IJITCE

ISSN 2347- 3657

International Journal of Information Technology & Computer Engineering

Email : ijitce.editor@gmail.com or editor@ijitce.com

International Journal of Information Technology & Computer Engineering

ISSN 2347–3657

Volume 12, Issue 1, 2024

PREDICTING EMOTION FROM COLOR PRESENT IN IMAGES AND VIDEO

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ABSTRACT

The goal of this project is to use machine learning techniques to predict behavior based on col ors found in images and video excerpts. The aim of this paper is threefold: (a) to develop a m achine learning algorithm to classify emotions according to the colors present in the image, (b) to select the best algorithm from the first stage and apply it to video excerpts as the color of emotional color. analyzing and (c) creating an online survey to check the accuracy of the tran scribed video. First, three color extraction methods were tested, which were mixing the color into the color of the specified color, assigning the color to the RYB (red, yellow, blue) pattern , and extracting the color histograms contained in the residual image. This is based on the ima ge's information, which contains color and emotional descriptions. Use multiple algorithms fo r classification, including deep learning and artificial intelligence techniques. Then, the result s are obtained in the undifferentiated variable and the training set is given. In the second part, the best performing algorithm from the first stage was used to color the video excerpts accord ing to emotions. This is followed thirdly by an online survey designed to examine the accurac y of respondents' algorithmic descriptions of film material. Additionally, the results obtained were discussed. The conclusion section contains a summary of the results and additional reco mmendations for improving the performance of the developped algorithm.

Introduction

Many things can affect people's emotions when looking at pictures or watching videos; One o f these is the color of the space. This project is designed to create a framework that uses mach ine learning to predict behavior based on colors in images, photos, and video clips. Although the thinking, knowledge, and reasoning resulting from machine learning may be viewed as se parate categories, all of these categories can provide benefits when they interact. Additionally , intelligence is understood as the processes of memory, listening, language, problem solving, and thinking, all of which are related to stateoftheart machine learning algorithms [1] . in the field of application. The lack of a clear definition of emotions causes serious problems in rese arching, modeling and quantifying emotions. In his book "Imagination, Biology and Culture",

ISSN 2347–3657
Volume 12, Issue 1, 2024

Levenson defines emotion as short-
term mental and physical activity that adapts to the changing environment (3). The title of the project is justified by showing the influence of biology and culture on thought. The role of various factors in emotional perception has also been identified. They say evolutionary, anthropological, sociological, biological, physiological, evaluative, biocultural, and even lexical and linguistic theories may be necessary for humans to understand emotions. Many effects. The first experiment conducted by these researchers relied on training two conceptual models using descriptive memory alone. For example, the second experiment used multiple sites to train and test the model. The final prediction for each trial was related to interest, emotion, and control. For this purpose, R2 score (variance) is calculated. The average R2 of music paired with memory was found to have a greater value for each label (fun, emotional, and control). In summary, these authors showed that analysis of viewer responses provides additional information for selestimation without any correlation in VACA [17] . proposed another method for emotional prediction from music and movies [18]. For this purpose, researchers have prepared a new publicly available database called MuVi. The MuVi dataset contains three types of music videos: audiovisual (original music videos), pure music, and visual (only silent videos). These items were derived from expanded versions of the Geneva Mood Music Scale Among the existing colors, red, green, blue and yellow cannot be mixed with other colors [29]. Complementary colors (called binary) are combinations of the following colors:

➞ Green-yellow and light green are combinations of green and yellow,

➞ Orange is a combination of yellow and red,

➞ Magenta or Blood-
colors are combinations of red and yellow. It is the result of the combination of blue,

➞ green-blue and sea blue are colors formed by the mixture of green and blue.

