

Algorithm 3: PerformInflations

Input : $\vec{B}, \vec{CIB}, \vec{\sigma}, \vec{min}, \vec{max}, \mathcal{D}, \text{acceptedCandSet}_1, \text{acceptedCandSet}_2, \text{noCandidates}, \hat{O}.m$

ConfigParams: $\delta_{cost}, \delta_{restart}, \text{noSimulations}, \text{maxSimBudget}, \vec{PB}, \text{CB}, \vec{\alpha}$

Output : $\text{acceptedCandSet}_1, \text{acceptedCandSet}_2, \text{noCandidates}, \hat{O}.m, \vec{LIB}, \vec{CIB}$

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1  $\vec{LIB} \leftarrow \vec{CIB}$ 
2 repeat
3   (result,  $\vec{NIB}, X_1, \{X_2, \dots, X_k\}, O.m, O.sd, \vec{SC.m}, \vec{SC.sd}, N) \leftarrow$ 
     Inflate ( $\vec{B}, \vec{CIB}, \vec{\sigma}, \vec{min}, \vec{max}, \mathcal{D}, \delta_{cost}, \delta_{restart},$ 
     noSimulations, maxSimBudget,  $\vec{PB}, \text{CB}, \vec{\alpha}$ ) // Algorithm 4
4   if result is accept or not-reject then
5     acceptedCandSet2  $\leftarrow \text{acceptedCandSet}_2 \cup \{\vec{X}_2, \dots, \vec{X}_k\}$ 
6     noCandidates  $\leftarrow \text{noCandidates} + (k - 1)$ 
7     if result is accept and  $\hat{O}.m$  statistically better than  $\hat{O}.m$  with at least CB
       confidence then
8       acceptedCandSet1  $\leftarrow \text{acceptedCandSet}_1 \cup \{(\vec{X}_1, O.m, O.sd, \vec{SC.m}, \vec{SC.sd}, N)\}$ 
9        $\hat{O}.m \leftarrow O.m$ 
10      noCandidates  $\leftarrow \text{noCandidates} + 1$ 
11    end
12  else
13     $\vec{LIB} \leftarrow \vec{CIB}$ 
14     $\vec{CIB} \leftarrow \vec{NIB}$ 
15  end
16 until result is accept
17 return  $\text{acceptedCandSet}_1, \text{acceptedCandSet}_2, \text{noCandidates}, \hat{O}.m, \vec{LIB}, \vec{CIB}$ 

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Algorithm 4: Inflate

Input : $\vec{B}, \vec{CIB}, \vec{\sigma}, \vec{min}, \vec{max}, \mathcal{D}$

ConfigParams: $\delta_{cost}, \delta_{restart}, \text{noSimulations}, \text{maxSimBudget}, \vec{PB}, \text{CB}, \vec{\alpha}$

Output : result, $\vec{NIB}, X_1, \{X_2, \dots, X_k\}, O.m, O.sd, \vec{SC.m}, \vec{SC.sd}, N$

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1  $((\vec{X}_1, O_1), \dots, (\vec{X}_k, O_k)) \leftarrow \text{GenerateCandidates}(\vec{CIB}, \vec{min}, \vec{max}, \delta_{cost}, \delta_{restart})$ 
2 (result,  $O.m, O.sd, \vec{SC.m}, \vec{SC.sd}, N) \leftarrow \text{PerformStochasticSimulations}(\vec{X}_1, \vec{B},$ 
    $\vec{\sigma}, \mathcal{D}, \text{noSimulations}, \text{maxSimBudget}, \vec{PB}, \text{CB})$  // Algorithm 9
3  $\vec{NIB} \leftarrow []$ 
4 if result is reject or not-reject then
5   for  $i \in \mathcal{D}$  do
6     if  $P(SC.m_i \geq PB_i) \not\geq CB$  then
7        $b_i \leftarrow SC.m_i - \frac{\text{StdNormInvCDF}((1-PB_i)+\epsilon) \times SC.sd_i}{\sqrt{N}}$ 
8        $\Delta \leftarrow b_i - CIB_i$ 
9        $NIB_i \leftarrow CIB_i + (\alpha_i \times \Delta)$ 
10    else
11       $NIB_i \leftarrow CIB_i$ 
12    end
13  end
14 end
15 return result,  $\vec{NIB}, X_1, \{X_2, \dots, X_k\}, O.m, O.sd, \vec{SC.m}, \vec{SC.sd}, N$ 

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