OAKLAND UNIVERSITY
Powered by Google

Jacob Dunn <jacobdunn@oakland.edu>

Problem Solving 5

2 messages

Jacob Dunn <jacobdunn@oakland.edu> Mon, Dec 5, 2022 at 4:05 PM
To: cadenadams@oakland.edu

Caden,

Attached is our final version of Problem Solving 5 which is ready for submission. Please respond to this email to confirm your contribution to this exercise and that you agree it is ready for submission.

--
Jacob Dunn

PS5.docx
813K

Caden Adams <cadenadams@oakland.edu> Mon, Dec 5, 2022 at 4:12 PM
To: Jacob Dunn <jacobdunn@oakland.edu>

Hi Jacob,

I agree with all of the information in the word document, go ahead and submit it.

Caden Adams
[Quoted text hidden]

A:

i.

Sensor Value	First Derivative	Second Derivative
21		
	4	
25		0
	4	
29		0
	4	
33		1
	5	
38		1
	6	
44		-12
	-6	
38		10
	4	
42		0
	4	
46		0
	4	
50		0
	4	
54		

It makes more sense to use the first derivative since the values are more consistent for this derivative. If the first derivative is < or > 4 then noise.

ii.

Sensor Value	First Derivative	Second Derivative
176		
	15	
191		2
	17	
208		2
	19	
227		2
	21	
248		2
	23	
271		-9
	14	
285		6
	20	
305		2
	22	
327		2
	24	
351		2
	26	
377		

It makes more sense to use the second derivative since the values are more consistent for this derivative. If the second derivative is < or > 2 then noise.

B:

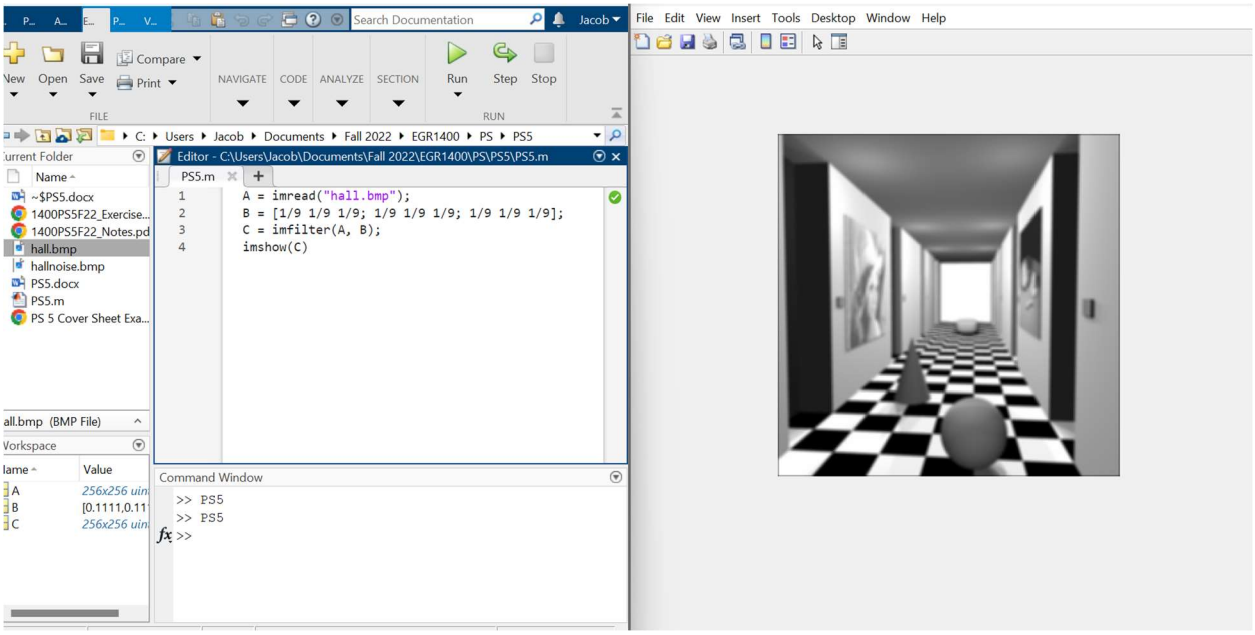
35	43	46	24	21	13
43	53	59	38	34	22
43	58	61	42	34	24
22	39	43	44	35	24
19	35	36	37	28	20
14	24	27	26	21	13

