
Algorithm 1 DIALIGN-TX (s_1, \dots, s_k)

 $F \leftarrow \emptyset$ **for all** s_i, s_j such that $i < j$ **do** $F \leftarrow F \cup \text{PAIRWISE_ALIGNMENT}(s_i, s_j, \emptyset)$ **end for**/* initial computation of A_1 : original DIALIGN alignment */ $A_1 \leftarrow \emptyset$ $A_1 \leftarrow \text{GREEDY_ALIGNMENT}(A_1, F)$ /* initial computation of A_0 : "progressive DIALIGN" alignment */ $a = \text{AVERAGE}(w(f) | f \in F)$ $F_0 = \{f \in F | w(f) < a\}$ $F_1 = \{f \in F | w(f) \geq a\}$ $T = \text{BUILD_UPGMA}(F)$ **while** there is an unprocessed non-leaf node in T **do**Let p be an unprocessed non-leaf node such that the child-nodes are either marked as processed or are leaf. $A'(p) \leftarrow \text{MERGE}(p, F_1)$ $\text{PROCESSED}(p) \leftarrow \text{TRUE}$ **end while** $A_0 \leftarrow A'(\text{ROOT}(T))$ $A_0 \leftarrow \text{GREEDY_ALIGNMENT}(A_0, F_0)$ /* adding further fragments to A_1 */**while** additional fragments can be found **do** $F \leftarrow \emptyset$ **for all** s_i, s_j such that $i < j$ **do** $F \leftarrow F \cup \text{PAIRWISE_ALIGNMENT}(s_i, s_j, A_1)$ **end for** $A_1 \leftarrow \text{GREEDY_ALIGNMENT}(A_1, F)$ **end while**/* adding further fragments to A_0 */**while** additional fragments can be found **do** $F \leftarrow \emptyset$ **for all** s_i, s_j such that $i < j$ **do** $F \leftarrow F \cup \text{PAIRWISE_ALIGNMENT}(s_i, s_j, A_0)$ **end for** $A_0 \leftarrow \text{GREEDY_ALIGNMENT}(A_0, F)$ **end while****if** $W(A_0) > W(A_1)$ **then** $\text{RETURN} \leftarrow A_0$ **else** $\text{RETURN} \leftarrow A_1$ **end if**
