Machine Project Proposal

Jadie | Lopez | Ponce
STINTSY S14

Outline

- Task and Description
- The Dataset and its information
- (planned) Machine learning models to be used

Description of the Task

- Task Category: **Image Classification**
  - *to associate a **label** with a given image*
- Classify an image according to:

if it contains...

tom only

jerry only

both tom and jerry

no tom and jerry

images from Kaggle (https://www.kaggle.com/datasets/balabaskar/tom-and-jerry-image-classification)

The Dataset

Tom and Jerry Image Classification

- Dataset containing images from various episodes of the famous cartoon show, Tom and Jerry.
- Currently contains **5478** images (instances).
  - **1930** images wherein only **Tom** is present.
  - **1240** images wherein only **Jerry** is present.
  - **780** images wherein both **Tom** and **Jerry** are present.
  - **1528** images wherein **neither** of them are present.

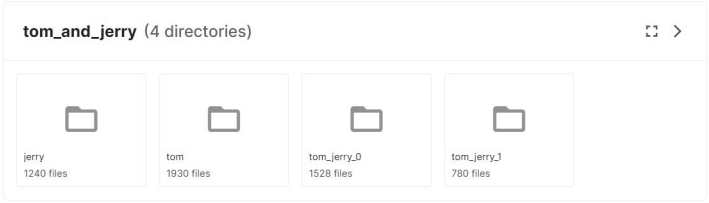
Source: Kaggle
https://www.kaggle.com/datasets/balabaskar/tom-and-jerry-image-classification

The Dataset

Tom and Jerry Image Classification

From Kaggle:

- The images are already separated and placed into sub-folders which are also the **labels**.
- A ground truth file is also provided containing the labeled data against each image file for supervised training.



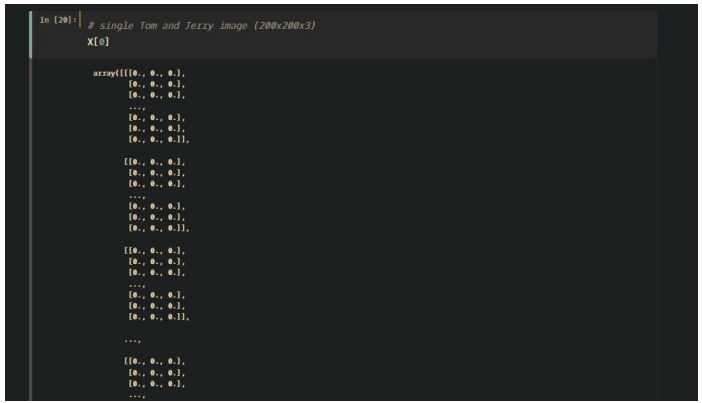
	A	B	C
1	filename	tom	jerry
2	frame0.jpg	0	0
3	frame1.jpg	0	0
4	frame2.jpg	0	0
5	frame3.jpg	0	0
6	frame4.jpg	0	0
7	frame5.jpg	0	0
8	frame6.jpg	0	0
9	frame7.jpg	0	0
10	frame8.jpg	0	0
11	frame9.jpg	0	0
12	frame10.jpg	0	0
13	frame11.jpg	0	0
14	frame12.jpg	0	1
15	frame13.jpg	0	0
16	frame14.jpg	1	0
17	frame15.jpg	1	0
18	frame16.jpg	0	0
19	frame17.jpg	0	1
20	frame18.jpg	1	1
21	frame19.jpg	0	1

The Dataset

Tom and Jerry Image Classification

Features? -> Images

- All images are in JPEG format (1280x720).
  - Resized and converted into 3D NumPy **ndarrays** (200x200x3).
    - Faster training.
  - Data type for each pixel value is **float32**.
    - Values are normalized, scaling them down to 0-1 from 0-255.
      - Faster convergence.



(planned) ML Models to be Used

Applicable classification models in STINTSY:

- k-Nearest Neighbors
- (Multinomial) Logistic Regression
- Neural Networks
- Naive Bayes*
- Decision Trees*

*yet to be discussed in STINTSY

(planned) ML Models to be Used

Applicable classification models in STINTSY:

- k-Nearest Neighbors
- (Multinomial) Logistic Regression
- **Neural Networks**
- Naive Bayes*
- Decision Trees*

*yet to be discussed in STINTSY

Machine Project Proposal

Jadie | Lopez | Ponce
STINTSY S14