```
% Load LiDAR data for flight line 1
data_flight1 = readmatrix('flightline1.csv'); % Assuming CSV format with x, y coordinates
x_flight1 = data_flight1(:, 1);
y_flight1 = data_flight1(:, 2);

% Load LiDAR data for flight line 2
data_flight2 = readmatrix('flightline2.csv'); % Assuming CSV format with x, y coordinates
x_flight2 = data_flight2(:, 1);
y_flight2 = data_flight2(:, 2);

% Define the overlap area
x_min_overlap = max(min(x_flight1), min(x_flight2));
x_max_overlap = min(max(x_flight1), max(x_flight2));
y_min_overlap = max(min(y_flight1), min(y_flight2));
y_max_overlap = min(max(y_flight1), max(y_flight2));

% Find unique points within the overlap area for each flight line
overlap_indices_flight1 = find(x_flight1 >= x_min_overlap & x_flight1 <= x_max_overlap ...
    & y_flight1 >= y_min_overlap & y_flight1 <= y_max_overlap);
overlap_indices_flight2 = find(x_flight2 >= x_min_overlap & x_flight2 <= x_max_overlap ...
    & y_flight2 >= y_min_overlap & y_flight2 <= y_max_overlap);

% Count unique overlapping points
unique_overlap_points_flight1 = unique([x_flight1(overlap_indices_flight1), y_flight1(overlap_indices_flight1)], 'rows');
unique_overlap_points_flight2 = unique([x_flight2(overlap_indices_flight2), y_flight2(overlap_indices_flight2)], 'rows');

% Calculate percentage overlap
percentage_overlap_flight1 = (size(unique_overlap_points_flight1, 1) / size(x_flight1, 1)) * 100;
percentage_overlap_flight2 = (size(unique_overlap_points_flight2, 1) / size(x_flight2, 1)) * 100;

% Calculate maximum, minimum, and average overlap in terms of percentage
max_overlap_percentage = max(percentage_overlap_flight1, percentage_overlap_flight2);
min_overlap_percentage = min(percentage_overlap_flight1, percentage_overlap_flight2);
average_overlap_percentage = (percentage_overlap_flight1 + percentage_overlap_flight2) / 2;

% Display results
disp(['Minimum Overlap: ', num2str(100-max_overlap_percentage), '%']);
disp(['Maximum Overlap: ', num2str(100-min_overlap_percentage), '%']);
disp(['Average Overlap: ', num2str(100-average_overlap_percentage), '%']);
```

```
Minimum Overlap: 17.5903%
Maximum Overlap: 19.2237%
Average Overlap: 18.407%
```

Published with MATLAB® R2023a