Algorithm 8: RefineCandidates

Input : $acceptedCandSet_1$, $acceptedCandSet_2$, $\vec{B}$, $\vec{\sigma}$, $\hat{O}.m$, $\mathcal{D}$
ConfigParams: noSimulations, $\overrightarrow{PB}$, CB, maxSimBudget, budgetDelta, budgetThreshold
Output : bestCandidate, $\hat{O}.m$

newCandSet$_2$ ← Perform simulations and store candidates from $acceptedCandSet_2$ that return the *result* as *accept* from `PerformStochasticSimulations` (Algorithm 5) and whose O.m is statistically better than $\hat{O}.m$ with at least CB confidenc
acceptedCandSet ← acceptedCandSet$_1$∪ newCandSet$_2$
budget ← 1
iterationNo ← 1
repeat
  $\overrightarrow{N}^{iterNo}$ ← `ExtendedOCBA`($\overrightarrow{N}^{iterNo-1}$, iterationNo, $\mathcal{D}$, acceptedCandSet, noSimulations, budgetDelta) `// Algorithm 9`
  for $c \in acceptedCandSet$ **do**
    (result, $O.m, O.sd, \overrightarrow{SC.m}, \overrightarrow{SC.sd}$, N) ← `PerformStochasticSimulations` ($\overrightarrow{X}_c, \vec{B}, \vec{\sigma}, \mathcal{D}$, N_c^{iterNo}, N_c^{iterNo}, $\overrightarrow{PB}$, CB) `// Algorithm 5`
    if result is accept **then**
      $\hat{O}$.m ← O.m
    else if result is reject **then**
      Remove c from acceptedCandSet
  end
  budget ← budget + budgetDelta
  iterationNo ← iterationNo + 1
until budget > budgetThreshold
bestCandidate ← {c ∈ acceptedCandSet | $O.m_c = \hat{O}.m$}
return bestCandidate, $\hat{O}.m$

Algorithm 9: ExtendedOCBA

Input : $\overrightarrow{N}^{prev}$, iterationNo, $\mathcal{D}$, acceptedCandSet = {cand$_1$, ..., cand$_k$}; where $\forall_{i\in\{1,...,k\}}$ cand$_i$ = ($\overrightarrow{X}_i$, O.m$_i$, O.sd$_i$, $\overrightarrow{SC.m_i}$, $\overrightarrow{SC.sd_i}$, N$_i$)
ConfigParams: noSimulations, budgetDelta
Output : $\overrightarrow{N}$, a vector of number of simulations allocated using OCBA-CO for each candidate

bestCand ← arg min$_{i\in acceptedCandSet}$ O.m$_i$ s.t. $\forall_{i\in\mathcal{D}}(SC.m_i \geq PB_i) \geq CB$
$\Theta_O \leftarrow \left\{i | i \in acceptedCandSet, i \neq bestCand, \frac{(SC.m_{s,i} - PB_{s,i})}{SC.sd_{s,i}} \leq \frac{(O.m_i - O.m_{bestCand})}{O.sd_i}\right\}$
$\Theta_F \leftarrow \left\{i | i \in acceptedCandSet, i \neq bestCand, \frac{(SC.m_{s,i} - PB_{s,i})}{SC.sd_{s,i}} > \frac{(O.m_i - O.m_{bestCand})}{O.sd_i}\right\}$
$\forall_{i\in acceptedCandSet}\ \eta_i \leftarrow \begin{cases} \frac{SC.sd_{s,i}}{(SC.m_{s,i} - PB_{s,i})} & \text{if } i \in \Theta_F \\ \frac{O.sd_i}{(O.m_i - O.m_{bestCand})} & \text{if } i \in \Theta_O \\ \frac{SC.sd_{s,bestCand}}{(SC.m_{s,bestCand} - PB_{s,bestCand})} & \text{if } i = bestCand \\ 0 & \text{otherwise} \end{cases}$
$\forall_{i\in acceptedCandSet\setminus\{bestCand\}}\ \alpha_i \leftarrow$ proportional to η_i, i.e., $(\alpha_i/\alpha_j) = (\eta_i/\eta_j)^2$ for all i ≠ j ≠ bestCand
$\forall_{i\in acceptedCandSet\setminus\{bestCand\}}\ N_i \leftarrow \alpha_i(k\times\ noSimulations\ +\ iterationNo\ \times\ budgetDelta)$
$\alpha_O \leftarrow O.sd_{bestCand}\sqrt{\sum_{i\in\Theta_O}(\alpha_i/O.sd_i)^2}$
$\alpha_F \leftarrow$ proportional to $\eta_{bestCand}$, i.e., $(\alpha_F/\alpha_i) = (\eta_{bestCand}/\eta_i)^2$ for all i ≠ bestCand
$\alpha_{bestCand} \leftarrow \max(\alpha_F, \alpha_O)$
$\forall_{i\in acceptedCandSet}\ N_i \leftarrow$ Adjust the allocation for each candidate accordingly so that $\sum_{i=1}^{k} max(0, (N_i - N_i^{prev})) = budgetDelta$
return $\overrightarrow{N}$