Exercise 3

Please see the Python2 script *fernandez_blatt7.py* attached to this PDF for the details on how this figures were generated.
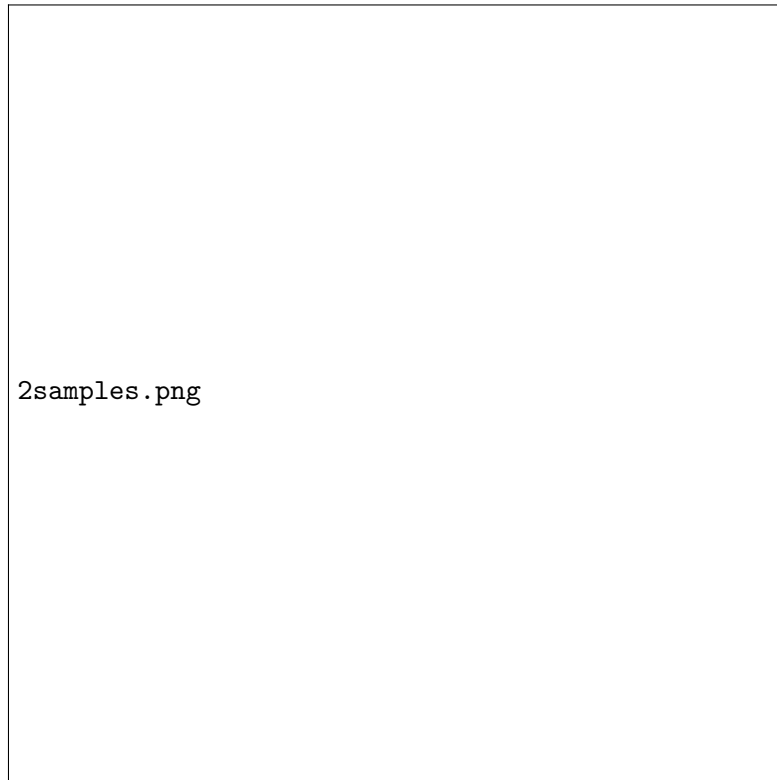

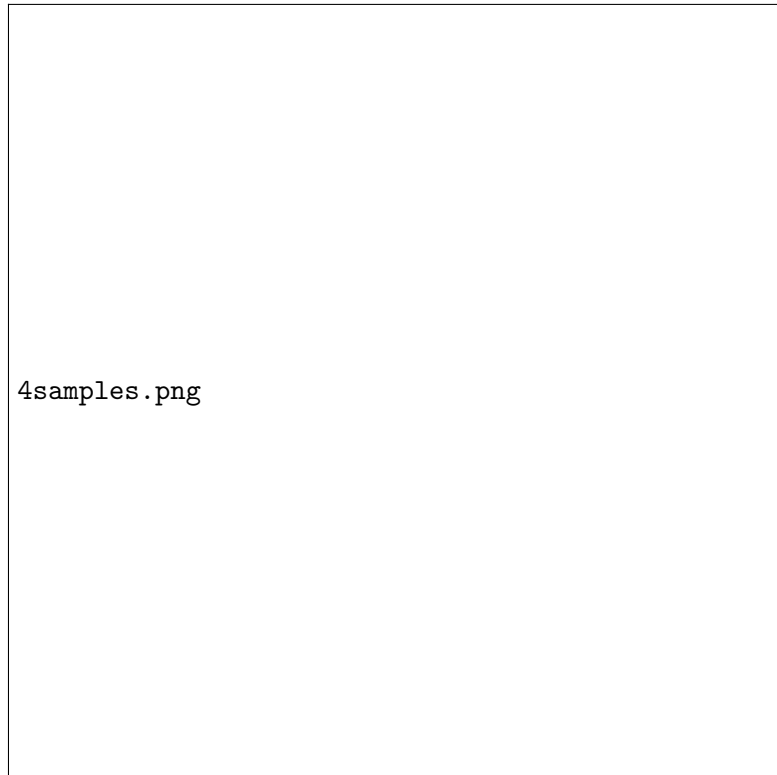Figure 1: With only two points generated, the posterior isn't able to overcome the noise

