

DSPC Tutorial A Research Paper Outline

Title

An Introduction to Digital Image Processing

Group Members

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Descript of DSPC Technology

Digital image processing is the two-dimensional application of digital signal processing. It commonly uses FFT, DCT and other transforms such as Walsh-Hadamard Transform to solve problems in digital image processing. It will be more complicated than DSPC but will be useful to our study of DSPC.

Context of DSPC Technology

The principal objective of our research paper is focused on two aspects:

1. Digital image transforms:

Transform theory has played a key role in digital signal processing, it is also very important to digital image processing. Two-dimensional transforms are widely used in image enhancement, restoration, encoding and description.

2. Digital image enhancement:

Digital image enhancement is to process digital images through some transforms so that the results are more suitable for some specific applications. So our research will focus on some certain applications, which, however, may be not the best methods of image processing under other conditions.

Technical aspect/related theory

2-D FT, FFT, DCT and other transforms are very useful to digital image processing. Other theories such as matrix calculation and histogram also play an important role in the process of digital image.

Project tasks/outcomes

1. Introduce the two-dimensional Fourier transform in detail, including its definition, properties and applications.
2. Definition and application of FFT and DCT.
3. Overview of Walsh-Hadamard Transform
4. Application of the image enhancement
5. Try to use Matlab to realize all the results.

Group Responsibility

Not specific at this moment. Deng will make the presentation at the end of this course.

Key Reference

Digital Image Processing. Rafael C. Gonzalez; Paul Wintz; Addison-Wesley Publishing Company. 1977