

Algorithm 5: PerformDeflations

Input : $\vec{B}, \vec{LIB}, \vec{CIB}, \vec{\sigma}, \vec{min}, \vec{max}, \mathcal{D}, \text{acceptedCandSet}_1, \text{acceptedCandSet}_2, \text{noCandidates}, \hat{O}.m$
ConfigParams: $\delta_{cost}, \delta_{restart}, \text{noSimulations}, \text{maxSimBudget}, \vec{PB}, \text{CB}, \vec{\beta}$
Output : $\text{acceptedCandSet}_1, \text{acceptedCandSet}_2, \text{noCandidates}, \hat{O}.m, \vec{CIB}$

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

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Algorithm 6: Deflate

Input : $\vec{B}, \vec{LIB}, \vec{CIB}, \vec{\sigma}, \vec{min}, \vec{max}, \mathcal{D}$
ConfigParams: $\delta_{cost}, \delta_{restart}, \text{noSimulations}, \vec{PB}, \text{CB}, \vec{\beta}$
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  $((\vec{X}_1, O_1), \dots, (\vec{X}_k, O_k)) \leftarrow \text{GenerateCandidates} (\vec{CIB}, \vec{min}, \vec{max}, \delta_{cost}, \delta_{restart})$ 
  // Algorithm 9
2 (result,  $O.m, O.sd, \vec{SC.m}, \vec{SC.sd}, N) \leftarrow \text{PerformStochasticSimulations} (\vec{X}_1, \vec{B},$ 
     $\vec{\sigma}, \mathcal{D}, \text{noSimulations}, \text{maxSimBudget}, \vec{PB}, \text{CB})$ 
3  $\vec{NIB} \leftarrow []$ 
4 if result is accept then
5   for  $i \in \mathcal{D}$  do
6      $\Delta \leftarrow CIB_i - LIB_i$ 
7     if  $(\beta_i \times \Delta) \geq \tau$  then
8        $NIB_i \leftarrow CIB_i - (\beta_i \times \Delta)$ 
9     else
10       $NIB_i \leftarrow CIB_i$ 
11    end
12  end
13 end
14 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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