

## 附录

可以在 <https://github.com/South-Walker/OptimizationMethod> 中访问到本文中所涉及的具体代码及原始数据。

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**Algorithm 1** Search for the secret

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**Input:**  $D$ : dictionary;  $n$ : number of words in  $D$ ;  $l$ : number of letter in a word;  $Host()$ : an function that return the hitnumber between secret and input;

**Output:** secret  $s$

```

1: while  $|D| > 1$  do
2:   Select the optimal guess  $a$ ;
3:    $Hit = Host(a)$ 
4:   if  $Hit = l$  then return  $s = a$ 
5:   end if
6:    $D = \{d \in D | l - \|d - a\|_0 = Hit\}$ 
7: end while
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**Algorithm 2** Select the optimal guess

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**Input:**  $D$ : dictionary;  $n$ : number of words in  $D$ ;  $l$ : number of letter in a word;

**Output:** optimal guess  $a^*$

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1: for  $i = 1$  to  $l$  do
2:   initialize a dictionary  $D_i$ ;
3: end for
4: for each  $a \in D$  do
5:   for each  $d \in D$  do
6:      $Hit = l - \|a - d\|_0$ ;
7:      $D_{Hit} = D_{Hit} \cup \{d\}$ ;
8:   end for
9:   for each  $D_i$  do
10:     $P_i = |D_i| / \sum_{j=1}^l |D_j|$ ;
11:    for each  $d_j \in D_i$  do
12:      for each  $d_k \in D_i$  do
13:         $E_i = E_i + \|d_j - d_k\|_0 * P_i$ ;
14:      end for
15:    end for
16:    if  $E_i < E_{min}$  then
17:       $E_{min} = E_i$ ;
18:       $a_{min} = a_i$ ;
19:    end if
20:  end for
21: end for
22: return  $a^* = a_{min}$ ;

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