EECS432 Advanced Computer Vision, MP#2

This MP gives you an opportunity to play with the Kalman Filter. The due date is 2/10.

1   Kalman Filter

You need to really understand the Kalman filtering method step by step, and then write your own implementation, which should be quite straightforward. You should use the data in the example I used in class. We want to track a 2D trajectory. The ground truth, and the noisy observations are given in the file mp2_data.txt. You need to configure your Kalman filter to track the trajectory out of the noisy observation data. Since the ground truth is given, you also need to compare your tracking result again the ground truth trajectory. I suggest you use both (1) constant velocity motion model (1st order dynamic system), and (2) constant acceleration motion model (2nd order dynamic system). You are required to:

1. revisit the Kalman filter algorithm and code your implementation;

2. configure your Kalman filter

3. apply your Kalman filter to the noisy observation data;

4. compare your results with the ground truth;

5. use different set up for Kalman filters;

6. compare these two.

2   What to turn in

You can use whatever programming languages including Matlab. What you need to turn in includes, your results, your code and your short report of analysis (≤ 1 page is fine).