Deep LearniHng Lab Course Ex5

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The Bayesian Optimizer has after 43 iteration lower function values than Random Search, as seen in figure 1.

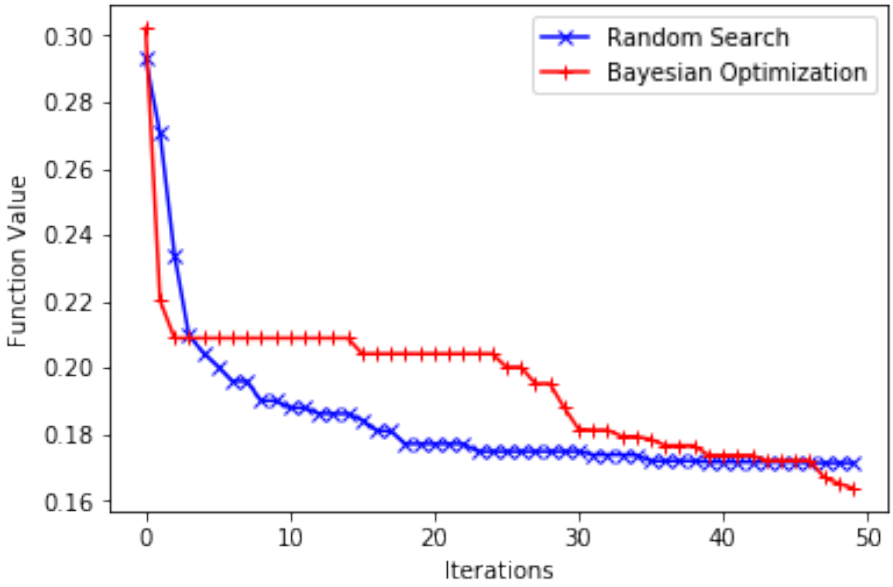


Figure 1: Function value over number of iterations

The minimum function value of Random Search 0.17132049639 was reached in 18187 s and the minimum function value of Bayesian Optimizer 0.163740907171 was reached in 28688 s.

But the runtime is larger over nearly all iterations as seen in figure 2

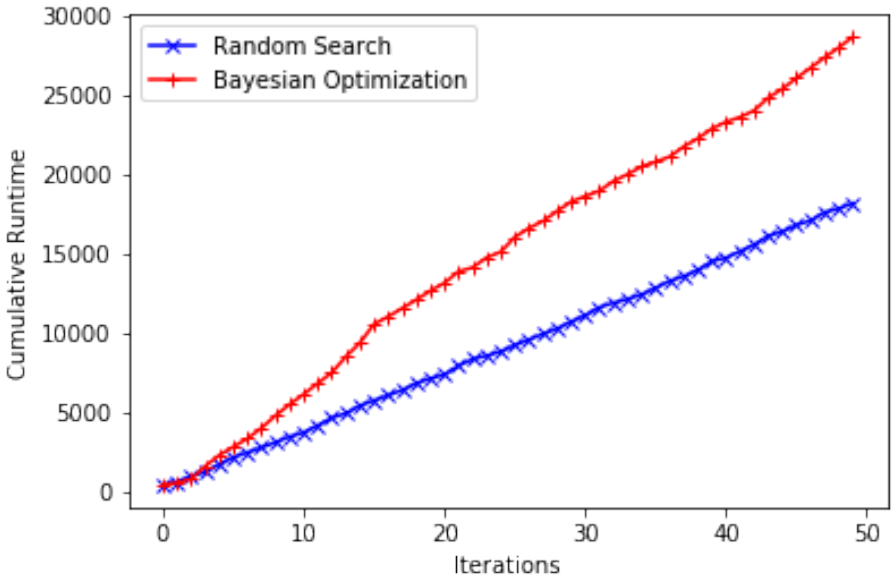
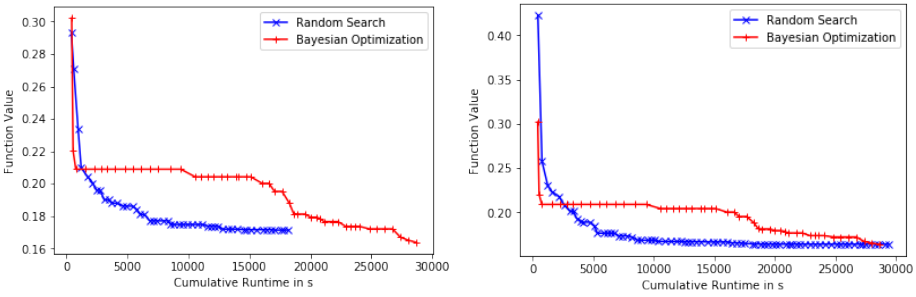


Figure 2: Runtime over number of iterations

If we look at the function value over the needed time to find this value figure 3a, we see that for 50 Bayesian Optimization steps the Random Search algorithm needs only 29 iteration or 57.7%. If we let both algorithm run for the same time as seen in figure 3 the difference does not look so bad for Random Search.

The minimum function value of Random Search 0.163926468881 was reached in 29418 s and the minimum function value of Bayesian Optimizer 0.163740907171 was reached in 28688 s.



(a) Each with 50 iterations

(b) Each with same time

Figure 3: Function vale over time