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IMAGE QUALITY ANALYSIS BASED ON VISUAL FEATURES

This article mainly introduces image quality analysis based on visual features briefly.

INTRODUCTION

The image features refer to certain aspects of image information required for a specific problem in the calculation process in the computer vision and image processing,. Mostly, feature extraction is to operate on the image from the pixel itself. The general information of certain characteristics of the image is extracted and converted into a format to recognize by the computer . The range of feature extraction is diverse: from simple points, lines, to complex areas, from objects, or the entire image.

People can perceive information such as color, texture, shape, motion, etc. The computer processes the image. Software processes this information by extracting corresponding features. Features of perceived visual information are called visual features. The overview will introduce several effective visual feature extraction methods.

1. COLOR FEATURES

Color feature is an overall function to describe the surface properties of the scene corresponding to the image or image area. Widely used methods to express color characteristics are: color histogram, color set, color moment and color correlation diagram.Color histogram is the most often used method to express color features. Color histograms can be based on different color spaces and coordinate systems. The most commonly used color space is the RGB (Red (R), Green (G), Blue (B)) color space, because most digital images are expressed in color space. The following formulas are about how to calculate the RGB color space.

2. TEXTURE FEATURES

Texture feature is also a kind of global feature, which also describes the surface properties of the scene corresponding to the image or image region. However, since texture is only a characteristic of the surface of an object, it cannot fully reflect the essential properties of the object, so it is impossible to obtain high-level image content only by using texture features.

Figure 1 :Texture feature

3. SHAPE FEATURES

The shape of objects and regions is the key basis for humans to recognize objects and scenes, and it is also an important means of describing image content. As one of the fundamental attributes of objects, shape is not affected by color, texture, and illumination changes, and is easy to be captured by human eyes. It is generally believed that only the area surrounded by a closed contour curve has a shape, so the description of the shape must be based on the division of objects or areas in the image.

4. SPATIAL RELATIONSHIP FEATURES

The so-called spatial relationship refers to the mutual spatial position or relative direction relationship between multiple objects segmented in the image. These relationships can also be divided into connection/adjacency relationship, overlapping/overlapping relationship and containment/containment relationship.

CONCLUSION AND FUTURE WORK

This research conducts the visual feature analysis in image quality analysis. It includes color features, texture features, shape features and spatial relationship features. They have a great effect on image analysis. The conducted studies have shown that for more accurate image analysis, it is necessary to combine algorithms and research methods based on color characteristics

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2. 2. Yanmei Li, Related Technology and Application Research of Image Enhancement /Chen Du, 2013,Page 8-12.

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Supervisor, Gourinovitch Alevtina, Associate Professor, PhD in Physics and Mathematics, the Belarusian State University of I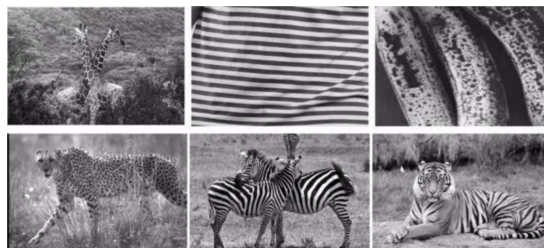nformatics and Radioelectronics gurinovich@bsuir.by.