

# A convolutional classification approach to colorization

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## Abstract

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## Introduction

The problem of colorization is one that comes quickly to mind when thinking about interesting challenges involving pictorial data. Namely, the goal is to build a model that takes the greyscale version of an image (or even an actual “black and white” picture) and outputs its colorized version, as close to the original as possible (or at least realistic, if the original is not in colors). One clear upside to this challenge is that any computer vision dataset, and even any image bank really, is a proper dataset for the colorization problem (the image itself is the model’s expected output, and its greyscale version is the input to the model).

Classical approaches to this task, *e.g.* [1] and [2], aim at predicting an image as close as possible to the ground truth, and notably make use of a simple  $L_2$  loss, which penalizes predictions that fall overall too far from the ground truth. As a consequence, the models trained following such methods usually tend to be very conservative, and to give desaturated, pale results. On the contrary, authors of [3] take another angle and set their objective to be “*plausible* colorization” (and not necessarily *accurate*), which they validate with a large-scale human trial.

Our goal is to reproduce the approach of [3], as we consider the implementation more challenging in the way the loss function and the prediction mechanism are designed, and the results more visually appealing.

If we reach satisfactory results in a timely manner, we will consider tackling the task of colorizing videos, for which, in order to fully take advantage of the input format, will need to incorporate the notion of consistency between consecutive frames in a sequence.

## 1. Related Work

## 2. Methods

## 3. Dataset and Features

## 4. Results and discussion

## 5. Conclusion and perspectives

## Contributions and acknowledgements

## References

- [1] Z. Cheng, Q. Yang, and B. Sheng. Deep colorization. In *Proceedings of the IEEE International Conference on Computer Vision*, pages 415–423, 2015.
- [2] R. Dahl. Automatic colorization. <http://tinyclouds.org/colorize/>, 2016.
- [3] R. Zhang, P. Isola, and A. A. Efros. Colorful image colorization. In *European Conference on Computer Vision*, pages 649–666. Springer, 2016.