Lecture 23: Bayesian global optimization

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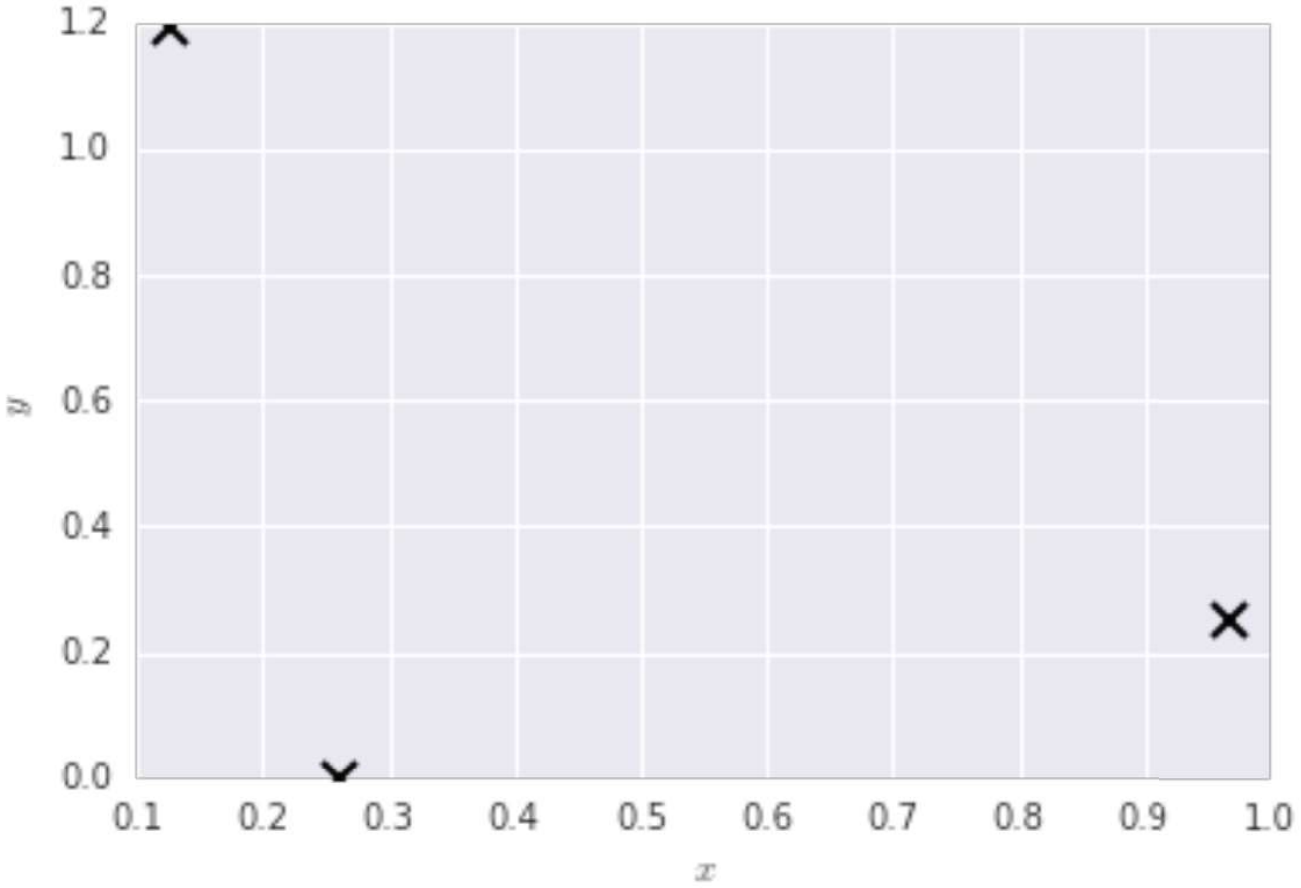
