

# Free-hand Sketch Recognition

TalentSprint

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# Description

- ▶ Provides web interface for drawing
- ▶ Captures the image
- ▶ Recognizes the object using CNN

# Challenges

- ▶ Large intraclass deformations
- ▶ Less detailed
- ▶ Sketch orientation

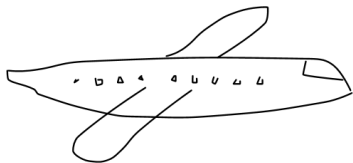
# Tech Stack

- ▶ Framework
  - ▶ Django
- ▶ Environment
  - ▶ Google colab
- ▶ Frontend
  - ▶ HTML, CSS, JS
- ▶ Backend
  - ▶ Python
- ▶ Modules
  - ▶ OpenCV, Keras(Imagenet, LeNet, ResNet)

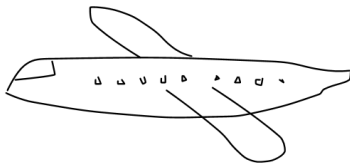
- ▶ TU Berlin dataset (20000 samples - 250 classes)
- ▶ Research papers
- ▶ Django overview

- ▶ Image augmentation
  - ▶ Mirroring
  - ▶ Erosion
  - ▶ Rotation
  - ▶ Shifting
  - ▶ Scaling

