Polytechnic University of Puerto Rico ECECS Department

Course: EE 3002 Signal and Systems
Project FA20

Introduction to 2-Dimensional <u>Low Pass</u> and <u>High Pass</u> Filtering for Biomedical Images using MATLAB

ream or four students	Project Due Date: As Specified in your Schedule	
Name		-
Name		_
Name		_
Name		

Dunings Dung Dates, An Conneiling in second Calendaria

- 1) Upload the sample images provided with the project.
- 2) Upload similar images (ideally with better resolution) that you find in the web and/or biomedical databases.
- 3) Use MATLAB to subject these images to **Low Pass Filtering** processing.
 - Use filters discussed in class.
 - Increase number of coefficients in the filter mask.
 - Show the before filtering and after filtering effects on the image.
 - For each trial provide the 2D filter mask used (filter coefficients)
 - Provide the filter frequency response plot.
 - Discuss what happens, to the filtered image, when the number of coefficients increases.
 - Provide MATLAB Code for all your trial experiments.
- 4) Repeat part 3) using MATLAB to subject these images to High Pass Filtering processing.
 - Use filters discussed in class.
 - Increase number of coefficients in the filter mask.
 - Show the before filtering and after filtering effects on the image.
 - For each trial provide the 2D filter mask used (filter coefficients)
 - Provide the filter frequency response plot.
 - Discuss what happens, to the filtered image, when the number of coefficients increases.
 - Provide MATLAB Code for all your trial experiments.
- 5) Provide general conclusions regarding the perceived effects of the type of filter used and the effects, on the filtered image, of increasing the number of filter coefficients.
- 6) Follow the Project Format provided in the next page.

Report Format:

- A. Cover Page
- B. Original Problem Proposed to the Student: Original project pages handed by the instructor (these pages)
- C. Index
- D. Introduction
- E. Low Pass Filtering
 - i) Low Pass Filter Experiment 1

2D filter mask used.

Filter frequency response.

Before filtering and after filtering results.

MATLAB Code

Comments.

- ii) Low Pass Filter Experiment 2
- iii) etc

F. High Pass Filtering

i) High Pass Filter Experiment 1

2D filter mask used.

Filter frequency response.

Before filtering and after filtering results.

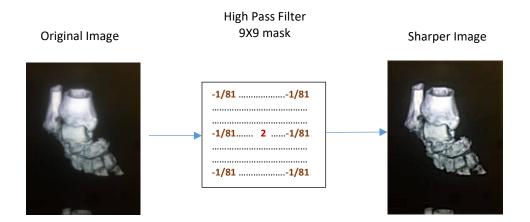
MATLAB Code

Comments.

- ii) High Pass Filter Experiment 2
- iii) etc
- G. Conclusions
- H. Bibliography

Include these project instructions pages in part B of your report.

Display of Filtering Results (Example)



Frequency Response

