STUDY ON CONVOLUTION AND DISPLACEMENT FILTERS TO IMPLEMENT AND DEVELOP AN IMAGE MANIPULATION APPLICATION USING GDI+

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ABSTRACT

Image processing is the art and science of manipulating digital images or techniques for representing visual information digitally, and for manipulating those representations with software. The field of Image Processing and Computer Vision has been growing at a fast pace. Both are developing so quickly in the concept and techniques. Image processing is applied in the multimedia field to medical imaging. With the development of IT filed including the hardware, the image processing area become wider. Before 1988 it impossible to do such image processing in our home base computer. But nowadays computer become faster and powerful, thus imagine processing concept can be implemented widely by many people.

Chapter 1 mainly focuses on the brief review about general concept of the image processing and imagines types. Two types of images (vector and raster) are being conversed here. The author explained about file size, resolution, and bit depth and color space.

Chapter 2, GDI+ concept is clearly described here. The three main structures in GDI+ and also the structure of the classes are interpreted in this computer.

Chapter 3 introduces the image file formats. Another thing that included here is the platform dependent format and platform independent format.

Chapter 4 talk about the basic techniques (invert and grayscale) convolution filters (edge detection, blur and sharp). Formula of each filter described here and also how actually the formula can affect the image.

Chapter 5, the basic of the imagine transformation is concentrated first before the specific filters are explained. The image transformation (flip, rotation, scaling, shear and translation, affine) and the displacement filter (jitter, twirl, water) explanation also included.

Chapter 6 investigates about the programming tools. This chapter also makes some short overview and compares some of the famous programming tools) VB and C++) with C#.

Chapter 7 converses the DFD, UML and Flow chart that has been constructed to build the system.

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Chapter 8 concentrates about the coding part. First, the author introduces about the basic filtering (invert and grayscale). Secondly, the author focuses about the core concept of the convolution filters (the convolution matrix and three filters edge detection, blur and sharp to prove that the convolution matrix is working). The last method is about the displacement filter.

Chapter 9, list out all the testing done (during and after the coding)

Chapter 10 looks into the limitation and future enhancement on current system.

B.SC. (HONS) IN COMPUTER SCIENCE