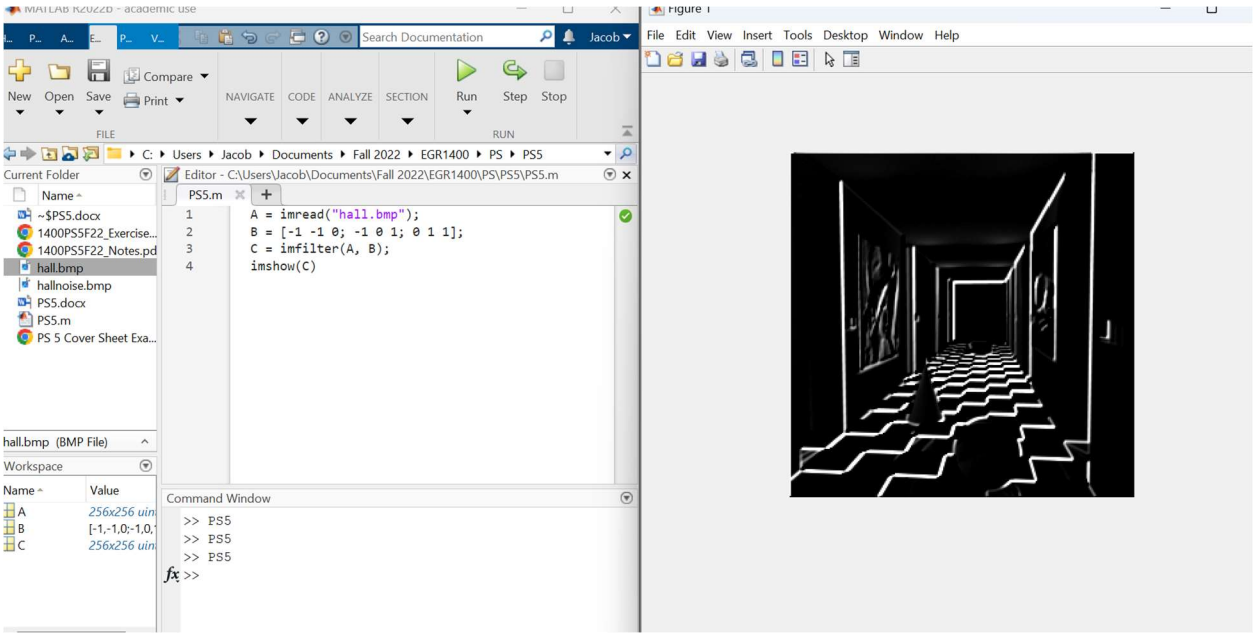
Example calculation for row 2 column 5:

20*1/9 + 28*1/9 + 55*1/9 + 20*1/9 + 64*1/9 + 66*1/9 + 20*1/9 + 22*1/9 + 21*1/9 = 35