International Journal of Information Technology & Computer Engineering
ISSN 2347–3657
Volume 12, Issue 1, 2024

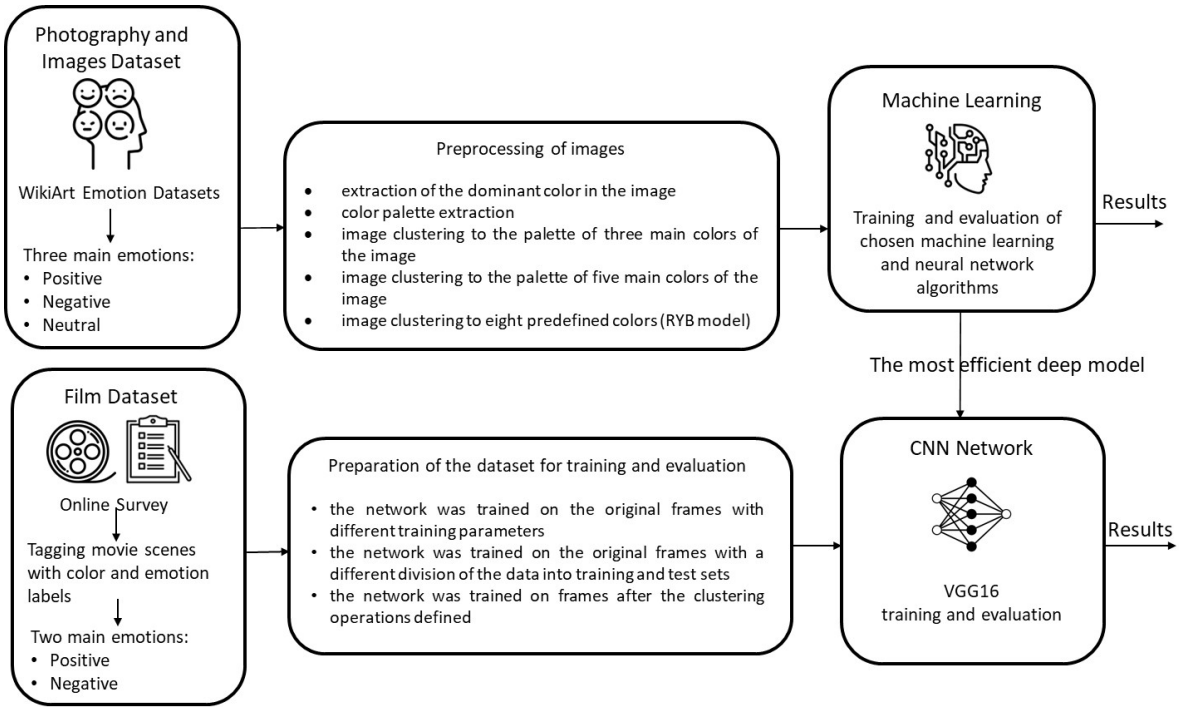

FIGURE 1. Schema of the experimental design.

Unlike colour, saturation (perceived color purity) and brightness (perceived intensity) (as opp osed to colour), i.e. the exact color intensity of the light stimulus, are also ignored in the color scheme [29]. They are also less common in color perception as reviewed [30]. In this context , the question arises as to which features of color are important and which ones should be use d when associating them with thought.

These data were also used by Machajdik and Hanbury [38]. Preparation of image dataPreproc essing must be done before data collection can be used. Image operations include cleaning fil es, cropping images, extracting dominant colors and palettes from images, grouping images b y dominant colors present in the image or predefined dominant colors, and extracting output c olor data using histograms. > Raw description in WikiArt Emotion Library evokes good emot ions after seeing the image presented with the title itself and after seeing the entire artwork (i mage and title). There are 20 different characters in the WikiArt repository. In our research, we aim to introduce quality requirements for three basic groups: good, bad, and average, as s hown in Table I, in order to create a classification with satisfactory performance

Conclusion:

Based on the analysis of the results obtained on WikiArt, it can be concluded that reducing th e information in the image only to colors and their work does not affect the classification resu lts. Additionally, none of the three different groups improved the performance of the algorith

