Car Color Classification Neural Net

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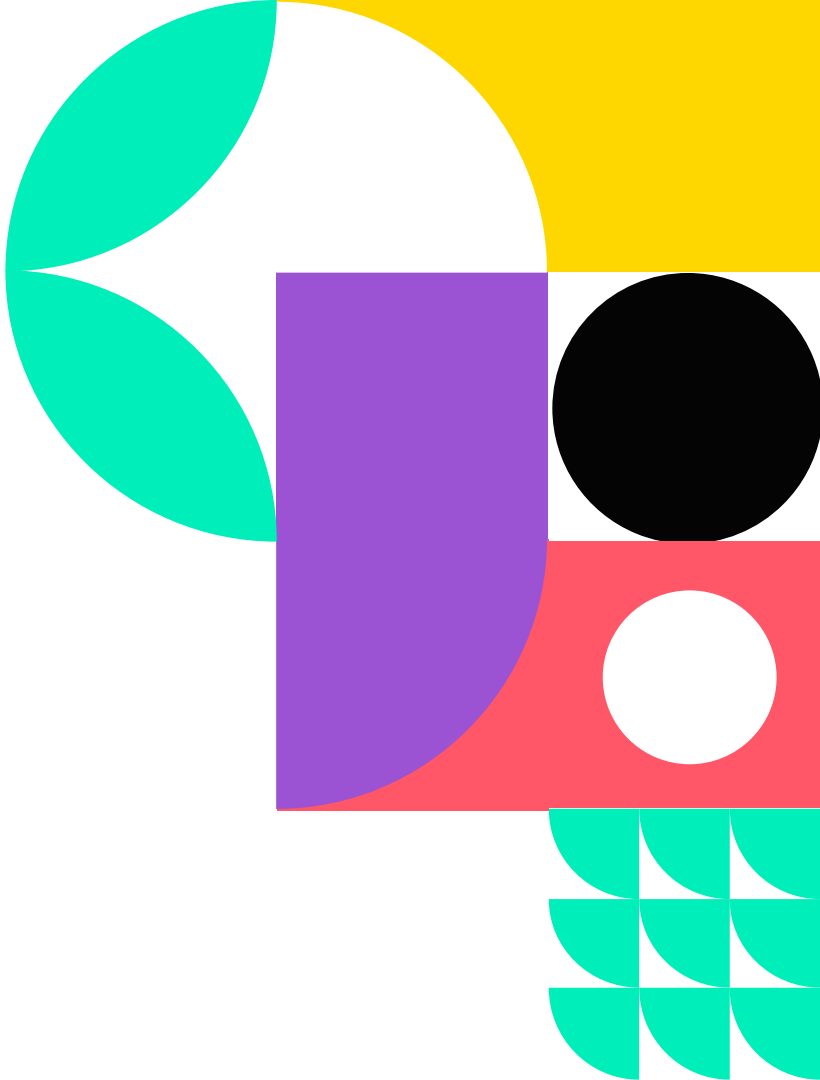
Colors



What color is this car?

What color is this car?

What color are these cars?

Background

Determining paint color is difficult...

Neural Network models can be trained to recognize color.

Image classification models are used in:

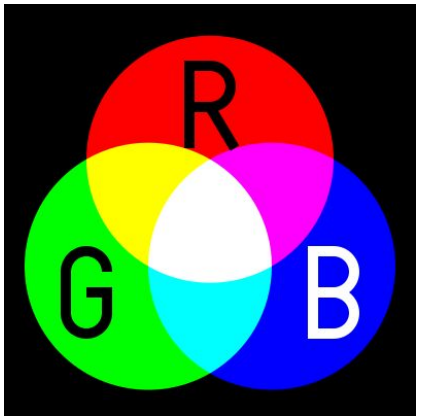
- ITS (Intelligent Traffic Systems)
- Telsa Autopilot
- This capstone project!

How can we convert visual paint into digital data?

RGB COLORS

(Red, Green, Blue)

(0,0,0) to
(255,255,255)



02

Methodology

Where’s the Data?

