

Machine Learning Project Proposal

Group 125

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Problem statement:

The problem we will be working on is grayscale images colorization, where the input is grayscale images and prediction output is color images.

Approaches

VGG 16 model and VGG 19 model will be used for prediction in this project.

The models will first be trained with a part of the dataset and then used for colorization prediction.

Comparison between two models will be conducted based on the prediction accuracy and time-consuming.

Description of dataset

The dataset is provided by Shravankumar Shetty on Kaggle. It consists of 25,000 224* 224 grayscale and color images. The dataset is .npy files that consist of a and b dimensions of LAB color space images, of the MIRFLICKR25k image dataset. Examples of the images plotted from the dataset is shown with Figure 1.

Starting point

The available VGG 16 model for Keras and VGG 19 model for Keras from Github.

Reference:

1. Baraldi, L., 2016: VGG 19 model for Keras, created Jan 16, 2019, <https://gist.github.com/baraldilorenzo/07d7802847aaad0a35d3>
2. Baraldi, L., 2016: VGG 16 model for Keras, accessed April 13, 2019, <https://gist.github.com/baraldilorenzo/8d096f48a1be4a2d660d>
3. Shetty, S., 2018: Image Colorization, accessed 12 April 2019, <https://www.kaggle.com/shravankumar9892/image-colorization>
4. Simonyan, K., and Zisserman, A., 2015: Very Deep Convolutional Networks for Large-Scale Image Recognition, *Computer Vision and Pattern Recognition*, <https://arxiv.org/abs/1409.1556>
5. Zhang, R., et al., 2016: Colorful image Colorization, *Computer Vision and Pattern Recognition*, <https://arxiv.org/abs/1603.08511>
6. Automatic Colorization, created in January 2016, <https://tinyclouds.org/colorize/>
7. ILSVRC-2014 model (VGG team) with 16 weight layers, <https://gist.github.com/ksimonyan/211839e770f7b538e2d8>

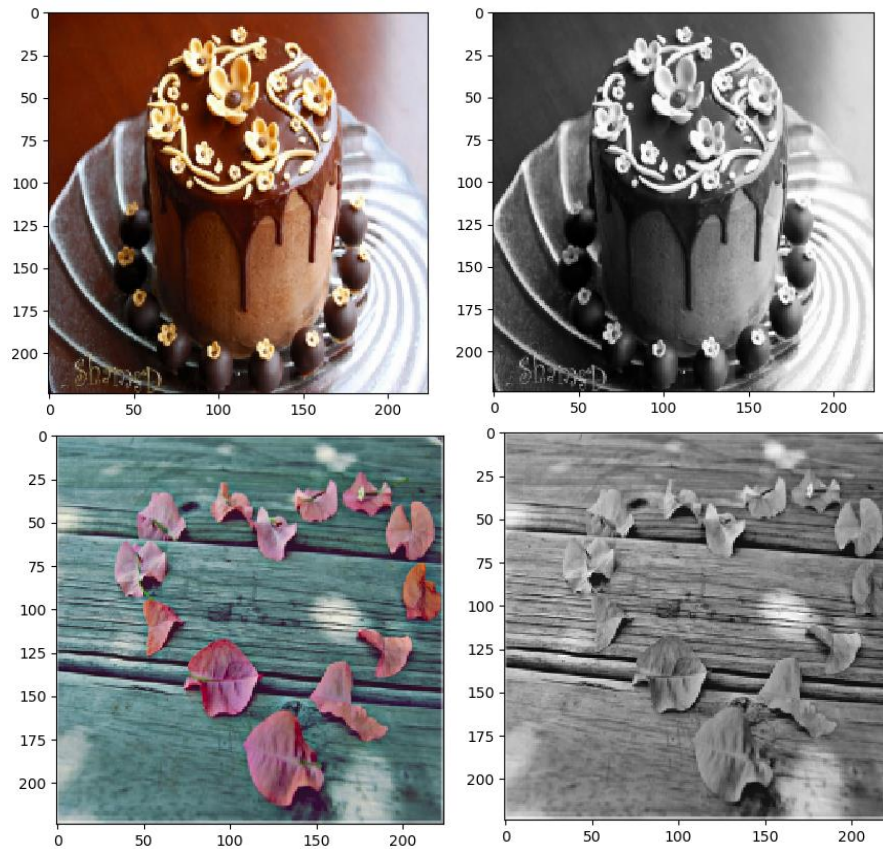


Figure 1. Example of color images and grayscale images.