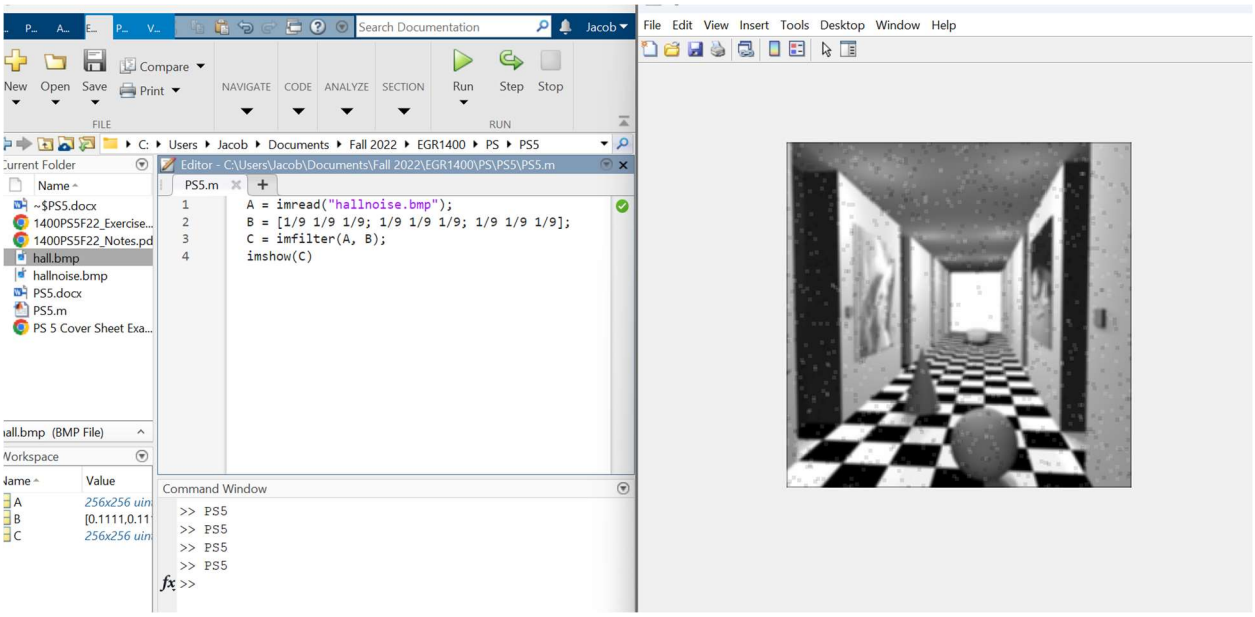
After the mean filter was applied, the noise was reduced to values more consistent with the rest of the table. The black and white noise are now gone.

C:

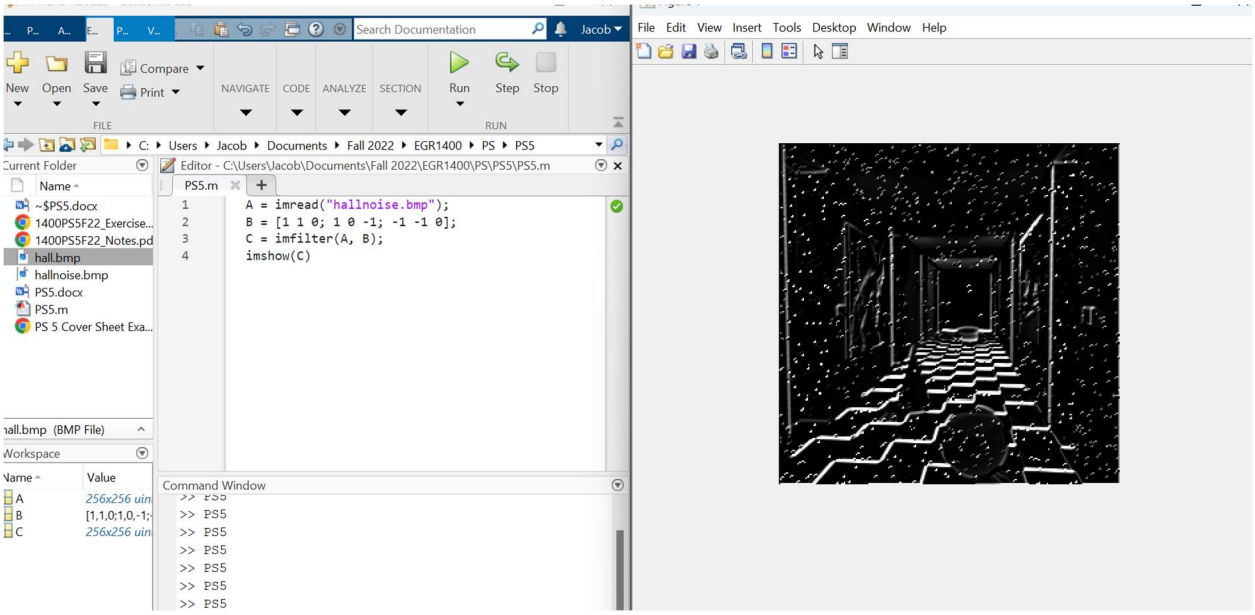

Search Documentation
Jacob
New
Open
Save
Compare
Print
NAVIGATE
CODE
ANALYZE
SECTION
Run
Step
Stop
FILE
RUN
C: ▸ Users ▸ Jacob ▸ Documents ▸ Fall 2022 ▸ EGR1400 ▸ PS ▸ PS5
Editor - C:\Users\Jacob\Documents\Fall 2022\EGR1400\PS\PS5\PS5.m
PS5.m
1 A = imread("hall.bmp");
2 B = [1/9 1/9 1/9; 1/9 1/9 1/9; 1/9 1/9 1/9];
3 C = imfilter(A, B);
4 imshow(C)
Name
~$PS5.docx
1400PS5F22_Exercise...
1400PS5F22_Notes.pd
hall.bmp
hallnoise.bmp
PS5.docx
PS5.m
PS 5 Cover Sheet Exa...
all.bmp (BMP File)
Workspace
Value
A 256x256 uin
B [0.1111,0.11
C 256x256 uin
Command Window
>> PS5
>> PS5
>>
File Edit View Insert Tools Desktop Window Help


Search Documentation
Jacob
New
Open
Save
Compare
Print
NAVIGATE
CODE
ANALYZE
SECTION
Run
Step
Stop
FILE
RUN
C: ▸ Users ▸ Jacob ▸ Documents ▸ Fall 2022 ▸ EGR1400 ▸ PS ▸ PS5
Editor - C:\Users\Jacob\Documents\Fall 2022\EGR1400\PS\PS5\PS5.m
PS5.m
1 A = imread("hall.bmp");
2 B = [-1 -1 0; -1 0 1; 0 1 1];
3 C = imfilter(A, B);
4 imshow(C)
Current Folder
Name
~$PS5.docx
1400PS5F22_Exercise...
1400PS5F22_Notes.pd
hall.bmp
hallnoise.bmp
PS5.docx
PS5.m
PS 5 Cover Sheet Exa...
hall.bmp (BMP File)
Workspace
Name
Value
A 256x256 uin
B [-1,-1,0;-1,0,1
C 256x256 uin
Command Window
>> PS5
>> PS5
>> PS5
>>
File Edit View Insert Tools Desktop Window Help

D:


Search Documentation
Jacob
New
Open
Save
Compare
Print
NAVIGATE
CODE
ANALYZE
SECTION
Run
Step
Stop
FILE
RUN
C: ▸ Users ▸ Jacob ▸ Documents ▸ Fall 2022 ▸ EGR1400 ▸ PS ▸ PS5
Current Folder
Name
~$PS5.docx
1400PS5F22_Exercise...
1400PS5F22_Notes.pd
hall.bmp
hallnoise.bmp
PS5.docx
PS5.m
PS 5 Cover Sheet Exa...
Editor - C:\Users\Jacob\Documents\Fall 2022\EGR1400\PS\PS5\PS5.m
PS5.m
1 A = imread("hallnoise.bmp");
2 B = [1/9 1/9 1/9; 1/9 1/9 1/9; 1/9 1/9 1/9];
3 C = imfilter(A, B);
4 imshow(C)
all.bmp (BMP File)
Workspace
Name
Value
A 256x256 uin
B [0.1111,0.11
C 256x256 uin
Command Window
>> PS5
>> PS5
>> PS5
>> PS5
>>
File Edit View Insert Tools Desktop Window Help

E:


Search Documentation
Jacob
New
Open
Save
Compare
Print
NAVIGATE
CODE
ANALYZE
SECTION
Run
Step
Stop
FILE
RUN
C: ▸ Users ▸ Jacob ▸ Documents ▸ Fall 2022 ▸ EGR1400 ▸ PS ▸ PS5
Current Folder
Name
~$PS5.docx
1400PS5F22_Exercise...
1400PS5F22_Notes.pd
hall.bmp
hallnoise.bmp
PS5.docx
PS5.m
PS 5 Cover Sheet Exa...
Editor - C:\Users\Jacob\Documents\Fall 2022\EGR1400\PS\PS5\PS5.m
PS5.m
1 A = imread("hallnoise.bmp");
2 B = [1 1 0; 1 0 -1; -1 -1 0];
3 C = imfilter(A, B);
4 imshow(C)
all.bmp (BMP File)
Workspace
Name
Value
A 256x256 uin
B [1,1,0;1,0,-1;-
C 256x256 uin
Command Window
>> PS5
>> PS5
>> PS5
>> PS5
>> PS5
>> PS5
>> PS5
File Edit View Insert Tools Desktop Window Help