# Implementation: Mirroring



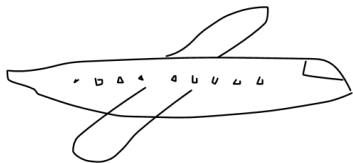
**Figure:** Original image



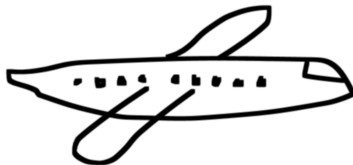
**Figure:** Mirrored image



# Implementation: Erosion

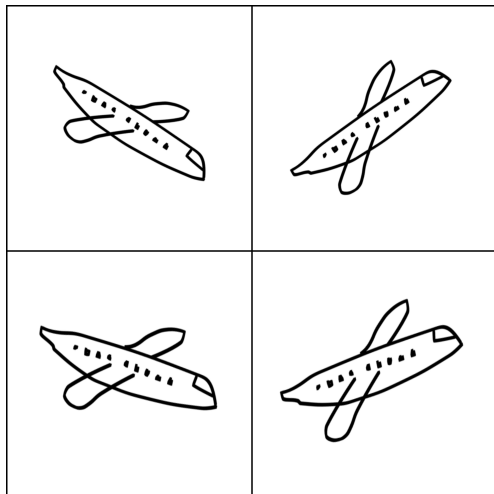


**Figure:** Original image



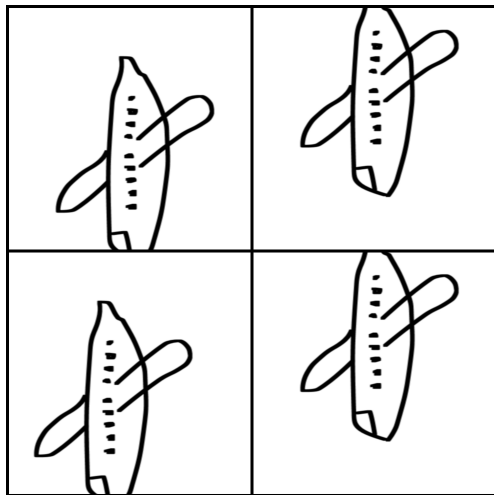
**Figure:** Image after erosion

# Implementation: Rotation



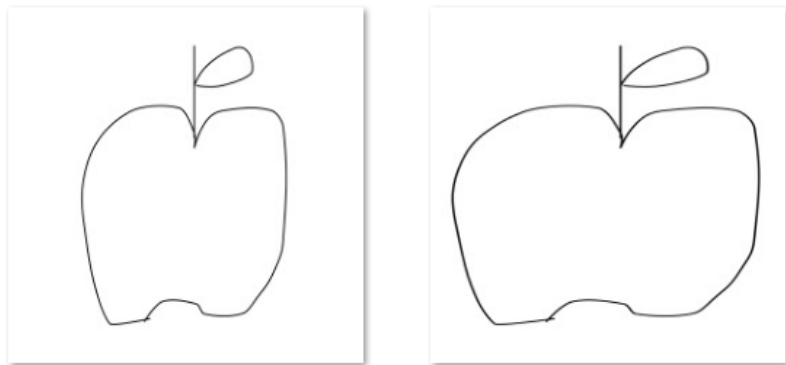
**Figure:** Rotated images

# Implementation: Shifting



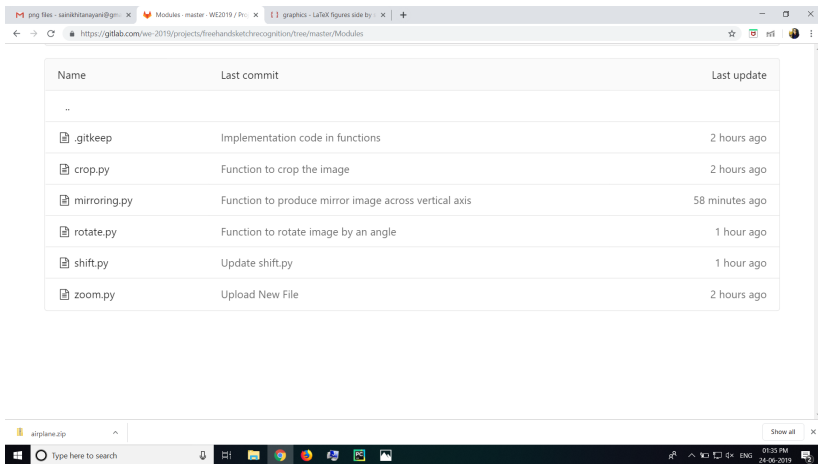
**Figure:** Shifted images

# Implementation: Scaling









**Figure:** Scaling of image

# Implementation: git commits



The screenshot shows a web browser window with multiple tabs. The active tab is titled "Modules - master - WE2019 / Projects" and displays the URL "https://gitlab.com/we-2019/projects/freehandsketchrecognition/tree/master/Modules". Below the browser window, a table lists the commit history for the "Modules" directory. The table has three columns: "Name", "Last commit", and "Last update". The rows show files like ".gitkeep", "crop.py", "mirroring.py", "rotate.py", "shift.py", and "zoom.py", each with a description of the commit and the time since the last update.

| Name   | Last commit   | Last update    |
|--|---|----------------|
| ..   |   |                |
|  .gitkeep     | Implementation code in functions                      | 2 hours ago    |
|  crop.py      | Function to crop the image                            | 2 hours ago    |
|  mirroring.py | Function to produce mirror image across vertical axis | 58 minutes ago |
|  rotate.py    | Function to rotate image by an angle                  | 1 hour ago     |
|  shift.py     | Update shift.py                                       | 1 hour ago     |
|  zoom.py      | Upload New File                                       | 2 hours ago    |

**Figure:** Commits

# Implementation: git issues

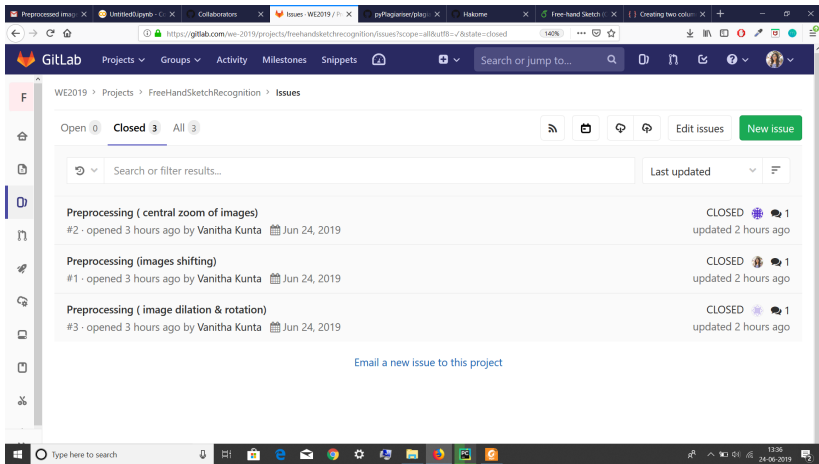


Figure: Issues

# Project Plan

- ▶ Image Processing (3 days)
- ▶ Neural Networks (5 days)
- ▶ Front end development (2 days)
- ▶ Integration and improve accuracy (week3)

# Discussions