**UNIVERSITY OF THE PUNJAB**

**GUJRANWALA CAMPUS**

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**Department of Information Technology**

**Computer Vision**

**Assignment**

* **Submitted by:**

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* **Session:**

BSIT 7th semester

* **Roll no:**

(BIT21203) Afternoon

* **Submitted to:**

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**Topic:**

**Euclidean Distance (MATLAB Code)**

% Euclidean Distance Calculation with Circle Visualization

% Define points

p1 = [1, 2]; % First point (x1, y1)

p2 = [4, 6]; % Second point (x2, y2)

% Calculate Euclidean Distance

euclideanDistance = sqrt(sum((p2 - p1).^2));

% Display the result

fprintf('Euclidean Distance between points [%d, %d] and [%d, %d] is: %.2f\n', ...

p1(1), p1(2), p2(1), p2(2), euclideanDistance);

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**% Visualization**

figure;

hold on;

% Plot points

scatter(p1(1), p1(2), 100, 'r', 'filled'); % Point 1

scatter(p2(1), p2(2), 100, 'b', 'filled'); % Point 2

% Add labels to points

text(p1(1), p1(2), ' P1', 'VerticalAlignment', 'bottom');

text(p2(1), p2(2), ' P2', 'VerticalAlignment', 'bottom');

% Draw straight line between points

plot([p1(1), p2(1)], [p1(2), p2(2)], 'k-', 'LineWidth', 1.5); % Straight line

% Plot circle

theta = linspace(0, 2\*pi, 100); % Angle values for circle

x\_circle = p1(1) + euclideanDistance \* cos(theta); % X-coordinates of circle

y\_circle = p1(2) + euclideanDistance \* sin(theta); % Y-coordinates of circle

plot(x\_circle, y\_circle, 'g--', 'LineWidth', 1.5); % Circle around p1

% Titles and grid

title('Euclidean Distance with Circle Visualization');

grid on;

axis equal; % Equal scaling for both axes

hold off;

**Output:**