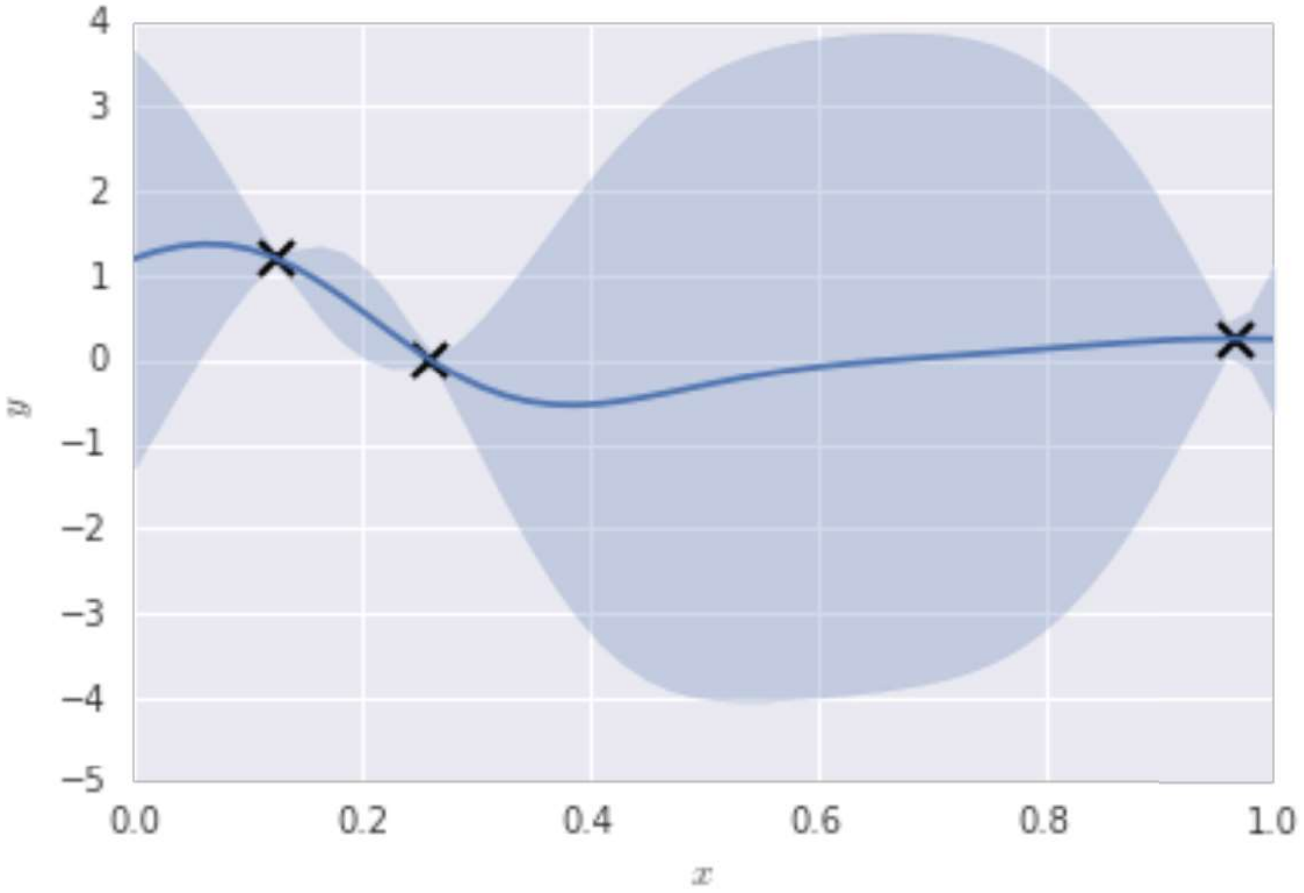
Overview of the Bayesian global optimization algorithm