ISSN 2347–3657
Volume 12, Issue 1, 2024

m. Additionally, when evaluating the training of even the best algorithms, it is important to re member that the training is not stable, which may be due to lack of data. Looking at the data, the accuracy of the average image and classification theory will vary depending on many fact ors such as the type of image used for classification, demand forecast, method used for annot ation, algorithm used for classification, etc. and benchmarking. Therefore it is not possible to make a direct comparison. However, in general, image classification and detection accuracy c an be around 50% to 70% or higher, depending on the complexity of the task and the quality of the data. The accuracy of these models can be increased by using different and larger data sets. In general, the results obtained in the study are compatible with the latest technology. He re it is necessary to divide the behavior into two groups. Due to limited data, other simple met hods are also used. Compared to training on an image dataset, clustering to reduce informatio n about colors and their location in the video can improve the performance of the algorithm re gardless of color type. However, combining colors according to the RYB model makes the re sults twice as good as separating them for image palettes. Such results may be due to the corr elation between the colors present in the video excerpts and the emotions recorded .Create an online survey to collect feedback from movie scenes to understand how people react to video clips. The results of this study provide insight into emotions and colors. But the meaning of th e audience's opinion is also clear. In fact, this problem can be solved by increasing the numbe r of observers. In addition, a more comprehensive consideration of the emotional notes of the audience in movie excerpts may help to eliminate inconsistencies caused by the small sample number of participants in the analysis. Another solution is to use videos of less popular works ; Failure to understand the content of video excerpts can leave viewers filled with thoughts fo rmed simply by watching the scenes. In this case, the analysis of the main color will also be more focused and a better relationship will be established between the color and the needs. M odern neuropsychology defines “color cognition” as a science that involves perception and m emory, so there is a connection between mental perception and knowledge/memory. Addition ally, the basis for understanding color dates back to Isaac Newton, who explained in the 17th century that light is colorless and "the waves themselves are colorless." As a result, color nee ds to be seen in our brain. In fact, color perception has attracted the attention of psychologists , especially in relation to emotions and behavior [52]. Thousands of people participated in a 2 020 study that linked color to emotion. Black to represent sadness, white to represent help, re d to represent love, green to represent pride, brown to represent hate, etc. they use. One of tho se who responded with love in brown color. Additionally, some correlations were found by G

onzálezMartín et al. Like the relationship between color and emotion, the color black and fear . Some colors (e.g., red, purple, and blue) are associated with arousal compared to other color combinations [53]. This shows that some colors may have a universal identity, but unity betw een colors and emotions should not be expected. Therefore, we believe that machine learning can identify commonalities of color and emotion and differentiate them based on culture, bac kground, age, personality, color preference, etc. We hope that this process is not universal to humans, depending on the A very interesting idea. Color is not uniform in the observer's emot ional perception [53], so this is another factor in emotional evaluation, especially in movies. Some of these are due to space limitations. Among these, the lack of information in the film's annotated excerpts seems to be the most important. The answermight be to think about video clips of the crowd. In this way, it is possible to better understand how video cls activate emoti ons in peo. Additionally, this data collection method would be more reliable in the context of deep model training without the concern of inconsistent data or model overfitting. Another im portant factor that may affect our findings is related to the definition of behavior, because not all concepts in the dictionary have the same meaning for everyone. Therefore, another task of crowdsourcing can be to find opinions of people. At the same time, the relationship between colors and emotions will be different from what is described. However, the same can be said using internet research. Last but not least, there are many ways to analyze color in film. This i s one of the suggestions that should be made in the future, especially since the transition from color image focus to the color in the film will be problematic. This can be seen as a longterm goal. We also believe that export distribution results may reveal additional challenges releva nt not only to our work but also to further research. Examining the relationship between color s The ideas in the movie quote can be used in many places. Emotion recognition can support automatic recommendations in advertising and marketing, as well as recommendations tailore d to the user's mood. But although discussing the crowd often leads to conflict, this requires a large amount of documentation.

Information in the context of COVID-
19 disease. Sustainability 2022, 14, 12989. , School of Communication and Information. He e arned a bachelor's degree in engineering. He received his doctorate in 2021, during which he developed an app designed to help patients with Alzheimer's and dementia. He received his M.S. He majored in Biomedical Engineering in 2022, specializing in Artificial Intelligence. H is main research interests include computer vision, developing mobile applications, and conn ecting artificial intelligence technologies to everyday tasks. He completed his education in th

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ISSN 2347–3657
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