**Algorithm 1** Screening Algorithm

**procedure** SCREENING–PRIMARYCANDIDATESELECTION
  $least\_distance_{rank} = MAX$
  $least\_distance_{range} = MAX$
  $dim\_distance_{rank} = 0$
  $dim\_distance_{range} = 0$
  $HD\_Rank_{selected}$
  $HD\_Range_{selected}$
  **for** each $HD_x$ in History Database **do**
    **for** each $Dim_i$ *where* $i$ *in* 1 .. 3 **do**
      **for** each $Bucket_j$ in Top 3 Buckets($Dim_i$) in Decreasing Order of Item Count for current data set **do**

        **for** each $pt_{cd}$ and $pt_{HDi}$ in points($Bucket_j$) **do**
          $distance_{rank} = dist(pt_{cd}, pt_{HDi})$;
        **end for**
      $Bucket_k$ = Bucket in $HD_i$ *where* $range(bucket_k) \sim range(bucket_j)$
        **for** each $pt_{cd}$ *in* $points(Bucket_j)$ *and* $pt_{HDi}$ *in* $Bucket_k$ **do**
          $distance_{range} = dist(pt_{cd}, pt_{HDi})$;
        **end for**
      **end for**
      $dim\_distance_{rank} = dim\_distance_{rank} + distance_{rank}$
      $dim\_distance_{range} = dim\_distance_{range} + distance_{range}$
    **end for**
    **if** $dim\_distance_{rank}$ ¡ $least\_distance_{rank}$ **then**
      $least\_distance_{rank} = dim\_distance_{rank}$;
      $HD\_Rank_{selected} = HD_x$;
    **end if**
    **if** $dim\_distance_{range}$ ¡ $least\_distance_{range}$ **then**
      $least\_distance_{range} = dim\_distance_{range}$;
      $HD\_Range_{selected} = HD_x$;
    **end if**
  **end for**
**end procedure**