串

模式匹配：问题 & 蛮力算法

13-B

一切事情，一旦失败，就显得很愚蠢

长的是磨难，短的是人生

邓俊辉

deng@tsinghua.edu.cn

循模式访问：问题特点 + 测试方法

$Text:$ `a man with money is no match against a man on a mission`

$Pattern:$ `match`

random T + random P ?

random T + substring P !

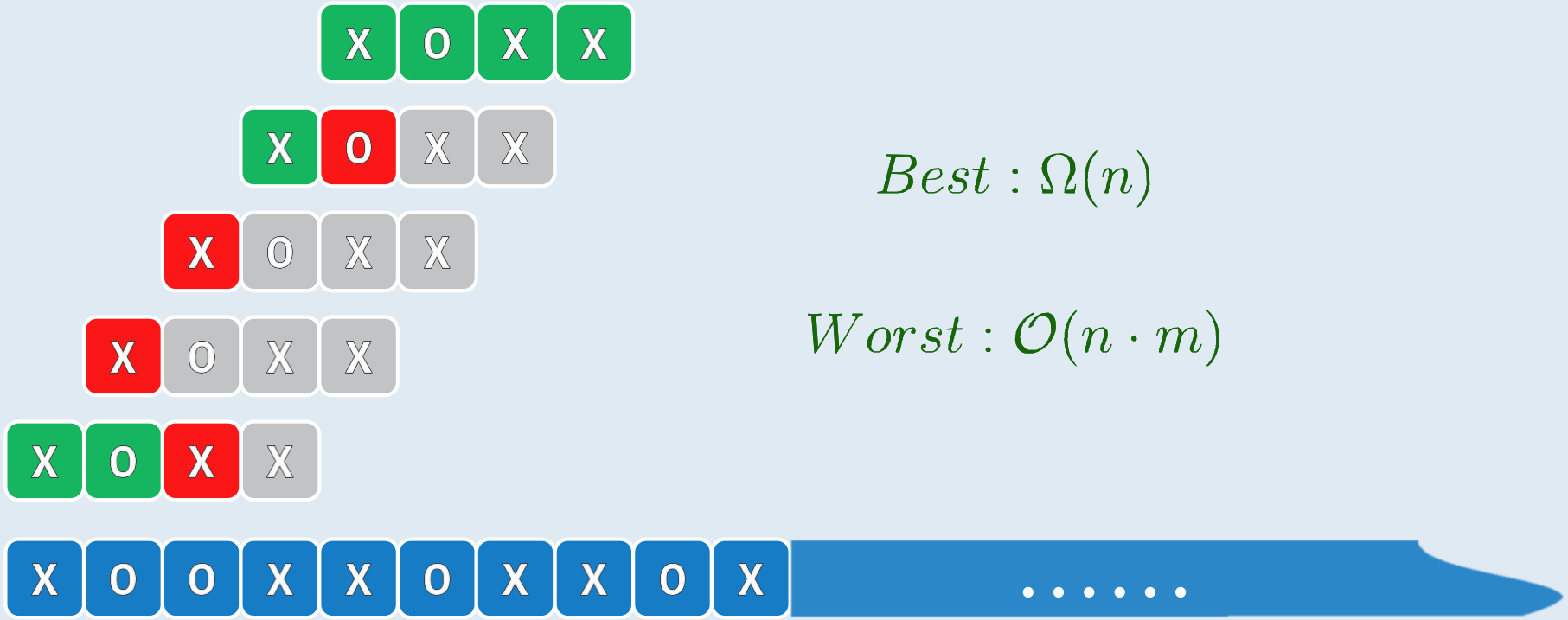
$n = |T| \quad m = |P|$

$2 \ll m \ll n$

$s = |\Sigma|$

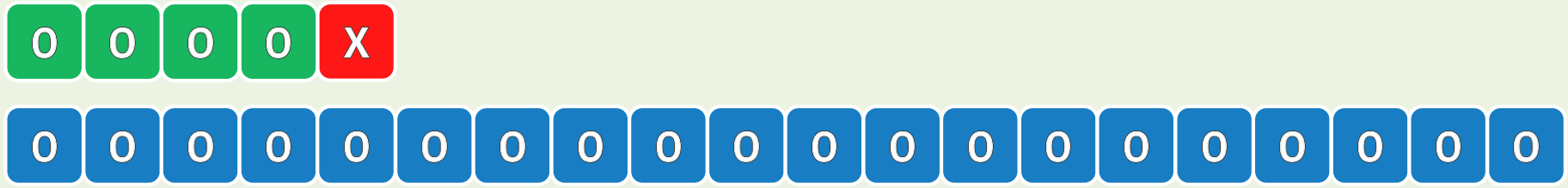
$Pr_{match} \approx n/s^m \to 0$

蛮力策略



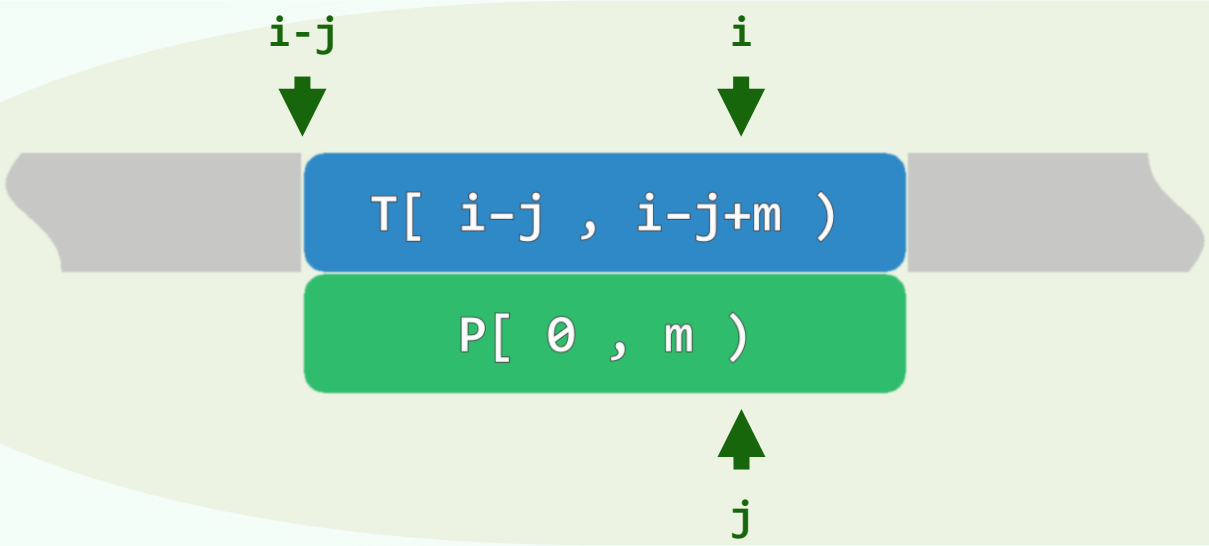
$$Best : \Omega(n)$$

$$Worst : \mathcal{O}(n \cdot m)$$



版本1

```
int match( char * P, char * T ) {
   size_t n = strlen(T), i = 0;
   size_t m = strlen(P), j = 0;
   while ( j < m && i < n ) //自左向右逐次比对
      if ( T[i] == P[j] )  { i ++;  j ++; } //若匹配，则转到下一对字符
      else                 { i -= j-1; j = 0; } //否则，T回退、P复位
   return i-j; //最终的对齐位置：藉此足以判断匹配结果
}
```



版本2

```
int match( char * P, char * T ) {
   size_t n = strlen(T), i = 0;
   size_t m = strlen(P), j;
   for ( i = 0; i < n-m+1; i ++ ) { //T[i]与P[0]对齐后
      for ( j = 0; j < m; j ++ ) //逐次比对
         if ( T[i+j] != P[j] ) break; //失配，转下一对齐位置
      if ( m <= j ) break; //完全匹配（Python：可以写得更简洁、优美）
   }
   return i; //最终的对齐位置：藉此足以判断匹配结果
}
```