Figure 2: With only two points generated, the prior distribution has predominance. The likelihood provides a linear function space because we have three dimensions, and 2 points, and both of them are multiplied resulting in the observed intersection
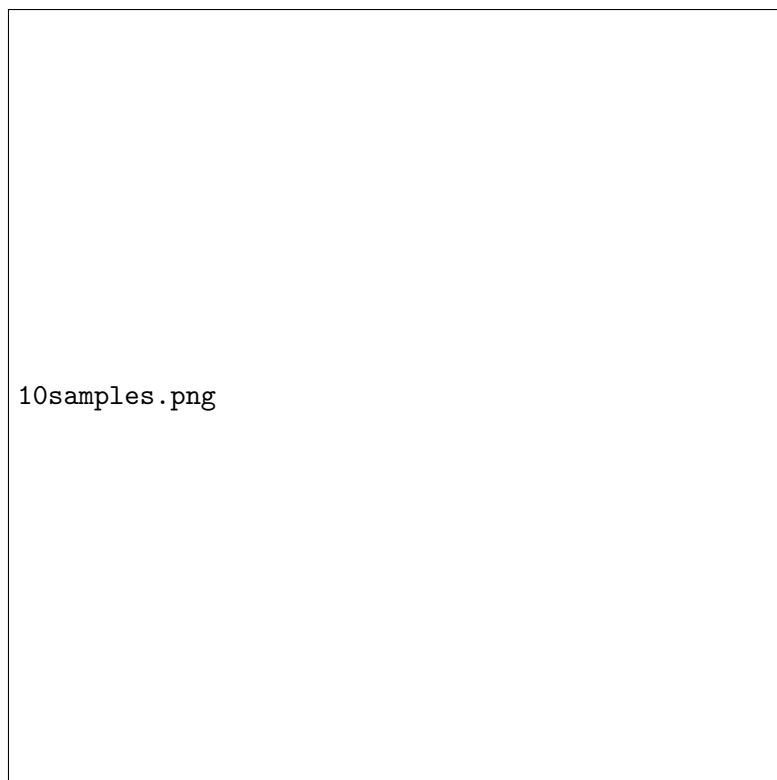
Figure 3: The bayesian estimation progresses greatly in the first steps. This is very useful in small datasets
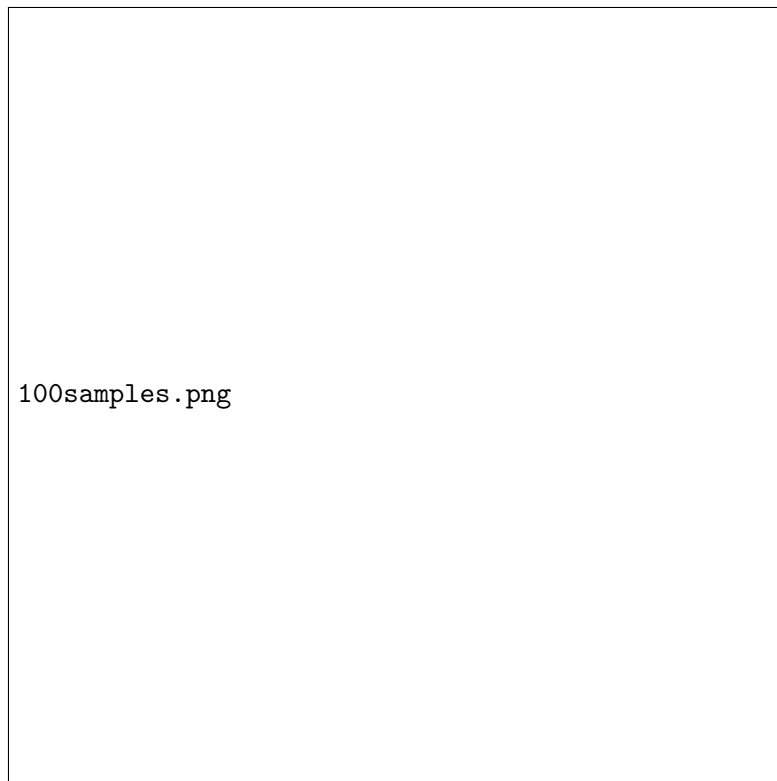
100samples.png

Figure 4: With 3 points it is already possible to limit all dimensions. This plot is the multiplication between the plot before, and the estimation provided by the new point, as it can be seen above in the definition of the likelihood
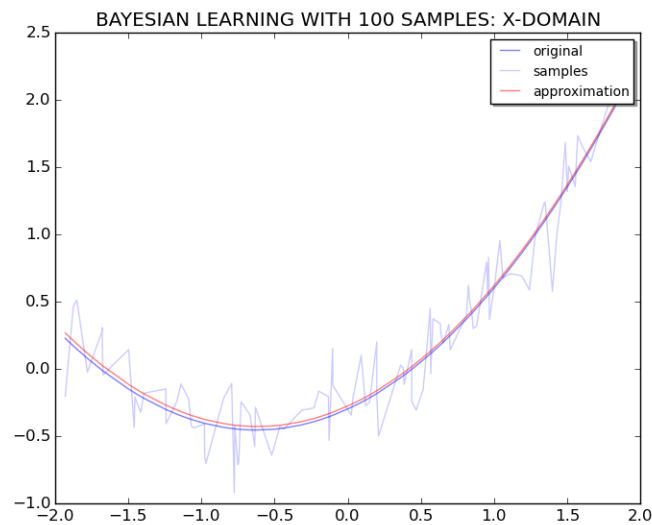
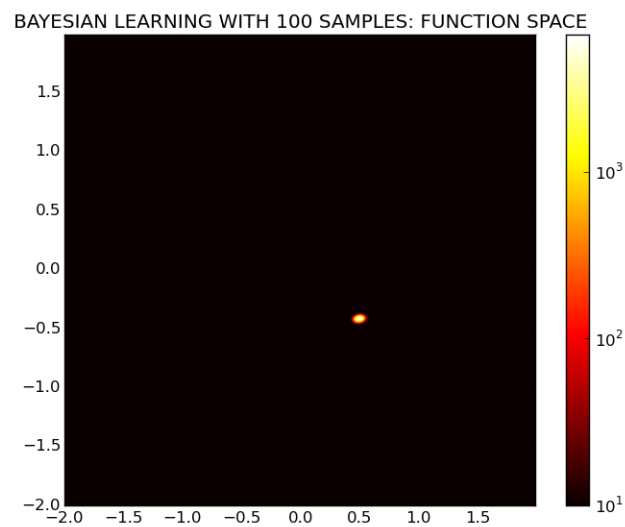Figure 5: with 100 samples, the approximation is already very percise

Figure 6: and the feasible function space is extremely reduced, but never to a singular
point: the main advantage of bayesian learning is that each possible outcome
can be analyzed, and not only the maxima like in the classical ML algorithms.
This enable a more explicit formulation of the assumptions and biases, which
may help to explain better the existing models