IDP - EE3025

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Project Idea:
Edge Detection on Images

Sobel Filter is used to detect two kinds of edges in an image

- Vertical Direction
- Horizontal Direction

Edge Detection on Images

Vertical Mask

-1	0	1
-2	0	2
-1	0	1

Horizontal Mask

-1	-2	-1
0	0	0
1	2	1

Edge Detection on Images

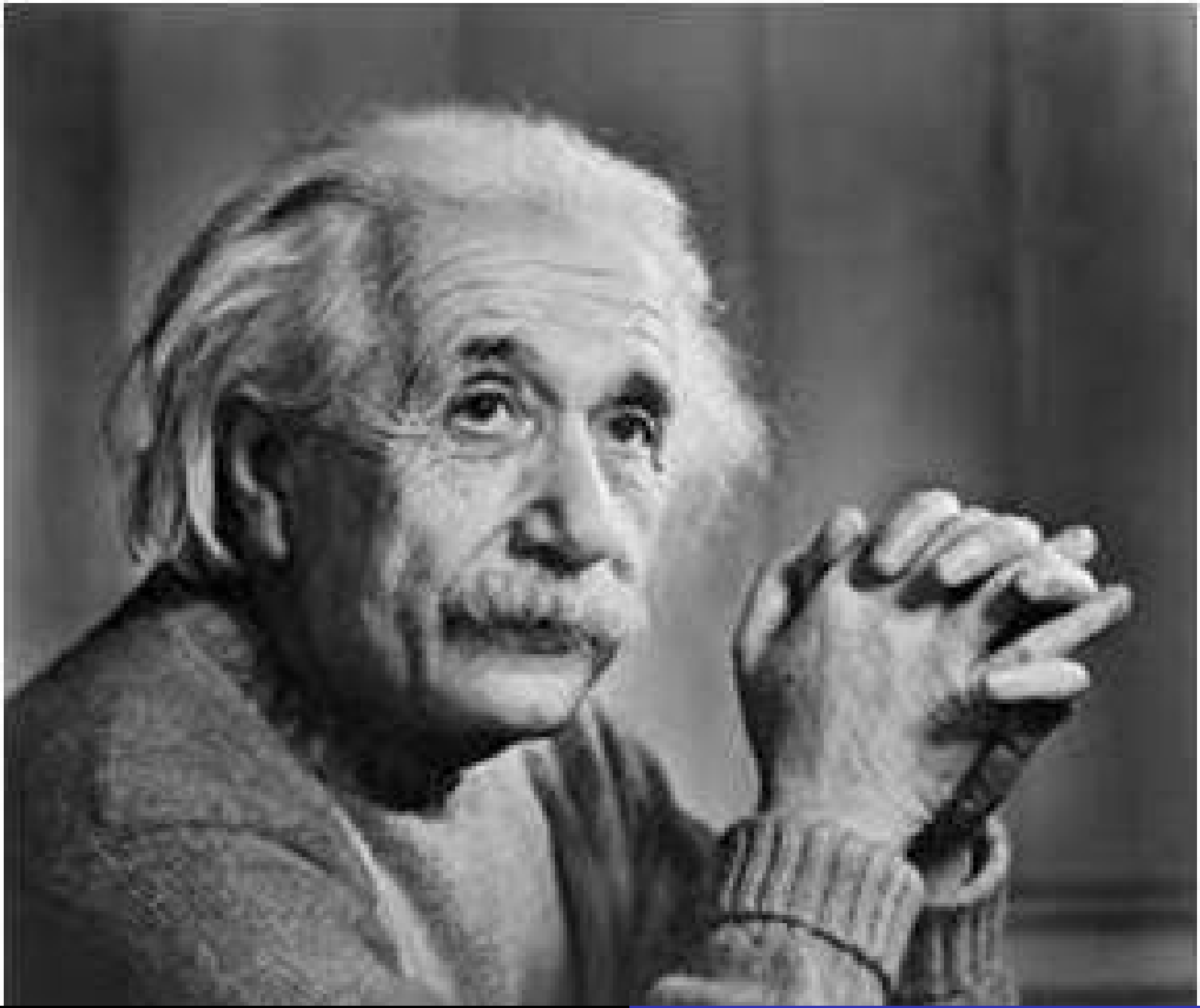
Vertical Mask

-1	0	1
-2	0	2
-1	0	1

Horizontal Mask

-1	-2	-1
0	0	0
1	2	1

Sample image



After applying vertical mask

After applying horizontal mask

Implementation Plan

- Load image into FPGA
  - Convert image to hex file using *ffmpeg*
  - Stream these pixel values as bytes from Raspberry Pi to FPGA RAM using *ffmpeg*
  - Use coordinate decoder module on sequence of pixels (bytes). For this we need to specify the image size. Later we plan to extend to use pilot bytes to detect row endings.
- To Implement an efficient Sobel Filter on FPGA
  - (write about sobel filter implementation in verilog)

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Loading Image into FPGA using Raspberry Pi

write about SPI interface
maybe about expected progress by next presentation