Movie Genre Classification

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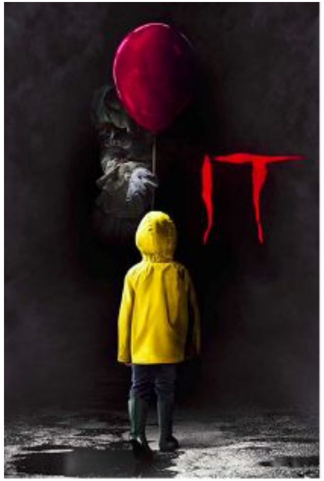
LUCK HAS NOTHING TO DO WITH IT.
lucky number slevin
PULP FICTION
LÉON
UN FILM DE
JEAN RENO GARY OLDMAN
GO FOR THE KILL
KILL BILL
THE FOURTH FILM BY QUENTIN TARANTINO
tom hanks
saving private ryan
FROM THE VISIONARY DIRECTOR OF '300'
WATCHMEN
03.06.09
PANS LABYRINTH
GARY OLDMAN
BRUCE WILLIS
MILLA JOVOVICH
THE FIFTH ELEMENT
There is no future without it.
300
LEGEND
MEL GIBSON
BRAVEHEART
OPENS WEDNESDAY, MAY 24
DIE HARD 4.0
WEDNESDAY JULY 4
SEAN CONNERY
DIE LIGA DER AUSSERGEWÖHNLICHEN GENTLEMEN
Vom Regisseur von BLADE
SIN CITY
PITCH BLACK
PLANET DER FINSTERNIS

Problem Statement

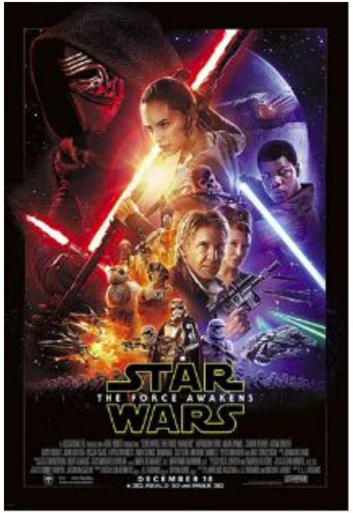
- Multi labeled movie genre classification based on posters analysis, which is achieved through extracting some elements from the poster such as the color, facial expression, objects and many more.



Prediction:

Horror …….........	76%
Action …………...	22%
Documentary ……	2%
Romance ………...	0%

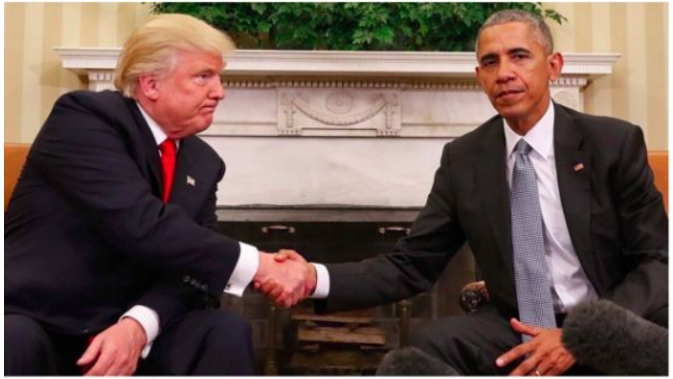
Correct genre: ✓
Horror



Prediction:

Action …………...	85%
Horror …….........	15%
Documentary ……	0%
Romance ………...	0%

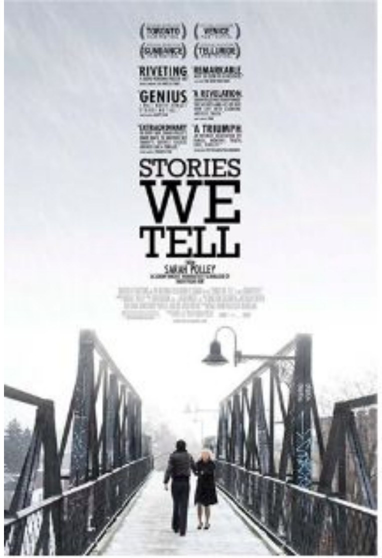
Correct genre: ✓
Action



Prediction:

Documentary ……	96%
Romance ………...	3%
Horror …….........	1%
Action …………...	0%

Close enough? ✓
Yes



Prediction:

Romance ………...	49%
Documentary ……	19%
Action …………...	17%
Horror …….........	15%

Correct genre: ✗
Documentary

Related Work

- Multi-labeled K-nearest neighbours (2 different papers)
    - First model (34.28%): 40 NN model to predict 20 genres
    - Second model (57%): {GIST, DC, local dominant color, and CM} features to classify 18 genres.
- Naïve Bayes (70%)
    - Convert multi-labeled data into single labeled data.
    - 18 genre using GIST features and dominant color features.
- RAKEL (Random k label set - 2^n)
    - 33% precision and 32% recall

Related Work

- CNN VGG net (50.5%)
  - 4 genres only, Very precise
- CNN YOLO (18.73%)
  - 7 layers CNN with 3 fully connected.
  - Using data augmentation and predicting 23 genre.
- CNN ResNet34 (90%)
  - 28,000 posters and 20 different genres

Proposed solution

We used the model proposed by state of the art paper, which is pretrained ResNet34 to predict 20 different movie genre.

Problems we are solving :

- Solving the problem of unbalanced dataset by collecting the top 1000 most popular movies in each genre.
- We will also try to improve model accuracy by changing the structure or the parameters of the model.

