DEPARTEMENT OF INFORMATION TECHNOLOGY

UNIVERSITY OF THE PUNJAB

(GUJRANWALA CAMPUS)

Computer Vision

Assignment

MATLAB codes

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Submitted To:

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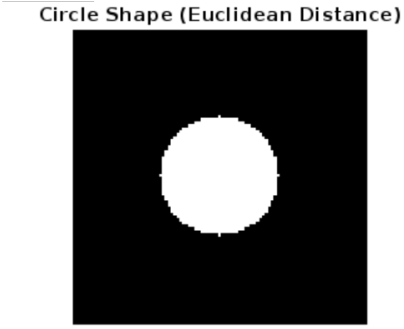
Circle(Euclidean Distance)

```
A = zeros(100, 100, 'uint8');
Cx = 50;
Cy = 50;
Radius = 20;
for i = 1:100
    for j = 1:100
        % Calculate the Euclidean distance
        distance = sqrt((Cx - i)^2 + (Cy - j)^2);
        if distance <= Radius
            A(i, j) = 255;
        end
    end
end

% Display the image
imshow(A, []);
title('Circle Shape (Euclidean Distance)');
axis off;
```



Chess-Board

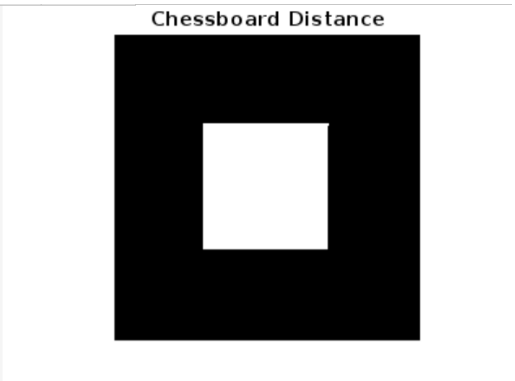
```
A = zeros(100, 100, 'uint8');

Cx = 50;
Cy = 50;
Radius = 20;

for i = 1:100
    for j = 1:100
        % Calculate the chessboard distance (Chebyshev distance)
        distance = max(abs(Cx - i), abs(Cy - j));


        if distance <= Radius
            A(i, j) = 255;
        end
    end
end

% Display the image
imshow(A);
title('Chessboard Distance');
axis off;
```



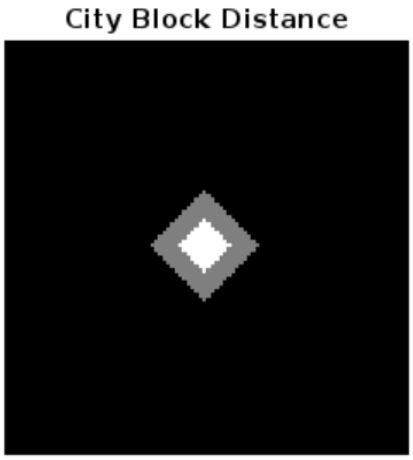
City-Block

```
size = 100;
Cx = 50;
Cy = 50;
Radius = 20;
A = zeros(size, size, 'uint8');
```

```
for i = 1:size
    for j = 1:size
        % Calculate the city block distance
        distance = abs(Cx - i) + abs(Cy - j);

        % Set the pixel intensity based on the distance
        if distance <= Radius / 3
            A(i, j) = 255; % White
        elseif distance <= (2 * Radius) / 3
            A(i, j) = 127; % Gray
        elseif distance <= Radius
            A(i, j) = 0; % Black
        end
    end
end

% Display the image
imshow(A);
title('City Block Distance');
axis off;
```



Diamond shape

```
A = zeros(100, 100, 'uint8');
Cx = 50;
Cy = 50;
Radius = 20;

for i = 1:100
  for j = 1:100
    % Calculate the Manhattan distance
    distance = abs(Cx - i) + abs(Cy - j);

    if distance <= Radius
      A(i, j) = 255;
    end
  end
end

% Display the image
figure;
imshow(A);
title('Diamond Shape (Manhattan Distance)');
axis off;
```