High Value Linear Envelope - 3
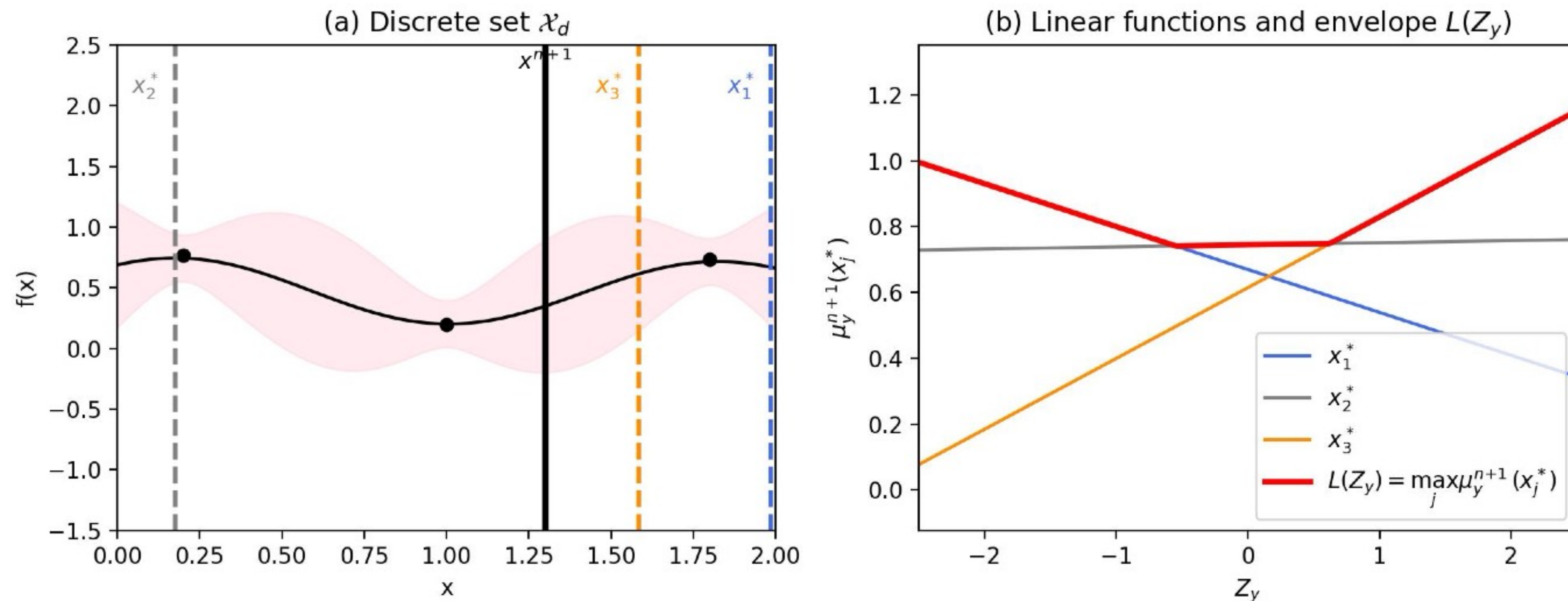
Pearce et al. [2020]

- Continue with Scott et al. (2011) using the scenario-driven discrete set $\mathcal{X}_d$:

(a) Discrete set $\mathcal{X}_d$

(b) Linear functions and envelope $L(Z_y)$

Constrained BO Definition

$$x^* = \arg \max_{x \in \mathcal{X}} f(x) \quad \text{s.t.} \quad c_k(x) \leq 0, \quad k = 1, \ldots, K.$$

Both the objective $f(x)$ and the constraints $c_k(x)$ are modeled as independent Gaussian Processes (GPs). At iteration n, their posteriors are described by their respective means and variances:

$\mu_y^n(x), \sigma_y^n(x)$ for the objective, and $\mu_{c_k}^n(x), \sigma_{c_k}^n(x)$ for each constraint.