Approximate String Matching

The approximate string matching problem is exact string matching problem with errors. We can use like Shift-And to achieve the $R^k[n,m]$ table. Here, we will introduce three operation which are insertion, deletion and substitution in approximate string matching.

$$R^k(n,m) \begin{cases} = 1 \text{ if there exists a suffix } A \text{ of } T_{1,i} \text{ such that } \mathrm{d}(A,P_{1,j}) \leqq k. \\ = 0 \text{ otherwise.} \end{cases}$$

where $1 \leqq i \leqq n$ and $1 \leqq j \leqq m$.

Let $R_I^k(i,j)$, $R_D^k(i,j)$ and $R_S^k(i,j)$ denote the $R^k(i,j)$ related to insertion, deletion and substitution respectively.

$R_I^k(i,j)=1$, $R_D^k(i,j)=1$ and $R_S^k(i,j)=1$ indicate that we can perform an insertion, deletion and substitution respectively without violating the error bound which is k.