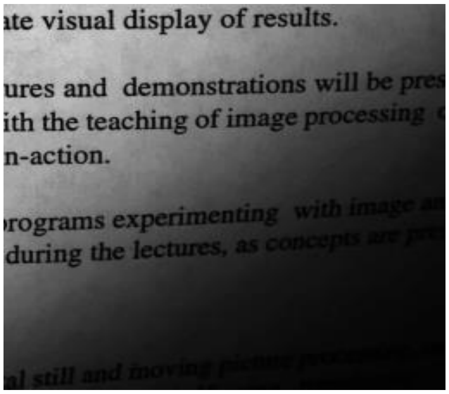
Machine Vision **Assignment #1** **Spring 2024**

Image division for shading correction

Consider the provide image (darkpage.png)

Write a python code to do the following:

1) **Read and display the image.** Note that the image has a problem in shading and needs what is called "shading correction".
   This image (call it **g[x,y]**) can be modelled as a product of the original perfect image (**f[x,y]**) with a shading function (**h[x,y]**) i.e., **g[x,y] = f[x,y]h[x,y].**



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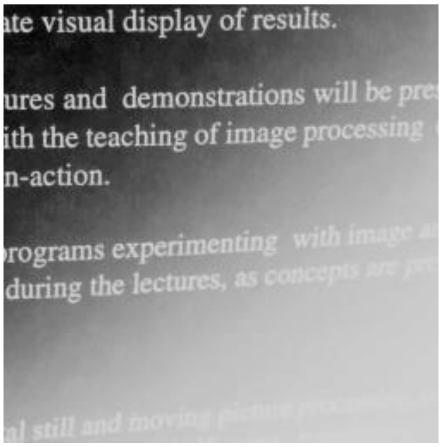
g[x,y]

2) **Compute and display the negative of the image.** Note how some details are better observed here than in the original image.



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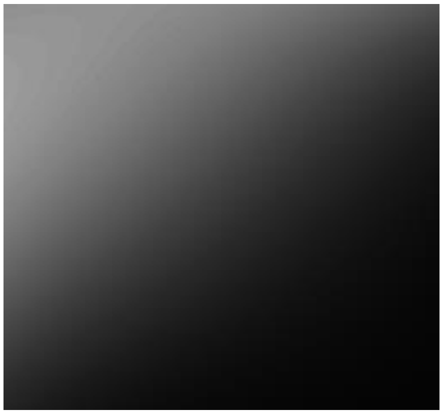
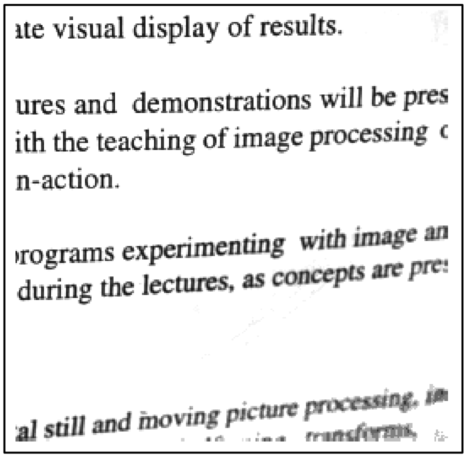
3) An estimation of the shading function (h[x,y]) is given as the provided image (bkgnd.png). **Read and display this image**.



h[x,y]

4) **In this step you should perform shading correction** by ***dividing*** the original image (g[x,y]) by the estimated shading function (h[x,y]) to get an *estimate* of the original “perfect image” (f[x,y]). **Display the result.**
The result should look like the one shown to the right.



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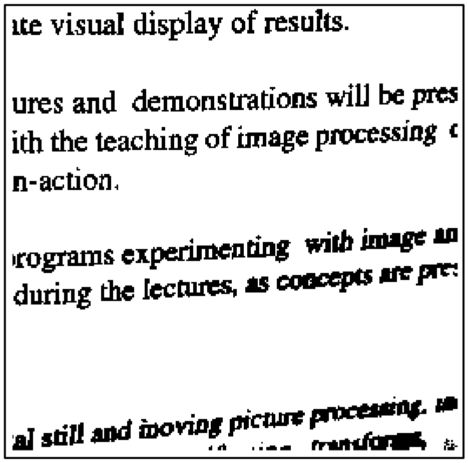
5) **Use a suitable threshold to binarize the image**, separating text pixels from background pixels. **Display the result.**
You should get something similar to the image shown to the right.



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