

ECE531 Homework Assignment Number 10

Due by 8:50pm on Thursday 16-Apr-2009

Make sure your reasoning and work are clear to receive full credit for each problem.

1. 8 points. In Matlab, write a Kalman filter estimator of the one-dimensional motion state $X[n]$ given observations $Y[0], \dots, Y[n]$ under the same assumptions as homework assignment 9 except that $T = 0.1$ and you now have measurement noise $V[n] \stackrel{\text{i.i.d.}}{\sim} \mathcal{N}(0, 0.1)$. Note that the variance of the measurement noise is equal to 0.1 here, not the standard deviation. Run several iterations of your Kalman filter and plot its mean-squared error performance as a function of n .
2. 4 points. Poor textbook Chapter V, Problem 2.
3. 4 points. Poor textbook Chapter V, Problem 3.
4. 4 points. Poor textbook Chapter V, Problem 4.