Exercise on RANSAC

April 2, 2019

In this exercise, you will work on line fitting using RANSAC.

1 RANSAC

Use the following code to generate simulated data for 2D line fitting

```
clc;close all;clear all;

[X, lineTrue] = gen_line_data(500);

ph = tohomo(X);

% your code starts here, do RANSAC line fitting
params = xxxx(ph);

% Results Visualization
figure;
hold on
xmin = min(X(1,:));
xmax = max(X(1,:));
xx = linspace(xmin,xmax,100);
yy1 = -(lineTrue(1).*xx+lineTrue(3))./(lineTrue(2)+1e-6);
yy2 = -(params(1).*xx+params(3))./(params(2)+1e-6);
plot(xx, yy1, 'k-.','LineWidth',1);
plot(xx, yy2, 'm--','LineWidth',2);
xlabel('x')
ylabel('y')
title('RANSAC results for 2D line estimation')
axis equal tight
set(gca,'FontName','Arial','FontSize',20);
```

Implement 4 main routines for RANSAC:

1. random sampling a minimum set.
2. estimating model parameters (**Hint: recall line fitting using homogeneous coordinate we did in the first exercise**).
3. compute consensus (**Hint: distance from point to line**).
4. update iteration.

Result obtained:

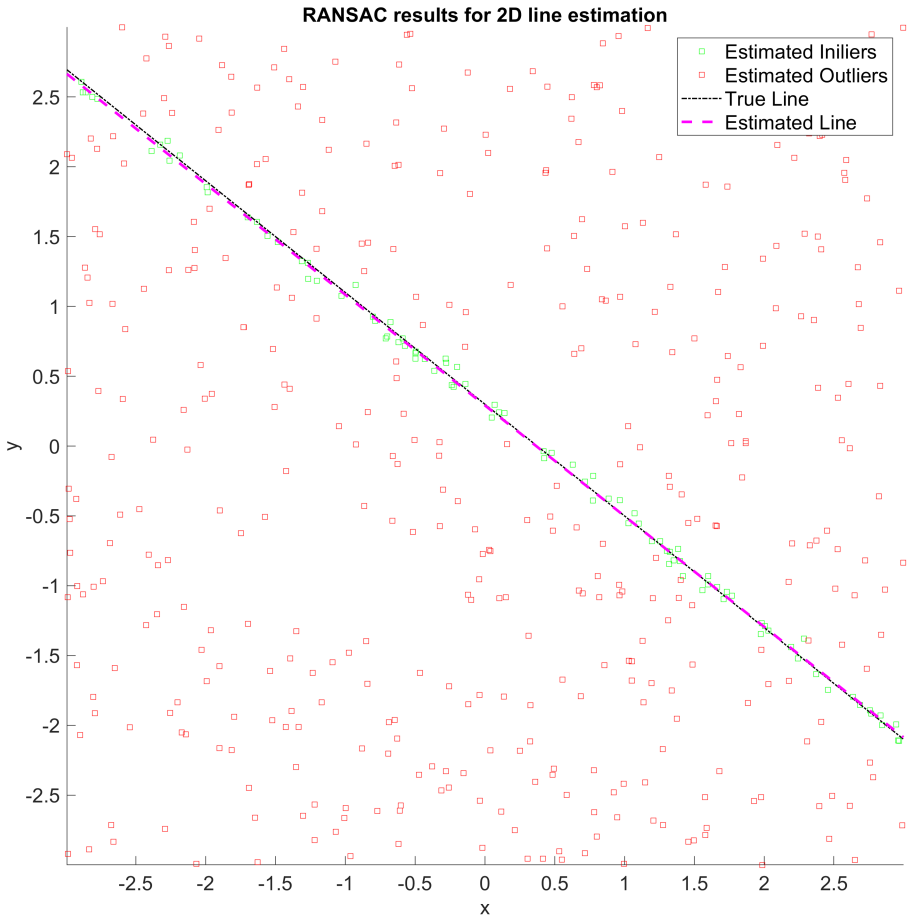

Figure 1: Example of RANSAC line fitting.