Naive RNA Splicing Checker

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We first determine that whether $\mathbb{S}(x) = \emptyset$ for a given string x.

Procedure NaiveMatchFinder(X, start, end)

Input : A string X of length n, *start* and *end* for search range on X
Output: Y/N
$x = x_1...x_{start}...x_{end}...x_n$
```
/* Finding corresponding match string(θ(u)) to the factor string(u)     */
/* P1 indicates subset of factor string end points on X                 */
/* S2,M2, and P2 each indicate matched string, subset of matched strings
   and subset of matched string start points on X                       */
```
for $i \leftarrow start \ to \ end/2$ **do**
    `/* start point of factor string                                     */`
    for $j \leftarrow start \ to \ end/2$ **do**
        `/* end point of factor string                                   */`
        for $k \leftarrow end \ to \ start$ **do**
            `/* length of string X.                                       */`
            t = i
            p = 0
            while $l \neq j$ **do**
                if $x_k = \theta(x_t)$ **then**
                    $S2[p] = X_k$ `// save matched character`
                    if $p=0$ **then**
                        P2 $\leftarrow$ k   `// save match start(backward-end) point`
                    t++
                    p++
                if $X[n] \neq \theta(X[T])$ **then**
                    p=0
                break
        M2 $\leftarrow$ S2   `// save matched string`
        P1 $\leftarrow$ j   `// save factor end point`
return M2,P1,P2

Figure 1: NaiveMatchFinder

Algorithm 1: NaiveSplicingChecker(X)

Input : A string X of length n
Output: Y/N
$S = x_1 x_2 ... x_n$

```
/* From x_1...x_n, find exon match                                    */
```
$EM_m, EP_f, EP_m = NaiveMatchFinder(X, 1, n)$

```
/* From w_{IP_f}...w_{IP_m}, find intron match                         */
```
$IM_m, IP_f, IP_m = NaiveMatchFinder(X, EP_f, EP_m)$

```
/* Check if match did happened.                                       */
```
if $IM_m \neq \emptyset$ & $EM_m \neq \emptyset$ **then**
  └ **return** Y
return N

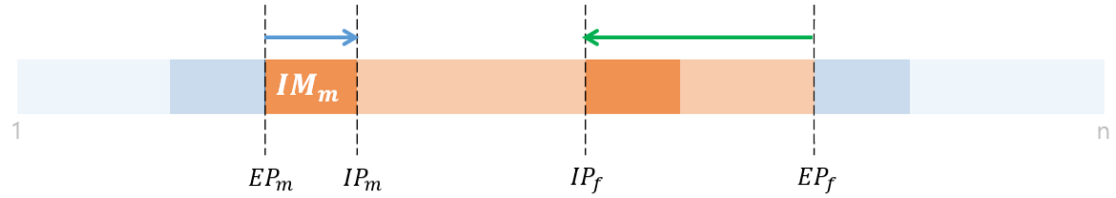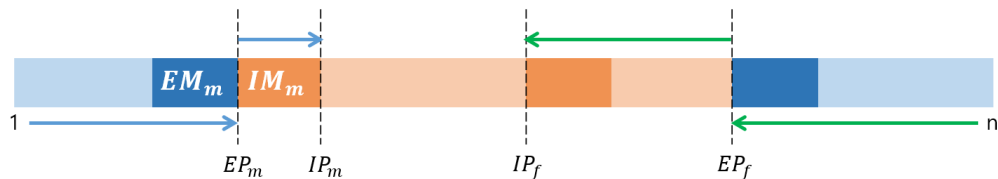Figure 2: NaiveMatchFinder for exon match

Figure 3: NaiveMatchFinder for intron match

Figure 4: FullNaiveSplicingChecker(X)