DIP ASSIGNMENT

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AG#: 2019-AG-6061

CLASS: BSCS 6th

SUBJECT: Digital Image Processing

DATE: 19 May, 2022

CODE:

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Untitled2*

```
onion = imread("onion.png");
peppers = imread("peppers.png");

imshow(onion)
imshow(peppers)
% non-interactively
rect_onion = [111 33 65 58];
rect_peppers = [163 47 143 151];
sub_onion = imcrop(onion,rect_onion);
sub_peppers = imcrop(peppers,rect_peppers);
% OR
% interactively
%[sub_onion,rect_onion] = imcrop(onion); % choose the pepper below the onion
%[sub_peppers,rect_peppers] = imcrop(peppers); % choose the whole onion
% display sub images
imshow(sub_onion)
imshow(sub_peppers)
c = normxcorr2(sub_onion(:,:,1),sub_peppers(:,:,1));
figure
surf(c)
shading flat
% offset found by correlation
[max_c,imax] = max(abs(c(:)));
[ypeak,xpeak] = ind2sub(size(c),imax(1));
corr_offset = [(xpeak-size(sub_onion,2))
                (ypeak-size(sub_onion,1))];
```

Editor - Untitled2*

Untitled2*

```
21      shading flat
22      % offset found by correlation
23      [max_c,imax] = max(abs(c(:)));
24      [ypeak,xpeak] = ind2sub(size(c),imax(1));
25      corr_offset = [(xpeak-size(sub_onion,2))
26                     (ypeak-size(sub_onion,1))];
27      % relative offset of position of subimages
28      rect_offset = [(rect_peppers(1)-rect_onion(1))
29                     (rect_peppers(2)-rect_onion(2))];
30      % total offset
31      offset = corr_offset + rect_offset;
32      xoffset = offset(1);
33      yoffset = offset(2);
34      xbegin = round(xoffset + 1);
35      xend   = round(xoffset + size(onion,2));
36      ybegin = round(yoffset + 1);
37      yend   = round(yoffset + size(onion,1));
38      % extract region from peppers and compare to onion
39      extracted_onion = peppers(ybegin:yend,xbegin:xend,:);
40      if isequal(onion,extracted_onion)
41         disp("onion.png was extracted from peppers.png")
42      end
43      recovered_onion = uint8(zeros(size(peppers)));
44      recovered_onion(ybegin:yend,xbegin:xend,:) = onion;
45      imshow(recovered_onion)
46      imshowpair(peppers(:,:,1),recovered_onion,"blend")
```

OUTPUT: