

THE STUDY OF IMPROVING IMAGE NOISE AND SEGMENTED THRESHOLD VALUE BASED ON FUZZY THEORY

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ABSTRACT

DIGITAL IMAGE IS A FASCINATING AND EXCITING AREA FOR HUMAN TODAY. THE FIELD OF DIGITAL IMAGE CAN BE SEPARATED INTO TWO CATEGORIES: (1) IMAGE PROCESSING, THE OUTPUT IMAGES ARE FOR HUMAN CONSUMPTION TO RECOGNIZE. (2) COMPUTER VISION, THE PROCESSED OUTPUT IMAGES ARE FOR USE BY A COMPUTER TO PROCESS. THE MAIN TOPIC OF THIS RESEARCH IS TO DISCUSS THE INFLUENCE OF THE IMAGE NOISE AND SEGMENTED THRESHOLD VALUE TO DIGITAL IMAGE PROCESSING. FOR IMPROVING IMAGE DATA QUALITY, VISION SUBJECTIVE CRITERION IS USED. BASED ON MIXED FUZZY MEMBERSHIP FUNCTION AND MEAN FILTER, A WEIGHTED FUZZY FILTER IS BUILT. DIFFERENT KINDS OF NOISES, SUCH AS: SALT & PEPPER NOISE, GAUSS NOISE IN GRAY IMAGE, IMPULSE NOISE IN COLOR IMAGE CAN BE DEALT. IN THIS PRE-PROCESSING STEP, A GOOD RESULT IS REACHED FOR GETTING NEAR TO THE ORIGINAL IMAGE DATA. BY USING THE FULL COLOR IMAGE DATA, THE HSV MODEL IS BUILT. OWING TO THE LIGHT IN THE REAL WORLD IS UNSTABLE, OFFSET ABOUT THE HUE IS OCCURRED. FUZZY THEORY IS USED FOR CALCULATING THE OPTIMAL SEGMENTED THRESHOLD VALUE TO GET MORE RECOGNIZED IMAGE DATA. GOOD RESULTS ARE ACHIEVED. SALT & PEPPER NOISE, GAUSS NOISE CAN BE IMPROVED. A GOOD SEGMENTATION METHOD ALSO CAN GET, FOR SOME UNCERTAIN DATA. THIS RESEARCH PROVIDES A GOOD IMAGE QUALITY CONTROL FOR VARIOUS KINDS OF OBJECTS IN A HIGH NOISE FACTORY ENVIRONMENT.

Keywords : HSV COLOR MODEL; MIXED FUZZY MEMBERSHIP FUNCTION ; WEIGHTED FUZZY FILTER ; SALT & PEPPER NOISE ; SEGMENTED THRESHOLD VALUE; IMAGE NOISE.

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