Part A – General Questions:

1. From Bayes’ theorem :

The posterior probability of a random event or an uncertain proposition is the conditional probability that is assigned after the relevant evidence or background is taken into account.

The prior probability of a random event or an uncertain proposition is the unconditional probability that is assigned before any relevant evidence is taken into account.

The likelihood function measures the goodness of fit of a statistical model to a sample of data for given values of the unknown parameters.

The Kalman/Particle filter is a process that helps us combine a model and measurements to provide better estimation. The filter uses prior data and model to estimate the observed state vector value in real time – If the input data is very noisy, the estimation would be based more on the model and if the model prediction produces a large error when compared to the real time samples, , the estimation would be based more on the input data.

1. For the measurement step in the particle filter, we used the histogram of the two patches:
2. We use the histogram to score the patches because \*\*\*\*\*\*
3. Particle filter will work when the tracked object changes it scale because we use the Markov

We propose to overcome this problem by assuming that the scale does not change abruptly, therefore it can be modeled as a simple Markov process