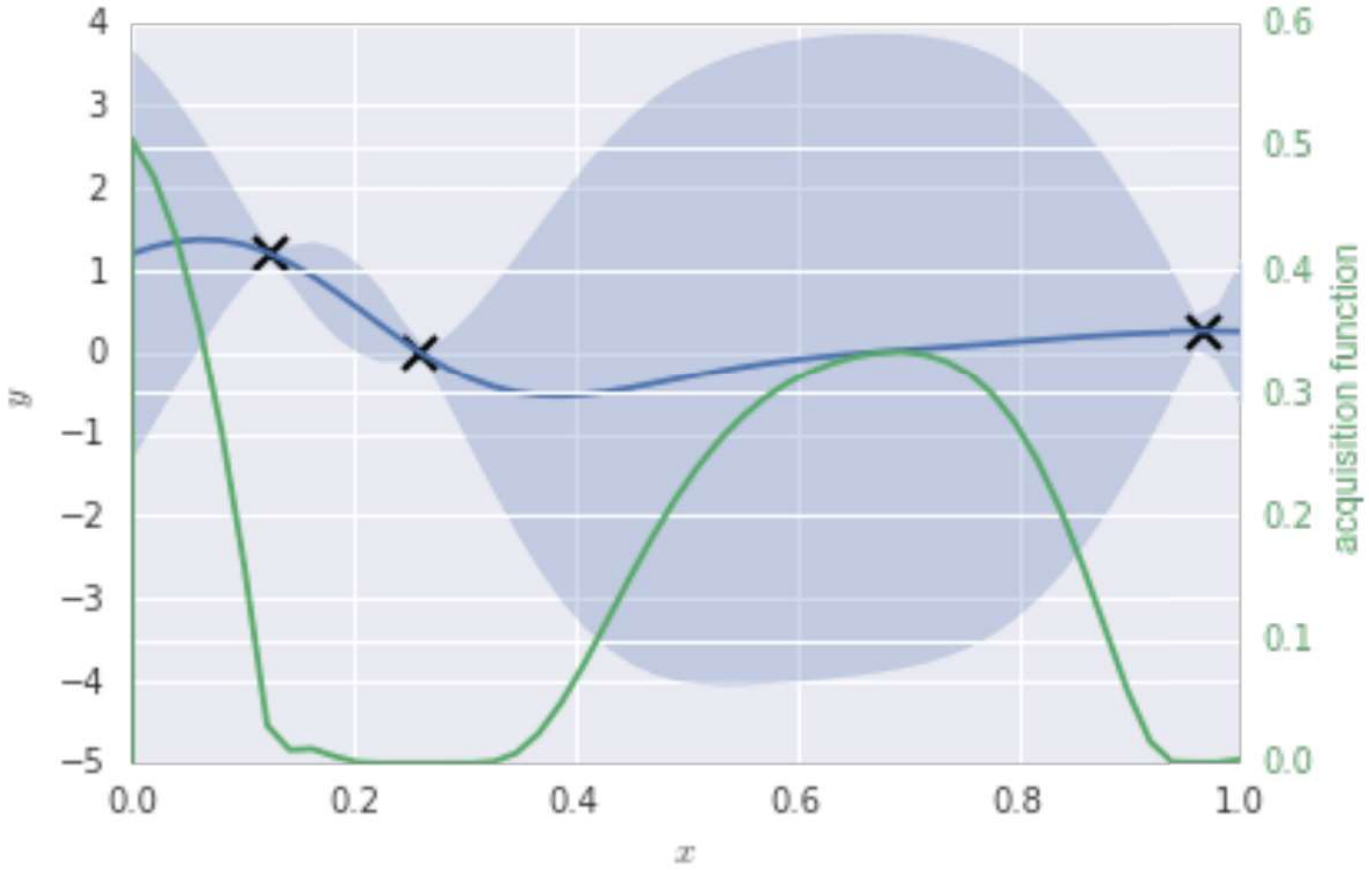
We have some data



We fit a statistical model

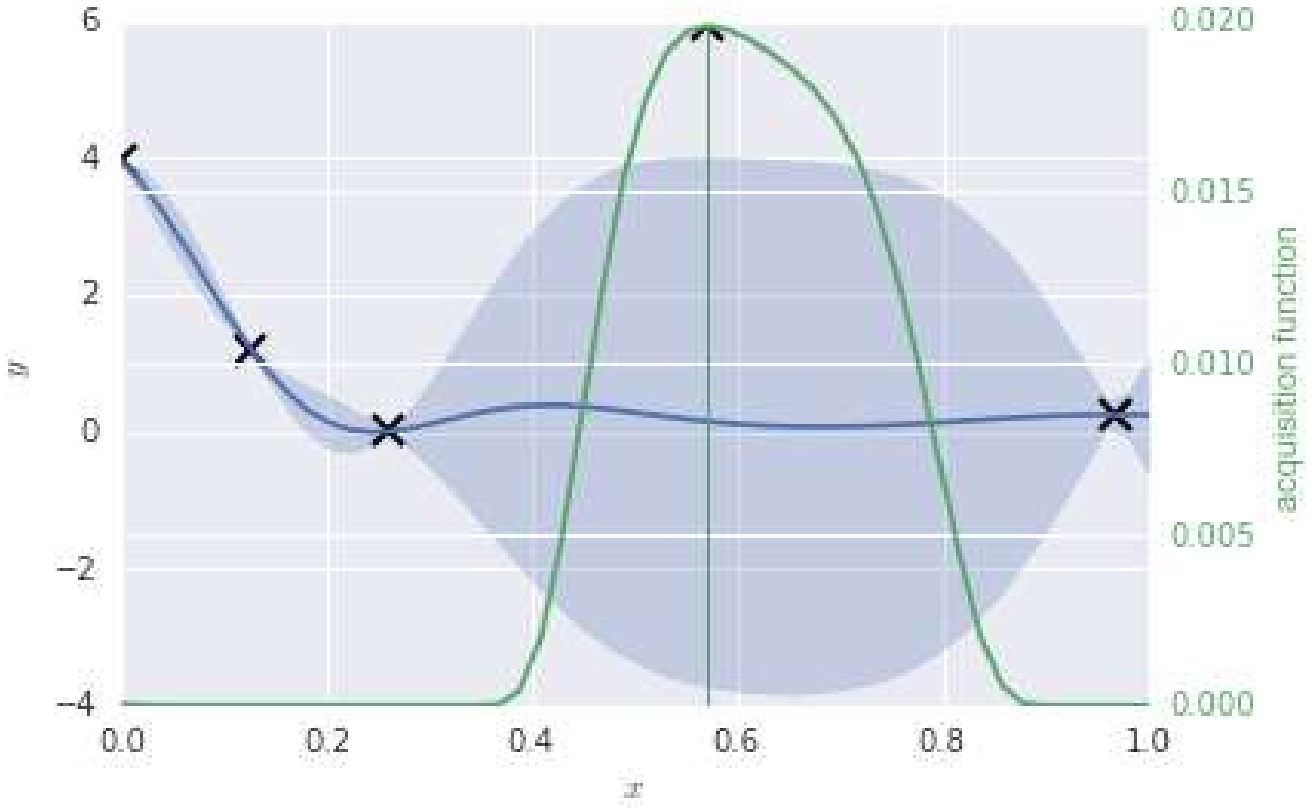


