Algorithm 3: PerformInflations

Input : $\vec{B}, \overrightarrow{CIB}, \vec{\sigma}, \overrightarrow{min}, \overrightarrow{max}, \mathcal{D}$, $acceptedCandSet_1$, $acceptedCandSet_2$, noCandidates, $\hat{O}.m$
ConfigParams: $\delta_{cost}, \delta_{restart}$, noSimulations, maxSimBudget, $\overrightarrow{PB}$, CB, $\vec{\alpha}$
Output : $acceptedCandSet_1$, $acceptedCandSet_2$, noCandidates, $\hat{O}.m, \overrightarrow{LIB}, \overrightarrow{CIB}$

$\overrightarrow{LIB} \leftarrow \overrightarrow{CIB}$
repeat
  (result, $\overrightarrow{NIB}, X_1, \{X_2, \ldots, X_k\}, O.m, O.sd, \overrightarrow{SC.m}, \overrightarrow{SC.sd}$, N) ← `Inflate` ($\vec{B}, \overrightarrow{CIB}, \vec{\sigma}$, $\overrightarrow{min}, \overrightarrow{max}$, $\mathcal{D}, \delta_{cost}, \delta_{restart}$, noSimulations, maxSimBudget, $\overrightarrow{PB}$, CB, $\vec{\alpha}$) `// Algorithm 4`
  if result is accept or not-reject **then**
    acceptedCandSet$_2$ ← acceptedCandSet$_2$∪ $\{\overrightarrow{X_2}, \ldots, \overrightarrow{X_k}\}$
    noCandidates ← noCandidates + (k - 1)
    if result is accept and O.m statistically better than $\hat{O}$.m with at least CB confidence **then**
      acceptedCandSet$_1$ ← acceptedCandSet$_1$∪ $\{(\overrightarrow{X}_1, O.m, O.sd, \overrightarrow{SC.m}, \overrightarrow{SC.sd}$, N)$\}$
      $\hat{O}$.m ← O.m
      noCandidates ← noCandidates + 1
    end
  else
    $\overrightarrow{LIB} \leftarrow \overrightarrow{CIB}$
    $\overrightarrow{CIB} \leftarrow \overrightarrow{NIB}$
  end
until result is accept
return $acceptedCandSet_1$, $acceptedCandSet_2$, noCandidates, $\hat{O}.m, \overrightarrow{LIB}, \overrightarrow{CIB}$

Algorithm 4: Inflate

Input : $\vec{B}, \overrightarrow{CIB}, \vec{\sigma}, \overrightarrow{min}, \overrightarrow{max}, \mathcal{D}$
ConfigParams: $\delta_{cost}, \delta_{restart}$, noSimulations, maxSimBudget, $\overrightarrow{PB}$, CB, $\vec{\alpha}$
Output : result, $\overrightarrow{NIB}, X_1, \{X_2, \ldots, X_k\}, O.m, O.sd, \overrightarrow{SC.m}, \overrightarrow{SC.sd}$, N

$((\overrightarrow{X_1}, O_1), \ldots, (\overrightarrow{X_k}, O_k))$ ← `GenerateCandidates` ($\overrightarrow{CIB}, \overrightarrow{min}, \overrightarrow{max}, \delta_{cost}, \delta_{restart}$)
(result, $O.m, O.sd, \overrightarrow{SC.m}, \overrightarrow{SC.sd}$, N) ← `PerformStochasticSimulations` ($\overrightarrow{X}_1, \vec{B}$, $\vec{\sigma}, \mathcal{D}$, noSimulations, maxSimBudget, $\overrightarrow{PB}$, CB) `// Algorithm 5`
$\overrightarrow{NIB} \leftarrow [\,]$
if result is reject or not-reject **then**
  for $i \in \mathcal{D}$ **do**
    if $(SC.m_i \geq PB_i) \not\geq CB$ **then**
      $b_i \leftarrow SC.m_i - \frac{\texttt{StdNormInvCDF}((1-PB_i)+\epsilon) \times SC.sd_i}{\sqrt{N}}$
      $\Delta \leftarrow b_i - CIB_i$
      $NIB_i \leftarrow CIB_i + (\alpha_i \times \Delta)$
    else
      $NIB_i \leftarrow CIB_i$
    end
  end
end
return result, $\overrightarrow{NIB}, X_1, \{X_2, \ldots, X_k\}, O.m, O.sd, \overrightarrow{SC.m}, \overrightarrow{SC.sd}$, N