SAN JOSE STATE UNIVERSITY
DEPARTMENT OF ELECTRICAL ENGINEERING

HOMEWORK No.1 – Due Feb. 18

Problem 1 (Use Matlab or any language of your choice for this problem; Attach well-commented source code and the input and output images.)

In the Matlab code below, the "edge" command was used to apply convolution using Sobel and Prewitt edge operator.

```
>> I=imread('Lena.png');
>> G=rgb2gray(I);
>> imshow(G)
>> CG=edge(G,'sobel');
>> imshow(CG)
>> CP=edge(G,'prewitt');
>> imshowpair(CG,CP,'montage')
```

Using the "conv2" command as shown below, show the same results as above.

```
>> sx=[-1 0 1; -1 0 1; -1 0 1];
>> xx=conv2(G,sx);
```

Problem 2

Repeat the example in the Matlab document titled "Classify Webcam Images Using Deep Learning". Classify some other objects to repeat the example and attach the screen copy of the results.

Problem 3

Write the Matlab code to train the best codebook for the following 8x8 image.

Assume the initial ~~8~~ codebook consists of the following 4 code vectors: (60 65 70 75), (60 70 80 90), (65 75 85 95), (60 80 100 120).

52	55	61	66	70	61	64	73
63	59	66	90	109	85	69	72
62	59	68	113	144	104	66	73
63	58	71	122	154	106	70	69

67	61	68	104	126	88	68	70
79	65	60	70	77	68	58	75
85	71	64	59	55	61	65	83
87	79	69	68	65	76	78	94

C.Choo (2/11/21)