Quantify the value of information via an acquisition function



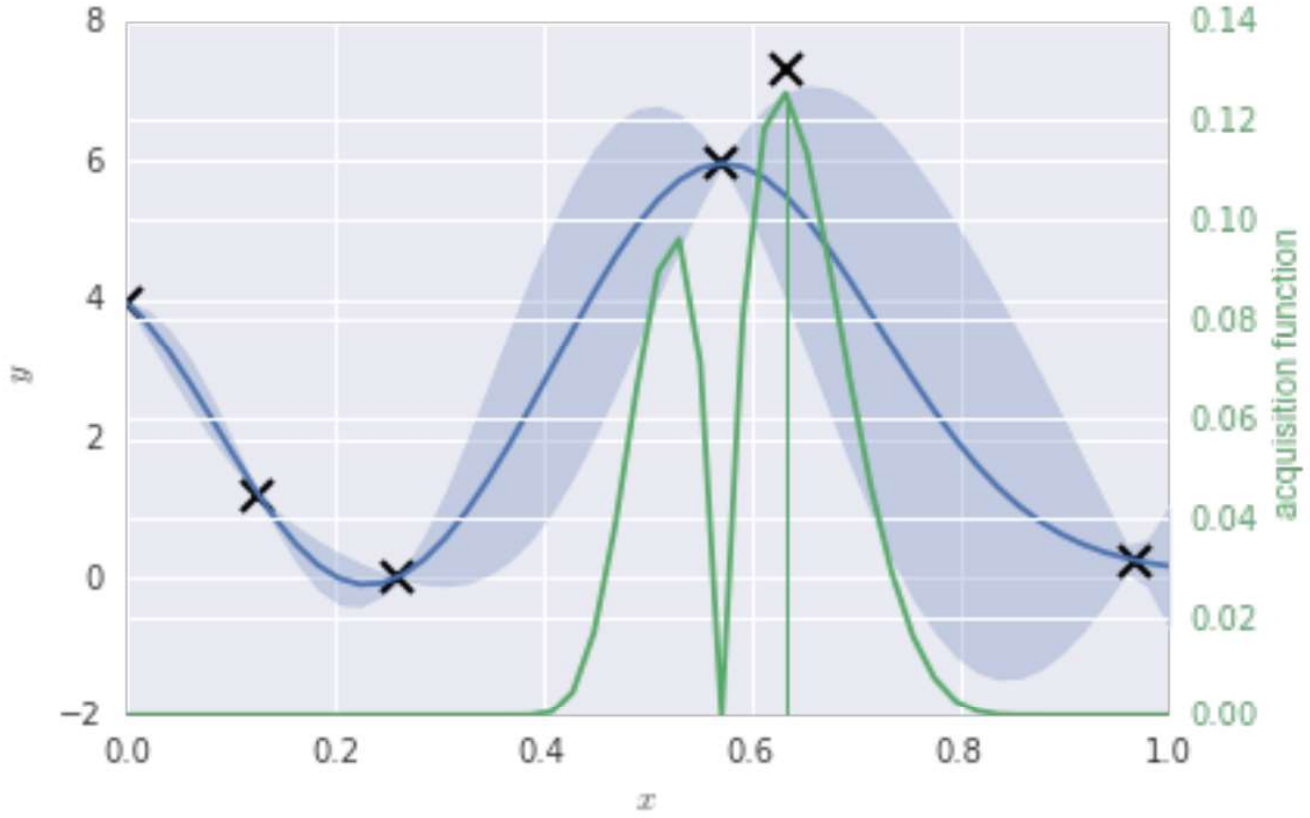
PREDICTIVE
SCIENCE LABORATORY

Repeat (Iteration 2)



