

Coloring with Words: Guiding Image Colorization Through Text-based Palette Generation

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Abstract. This paper proposes a novel approach to generate multiple color palettes that reflect the semantics of input text and then colorize a given grayscale image according to the generated color palette. In contrast to existing approaches, our model can understand rich text, whether it is a single word, a phrase, or a sentence, and generate multiple possible palettes from it. For this task, we introduce our manually curated dataset called Palette-and-Text (PAT). Our proposed model called Text2Colors consists of two conditional generative adversarial networks: the text-to-palette generation networks and the palette-based colorization networks. The former captures the semantics of the text input and produce relevant color palettes. The latter colorizes a grayscale image using the generated color palette. Our evaluation results show that people preferred our generated palettes over ground truth palettes and that our model can effectively reflect the given palette when colorizing an image.

Keywords: Color Palette Generation · Image Colorization · Conditional Generative Adversarial Networks.

1 Introduction

Humans can associate certain words with certain colors. The real question is, can machines effectively learn the relationship between color and text? Using text to express colors can allow ample room for creativity, and it would be useful to visualize the colors of a certain semantic concept. For instance, since colors can leave a strong impression on people [19], corporations often decide upon the season's color theme from marketing concepts such as 'passion.' Through text

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