ML = Maximum Liklihood

MAP = Maximum a-posteriori

ML is intuitive/naive in that it starts only with the probability of observation given the parameter (i.e. the likelihood function) and tries to find the parameter **best accords with the observation. But it take into no consideration the prior knowledge.**

MAP seems more reasonable because it does take into consideration the prior knowledge through the Bayes rule.

Here is a related question, but the answer is not thorough.<http://dsp.stackexchange.com/questions/13174/differences-using-maximum-likelihood-or-maximum-a-posteriori-for-deconvolution-d>

So, I think MAP is much better. Is that right? And when should I use which?

**A Bayesian would agree with you, a frequentist would not.** This is a matter of opinion, perspective, and philosophy. I think that it does a lot of harm to the statistics community to attempt to argue that one method is always better than the other. Many problems will have Bayesian and frequentist solutions that are similar so long as the Bayesian does not have too strong of a prior.

If a prior probability is given as part of the setup of the problem, then use that information (i.e., use MAP). If no such prior information is given or assumed, then MAP is not possible, and ML is a reasonable approach.

Maximum a Posteriori (MAP) is the same as Maximum Likelihood Estimation (MLE) except with a Bayesian prior distribution on whatever it is that you're trying to estimate. So if you have prior information on the distribution of point spread functions then MAP will work better.