01

Cars

~16,000 images of cars:
~8,000 for train
~8,000 for test

02

Colors

>200 colors with RGB values

ColorThief Categorizing Data

Dominant Color

Palette

Ghost (196,195,208)

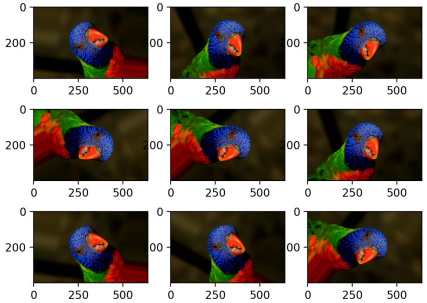
Dominant Color

Palette

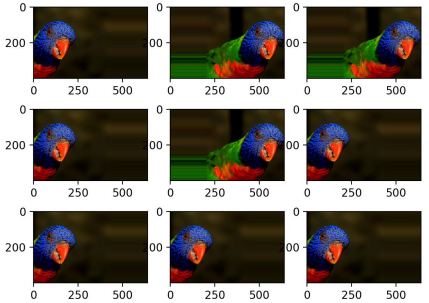
Persimmon (236,88,0)

Image Augmentation

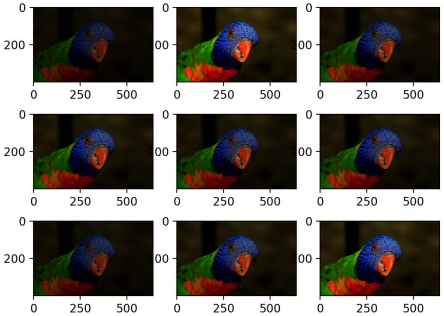