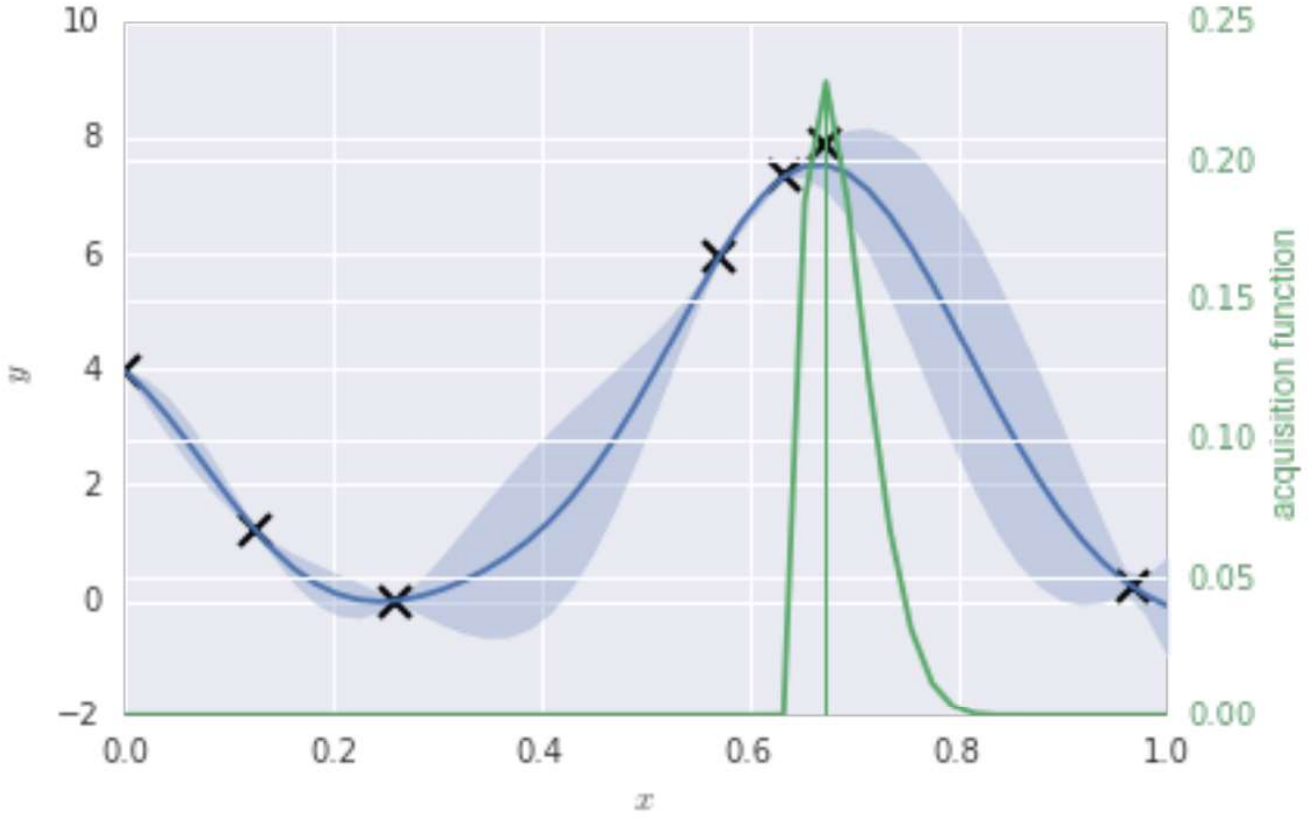
PREDICTIVE
SCIENCE LABORATORY

Repeat (Iteration 3)