Progress report on deploying the original model

- Paper implementation - worst code I have seen in my life!
  - Try to understand/deploy it - No luck :(
  - Alternatives - Alter another code

- ResNet34 is not supported on keras!
  - Alternatives - found API with models trained on imagenet

Progress report on deploying the original model

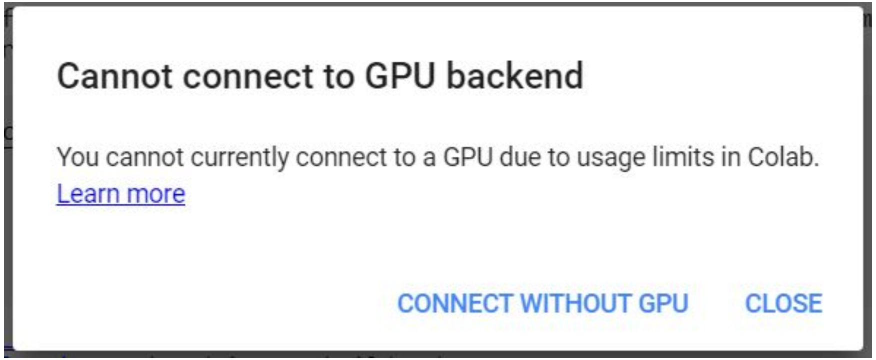
- Dataset 11k images downloaded
    - 25 epoch
    - Reached accuracy 45%

- Dataset 45k images downloaded
    - Took longer than expected

Progress report on deploying the original model

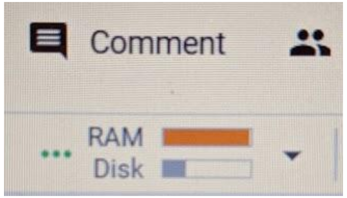
- Training Model
  - More problems to fix

Problems encountered



Cannot connect to GPU backend

You cannot currently connect to a GPU due to usage limits in Colab. Learn more



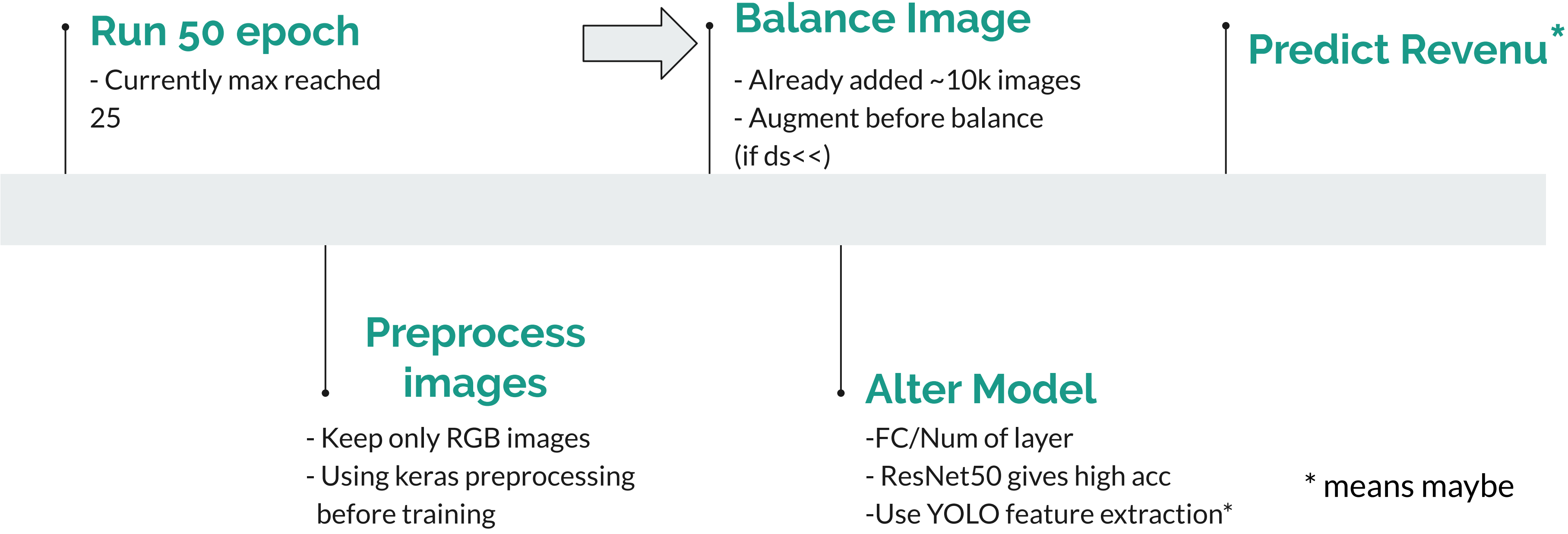
Current progress on proposed solution

- Added ~10k images to facilitate balancing the dataset
- Developed a way to balance data
- Updating model (not yet)

Initial results

- Still running epochs
- Result obtained so far from training the model on 3 splits of the data is 63.47% training accuracy

Next steps and timeline for the rest of the project.



Run 50 epoch

- Currently max reached 25

Preprocess images

- Keep only RGB images
- Using keras preprocessing before training

Balance Image

- Already added ~10k images
- Augment before balance (if ds<<)

Alter Model

-FC/Num of layer

- ResNet50 gives high acc

-Use YOLO feature extraction*

Predict Revenu*

* means maybe