Rotation



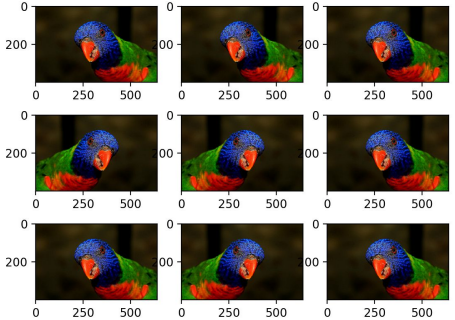
Shift



Brightness



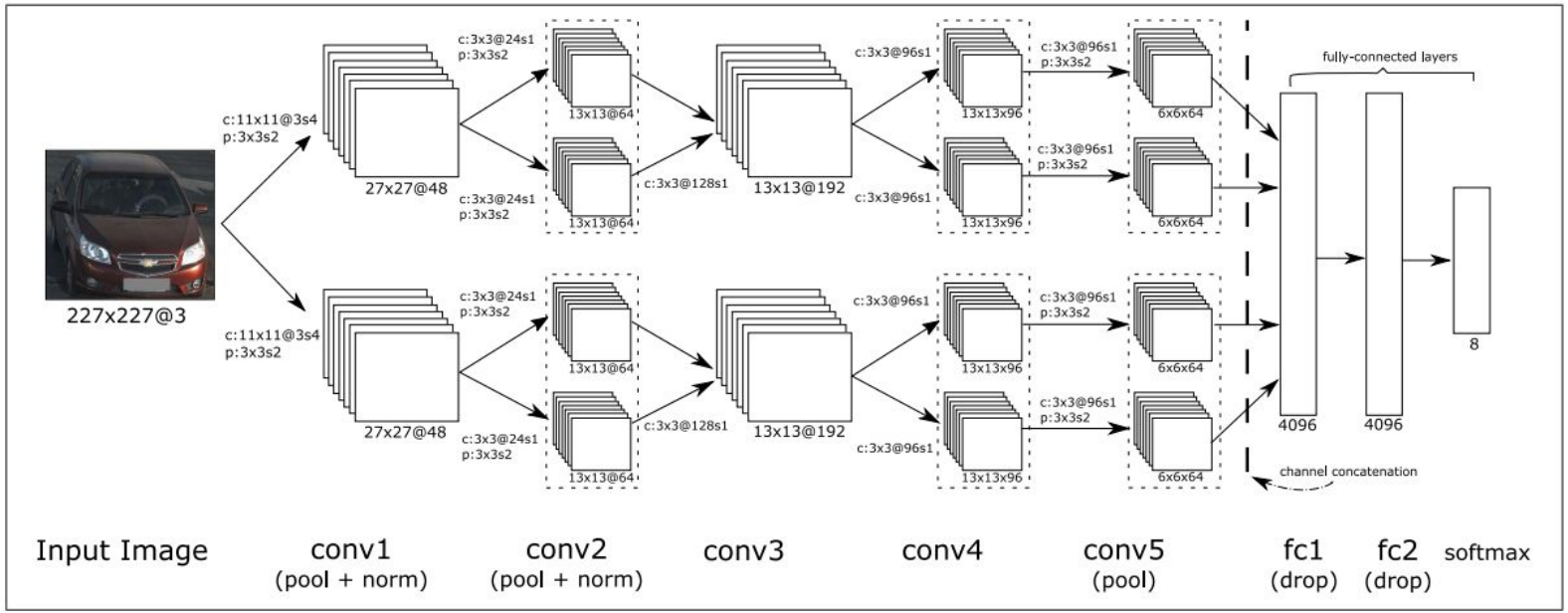
Flip



Convolutional Neural Network

CNN's are popular for image classification.

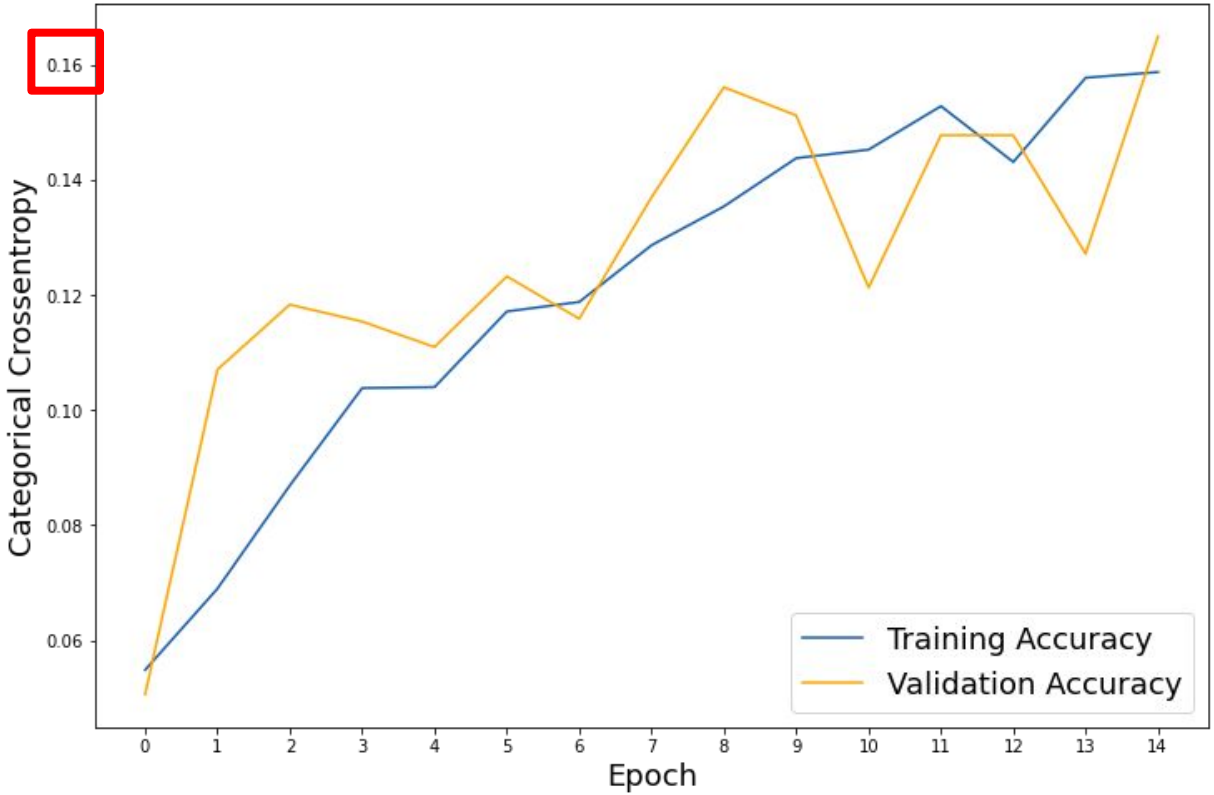
Model Architecture based off original work by Reza Fuad Rachmadi and I Ketut Eddy Purnama. https://arxiv.org/pdf/1510.07391.pdf