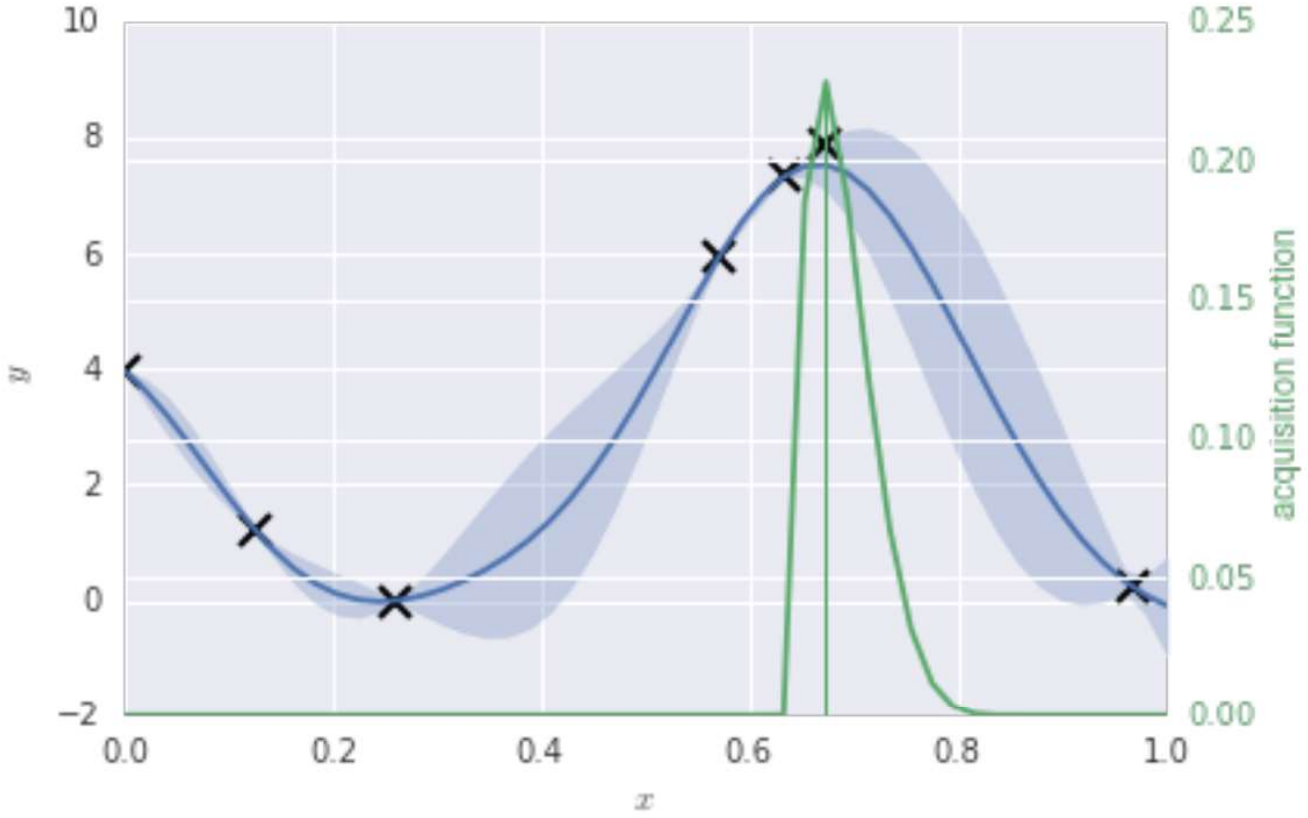
PREDICTIVE
SCIENCE LABORATORY

Repeat (Iteration 4)

