From Pixels to Pixar: Movie Recognition with YOLOv5

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Project Overview

- In this project i used the YOLOv5, a deep learning model of image recognition.

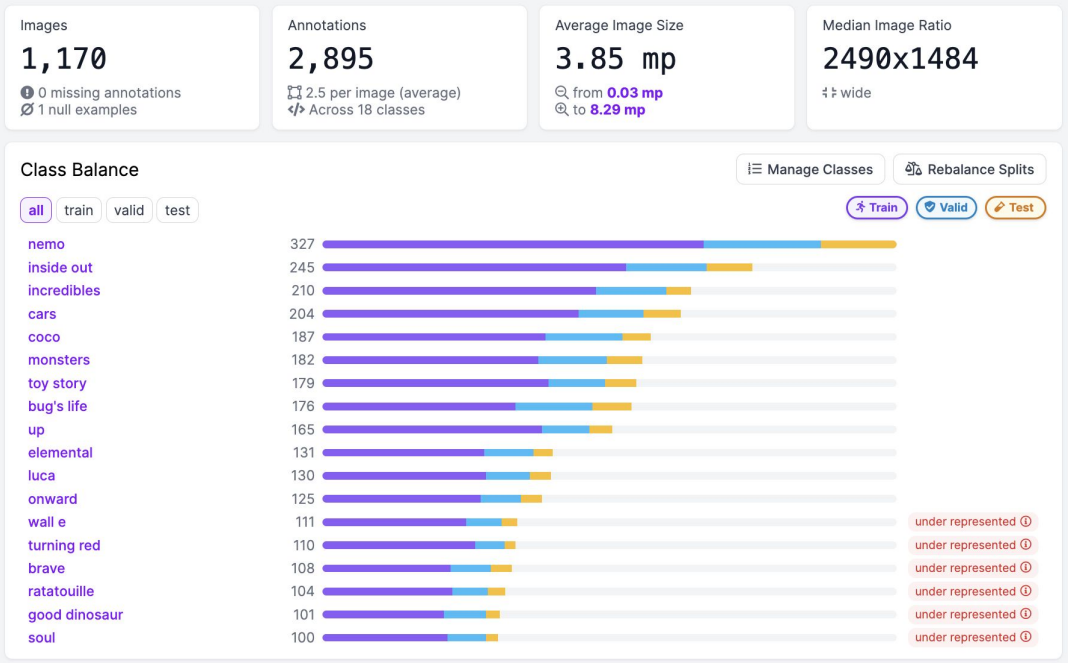
- I create a dataset of 1170 images of pixar movies, divided in 18 classes (each class correspond to a different pixar movie, 65 images per film). For that purpose i used Roboflow where all the images were labeled in the different classes.

- Then this dataset was divided by 3 (70% for training, 20% for testing and 10% for validation)

Features in YOLOv5

Features:

- Img size: 640x640
- Batch: 16
- Epoch: 75



Results

Class	Images	Instances	P	R	mAP50	
all	231	571	0.808	0.77	0.808	0.596
brave	231	23	0.894	0.735	0.834	0.661
bug-s life	231	44	0.738	0.705	0.763	0.476
cars	231	37	0.81	0.808	0.803	0.687
coco	231	44	0.586	0.455	0.519	0.332
elemental	231	23	0.752	0.739	0.797	0.652
good dinosaur	231	24	0.865	0.875	0.928	0.649
incredibles	231	40	0.868	0.95	0.947	0.709
inside out	231	46	0.904	0.87	0.904	0.699
luca	231	25	0.742	0.68	0.715	0.526
monsters	231	39	0.971	0.87	0.928	0.7
nemo	231	67	0.795	0.746	0.802	0.634
onward	231	21	0.818	0.905	0.909	0.507
ratatouille	231	20	0.811	0.55	0.677	0.462
soul	231	22	0.853	0.793	0.819	0.646
toy story	231	32	0.614	0.719	0.745	0.537
turning red	231	17	0.77	0.824	0.759	0.598
up	231	27	0.763	0.833	0.858	0.603
wall e	231	20	0.982	0.8	0.833	0.651

Difficulties and Improvements

Difficulties:

- Understanding the model, how to use it and his behavior
- Data gathering and preparation
- Hardware requirements

Improvements:

- More data and rebalance the dataset
- Run the model with more epochs for better results
- Improve the live recognition features

Streamlit

URL