Pseudocode

ALGORITHM 1: cKG computation.

Input: Sample x^{n+1}, size of Monte Carlo discretisations n_c and n_y

0. Initialise discretisation $X_d^0 = \{\}$ and set $n_z = n_c n_y$

1. Compute $x_r^n = \arg\max_{x \in \mathbb{X}} \mu_y^n(x)\mathrm{PF}^n(x)$

2. **for** j **in** $[1, \ldots, n_z]$ **:**

3. Generate $Z_y^j, Z_1^j, \ldots, Z_K^j \sim N(0, 1)$

4. Compute $x_j^* = \max_{x \in X_d} \left\{ \left[\mu_y^n(x) + \tilde{\sigma_y}(x, x^{n+1}) Z_y^j \right] \mathrm{PF}^{n+1}(x; x^{n+1}, \mathbf{Z}_c^j) \right\}$

5. Update discretisation $X_d^j = X_d^{j-1} \cup \{x_j^*\}$

6. **for** m **in** $[1, \ldots, n_c]$ **:**

7. Compute $\mathrm{KG}_d(x^{n+1} = x; \mathbf{Z}_c^m)$ using X_d

8. Compute Monte Carlo estimation $\frac{1}{n_c} \sum_{m=1}^{n_c} \mathrm{KG}_d(x^{n+1}; \mathbf{Z}_c^m)$

9. **Return:** $\mathrm{cKG}(x^{n+1})$

Performance in Deterministic Setting