03

Conclusions

Accuracy Results



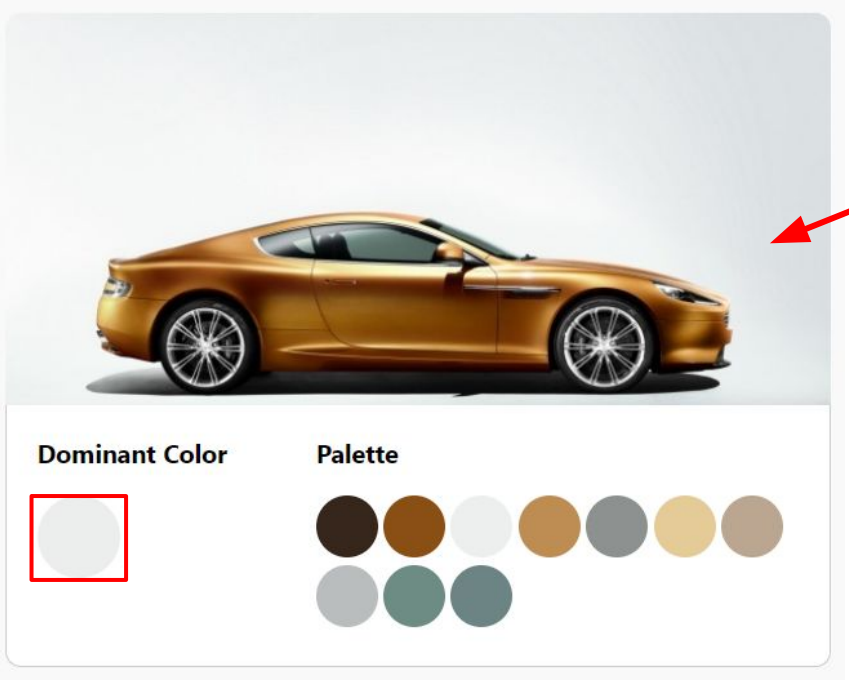
Validation Accuracy:
0.168

Prediction Accuracy:
0.008

Baseline Accuracy:
0.005

What happened?

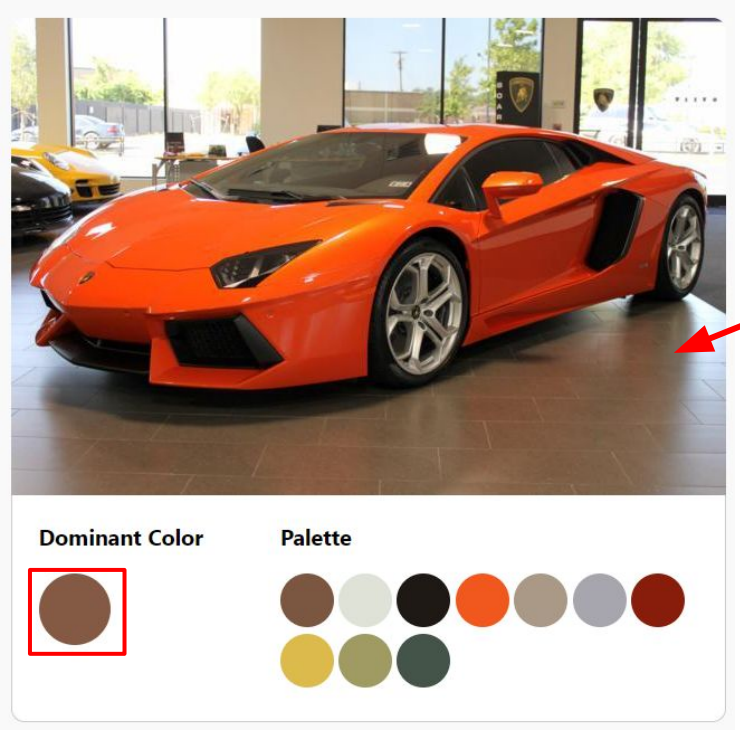
What went wrong: ColorThief



ColorThief:
Isabelline
(244,240,236)

Prediction:
Isabelline
(244,240,236)

What went wrong: ColorThief



ColorThief:
Raw Umber
(130,102,68)

Prediction:
Opera Muave
(183,132,167)

Areas for Improvement

- Reduce number of classes.
- Better pre-process data to reduce noise.
- More image augmentation.
- Replace RGB with other color models (HSV).

Questions?

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