```
def $bisectionEXP(left,right):$
    $P_L, P_R = P_{opt}(left), P_{opt}(right)$
    $if\ (left \leq right)\ and\ (P_L\ != P_R):$
        $mid = \frac{left+right}{2}$
        $P_M = P_{opt}(mid)$
        $if\ (P_L != P_M):$
            $bisectionEXP(left,\ mid)$
        $if\ (P_R != P_M):$
          $bisectionEXP(mid,\ right)$
```

```
def $AdaNEXUS(CC_i)$ :
    $S_{now}, P_{now} = InitializeSeed(CC_i)$
    $C_{now} = Cost(P_{opt}, S_{now})$
    $step, \ \Delta_{now} = 1 , \ [-1, 0]$
    $while \ (There \ exist \ next \ point)$ :
        $S_{proxy} = S_{now} + step * \Delta_{now}$
        $C_{proxy}, P_{proxy} = Cost(P_{opt} , S_{proxy})$
        $S_{next} , \Delta_{next} = Correct(CC_i, C_{proxy})$
        $C_{next}, P_{next} = Cost(P_{opt} , S_{next})$
        $if \ (\max\left(\frac{C_{next}}{CC_i} , \frac{CC_i}{C_{next}}\right) \leq (1 + \alpha))$ :
            $\Delta_{now} = TuneDir(\Delta_{now} , \Delta_{next})$
            $bisectionEXP(S_{now} , \ S_{next})$
            $S_{now} , step = S_{next} , 2 * step$
        $else$ :
            $if \ step > 1$ :
            $step = step \ / \ 2$
        $else$ :
            $\Delta_{now} = Rotate(S_{now} , \Delta_{now})$
```