Ex NO : 9 Fuzzy Logic - Image Processing

Date :

Aim

The aim of implementing fuzzy logic for edge detection is to enhance the robustness and accuracy of edge detection in images by handling uncertainities

Procedure for fuzzy logic edge detection

Step 1 : Set up the environment.

1 Open Matlab : Ensure you have access to Matlab with image processing toolbox

Step 2 : Import & convert image to grayscale

1) Read the RGB Image

2) Connect to Grayscale

Step 3 : Convert image to double precision data

1) Convert to double

Step 4 : Obtain image gradient

1) Define Gradient filters

2) Calculate Gradients

3) Plot image gradients

Step 5: Define fuzzy inference system (FIS)

1) Create FIS
2) Add Inputs
3) Define membership function for inputs
4) Add output
5) Define membership functions for output
6) Plot membership function for output

Step 6: Specify FIS rules

1) Add rules for FIS

Step 7: Evaluate FIS

1) Evaluate edge detection

Step 8: Plot results

1) Plot original Grayscale Image
2) Plot detected edges.

Result

Thus program was successfully executed and the O/P is verified