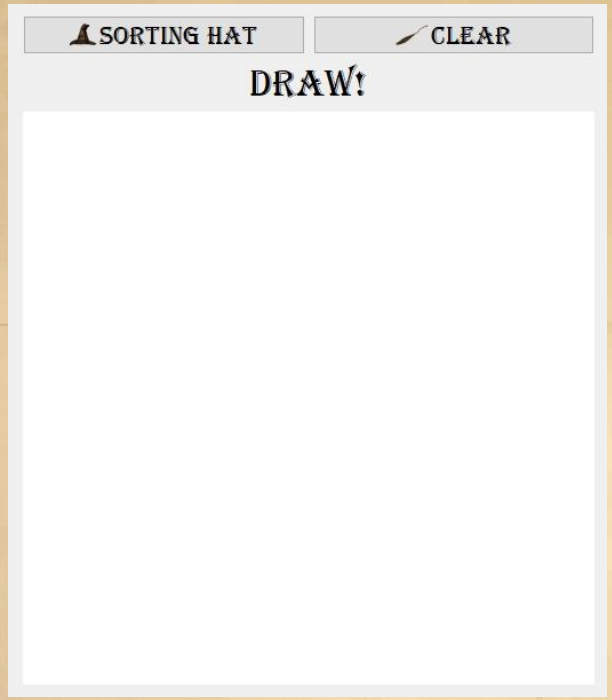


Validation Acc : 88.94%

04

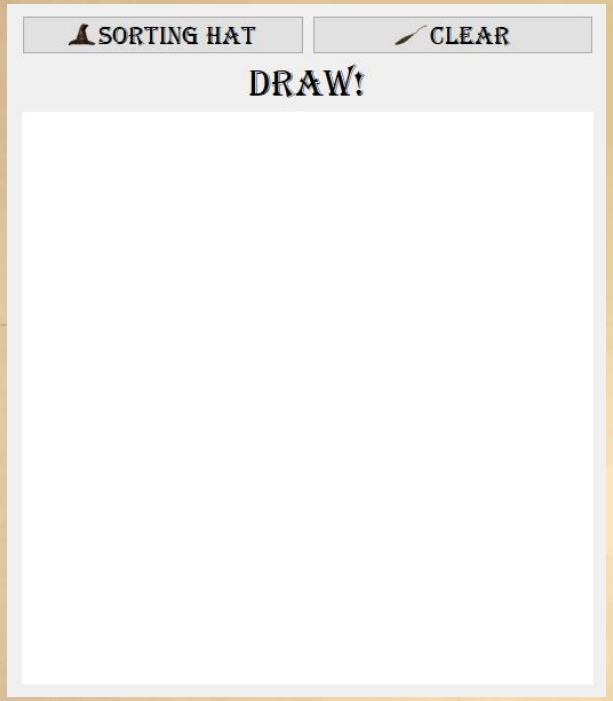
Front-end using PyQt5

Appearance



- QWidget()
- QPushButton()
- QLabel()
- QIcon()
- QFont()
- setStyleSheet()

Drawer



1. Mouse press - Start a path drawing
2. Mouse move - Draw and save the path
3. Save image - Make prediction
4. Clear image - Clear the drawer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DEMO

Contribution

- Data preprocessing / Front-end design : 羅子涵
- Model construction : 葉晨

Thanks!

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