

Image processing using VLSI

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Objective:

This project will give the filtered image as a final output. Image processing using VLSI will mainly contain the various operations like image filtering and transformation of input images (like color variation etc.).

Methodology:

The project will include 3 parts,

- Firstly, we will convert the input image into hexadecimal format using MATLAB.
- Secondly, we will take hexadecimal formatted file as input to the Verilog code in Vivado and then Verilog will perform the following operations like,
 - a) Increasing image contrast
 - b) Removing/adding artifacts to the original image
 - c) Giving special filtering effects on image
- At the end the Innovus is utilized to structure the layout, schematic, and parameters we are concerned about, such as geometry, conductivity, and violations, ensuring the accurate implementation of the desired changes in the image.

Expected Outcomes:

The Image processing using VLSI will gives the filtered, enhance and noise free image.

Aimed/Future Scope:

The future scope idea is,

- Expanding functionality to support larger images, enhance image quality, increase processing speed, and introduce additional filter.
- Image restoration involves removing degradation from an image, such as blurring, noise, and distortion.
- An idea under consideration involves the development of a user-friendly UI, where users can easily upload their images, select desired filters, and obtain their transformed images.

Challenges:

- To convert .png/jpg file into hexadecimal file format.
- Uploading the notepad/csv file to Vivado.
- Editing or giving special effects to image.