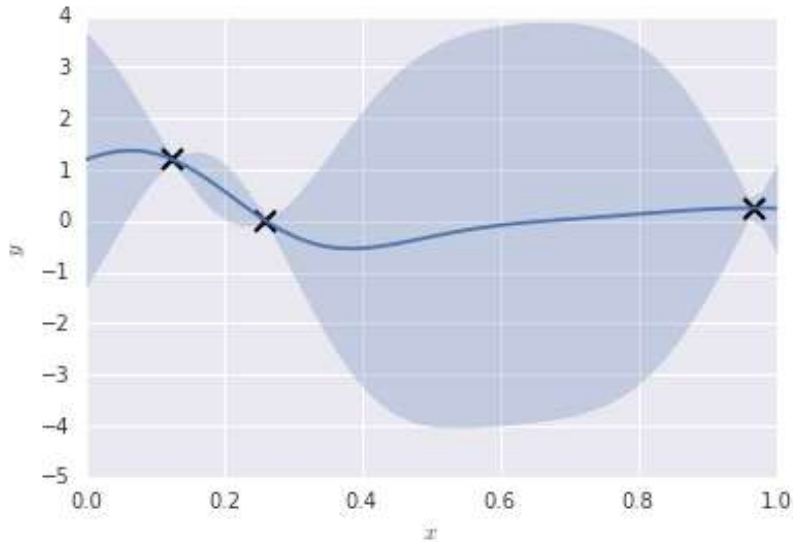


Lecture 23: Bayesian global optimization

Professor Ilias Bilonis

Maximum upper interval

Maximum Upper Interval



Use the variance to explore:

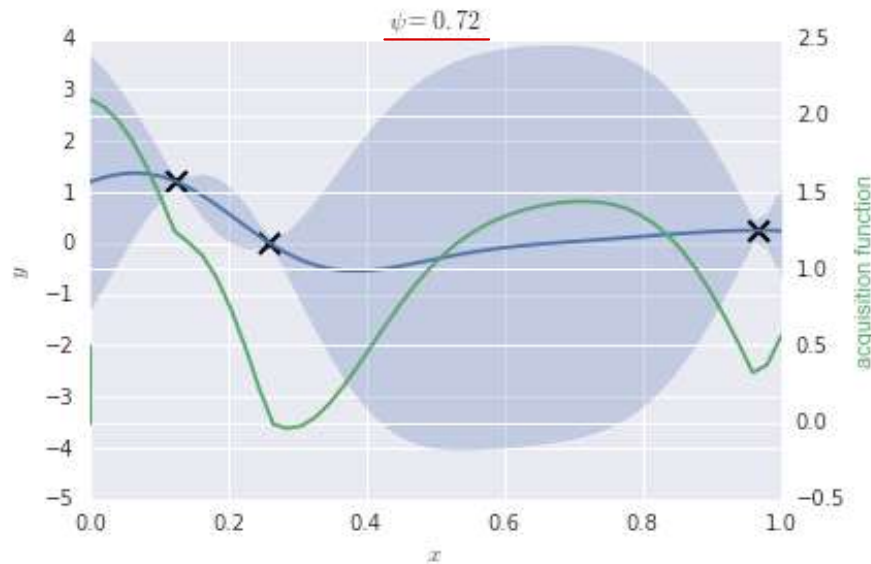
$$a(x) = \overset{\text{to exploit}}{m_n^*(x)} + \overset{\text{to explore}}{\psi \sigma_n^*(x)}$$

*adjustable parameter
to help favor exploitation
or exploration*

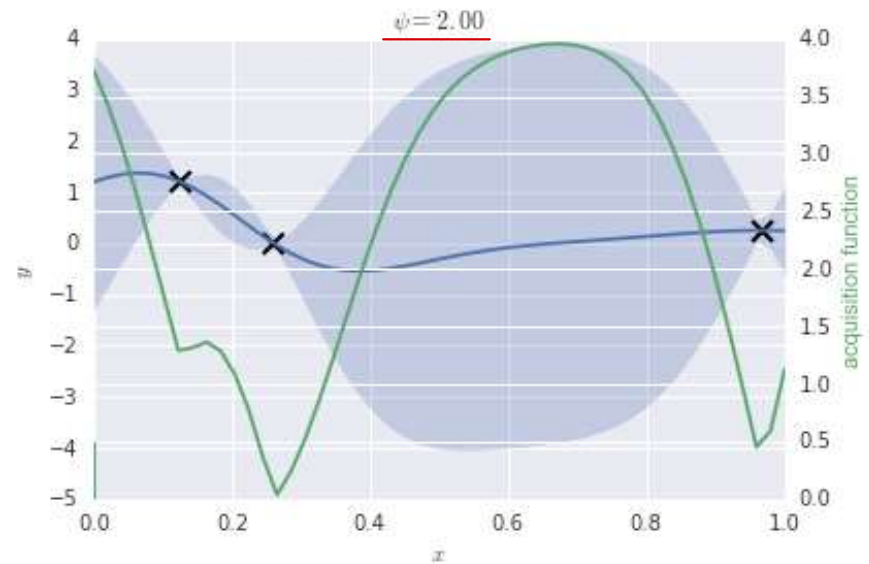
Provable convergence to the
global maximum!

Maximum Upper Interval

$$a(x) = m_n^*(x) + \psi \sigma_n^*(x)$$



Small ψ exploits more



Large ψ explores more

How to pick ψ ?