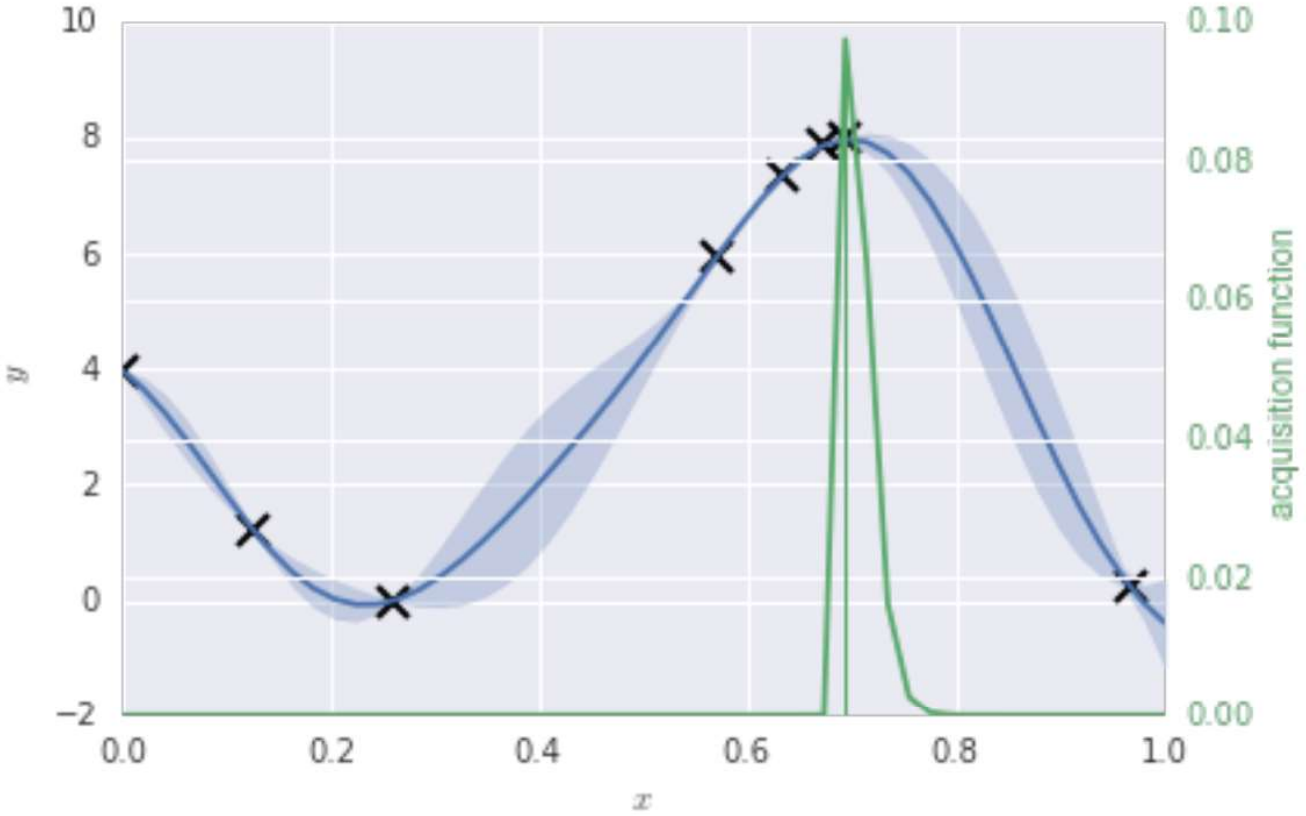


PREDICTIVE
SCIENCE LABORATORY

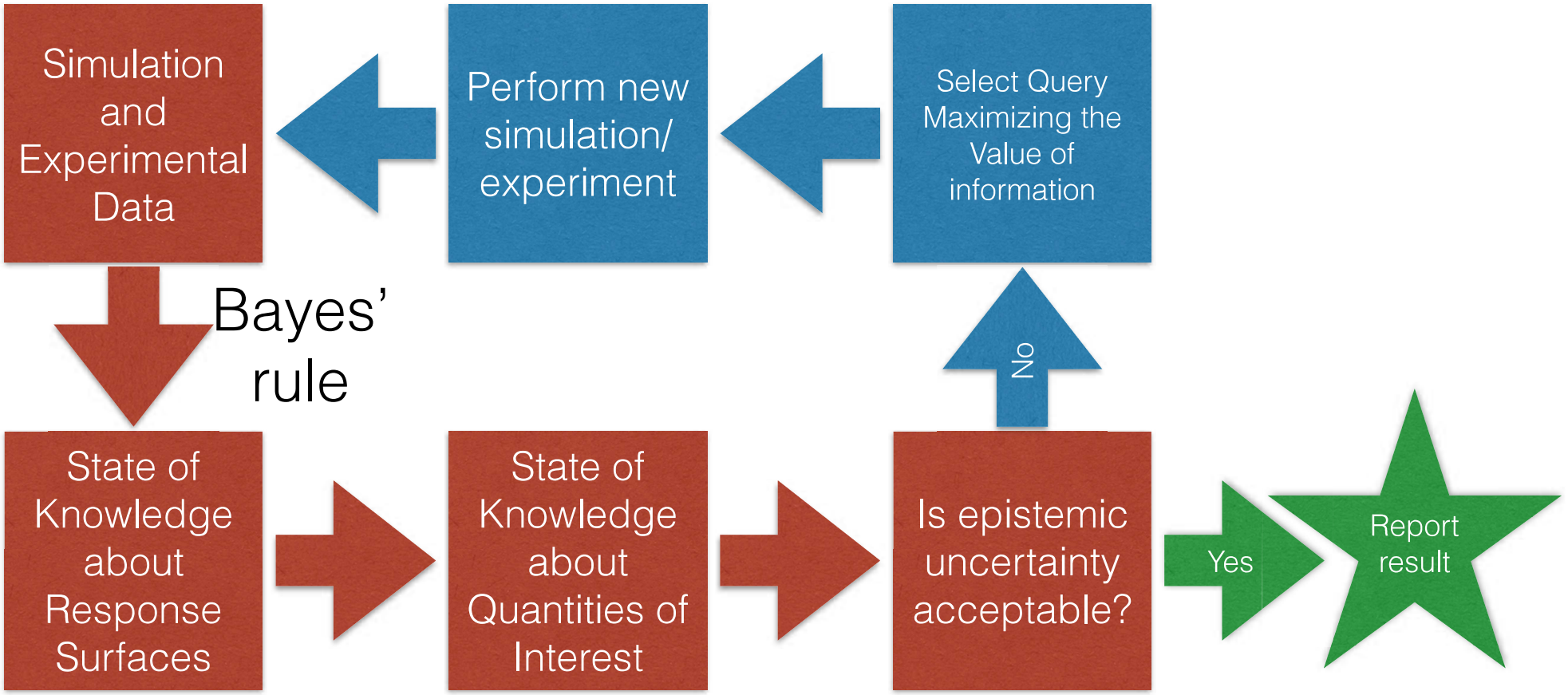
Repeat (Iteration 5)



Repeat (Iteration 6)



Bayesian global optimization



Example codes

- https://github.com/PredictiveScienceLab/py-bgo (features stochastic and multi-objective optimization)
- https://github.com/SheffieldML/GPyOpt (features parallel optimization)
- …