Impact of Penalty Parameter M - 2

M is very negative

- Strong penalty for infeasible points
- cKG becomes overly conservative, avoids boundary regions
- Fails to explore areas near constraint limits

M is too large

- Infeasible points treated as good as optimal ones
- cKG ignores constraints completely
- Recommends only infeasible solutions

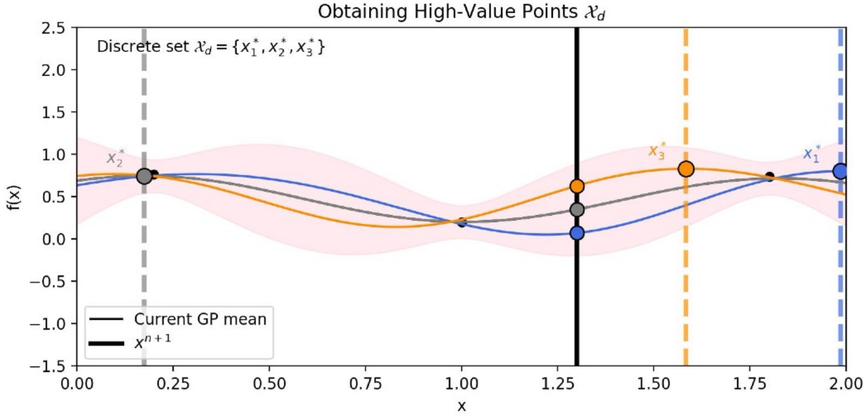
Adaptive M

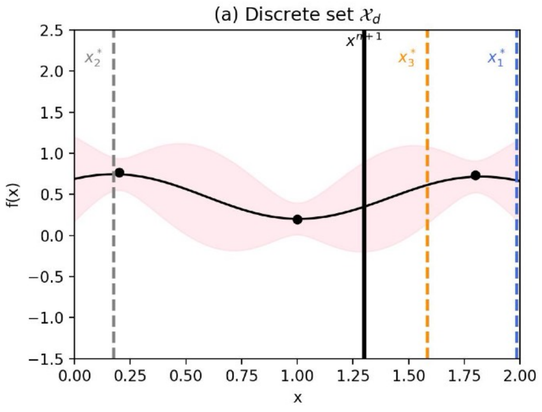
$$M = \min_{x} \mu_n(x)$$

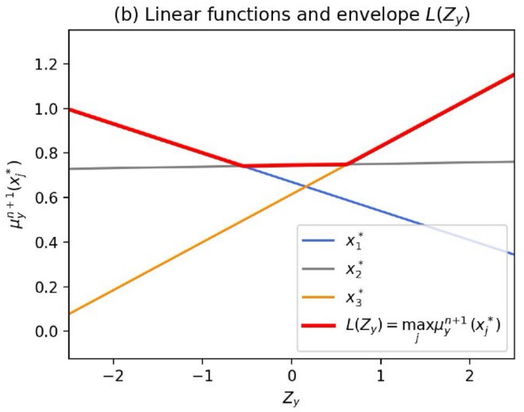
- Always prefers feasible over infeasiblecKG ignores constraints completely
- Still explores near constraint boundary

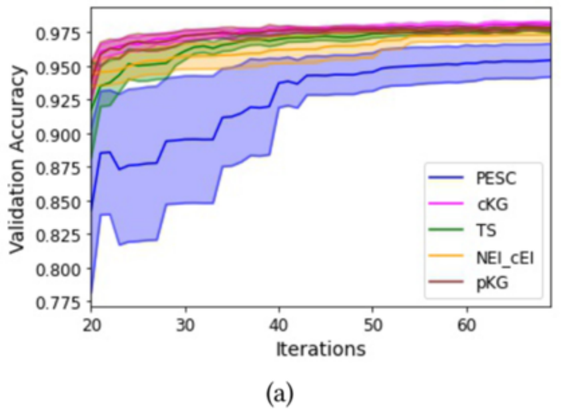
Conclusion & Overview

- cKG quantifies the expected value of information gained from sampling a new point, considering both the objective and constraint models.
- cKG can be efficiently computed by adapting the approach proposed in the work of Pearc eetal. [2020]
- Proved that the algorithm will find the true optimum in the limit.
- cKG consistently and significantly outperformed all benchmark algorithms **especially on noisy settings**









(a)