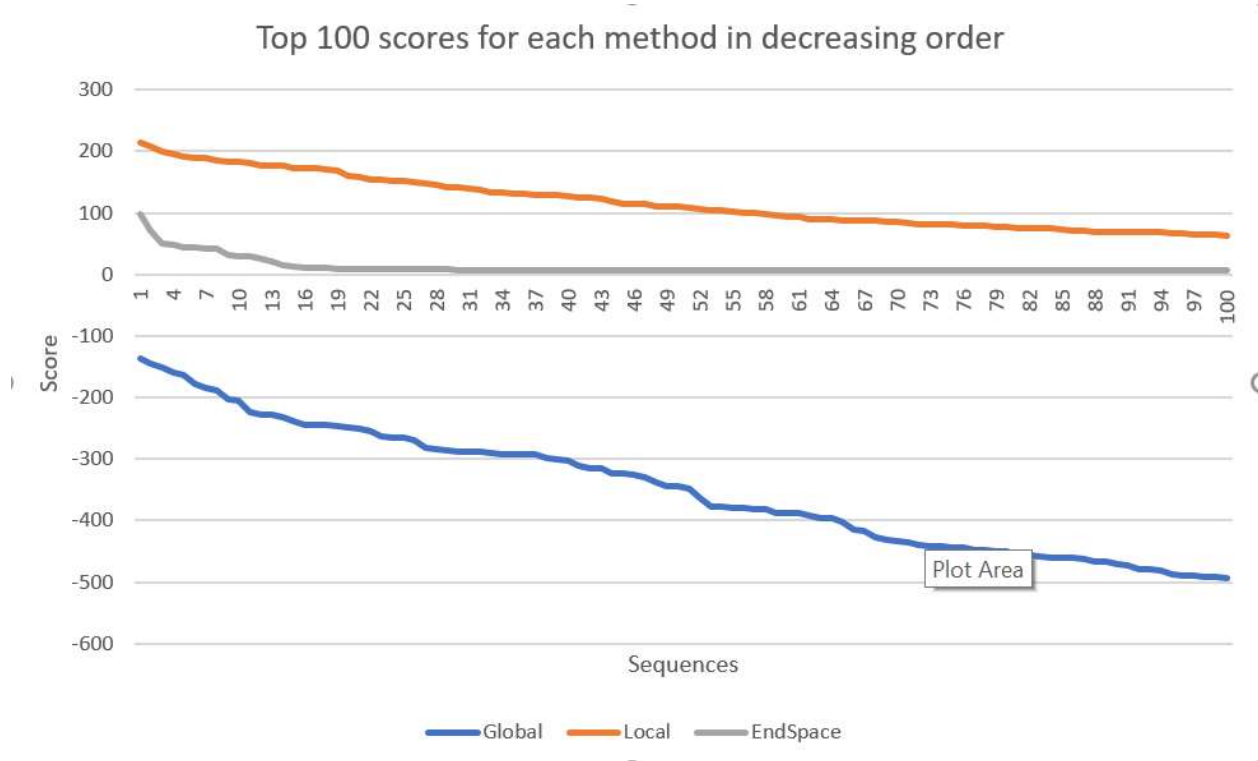
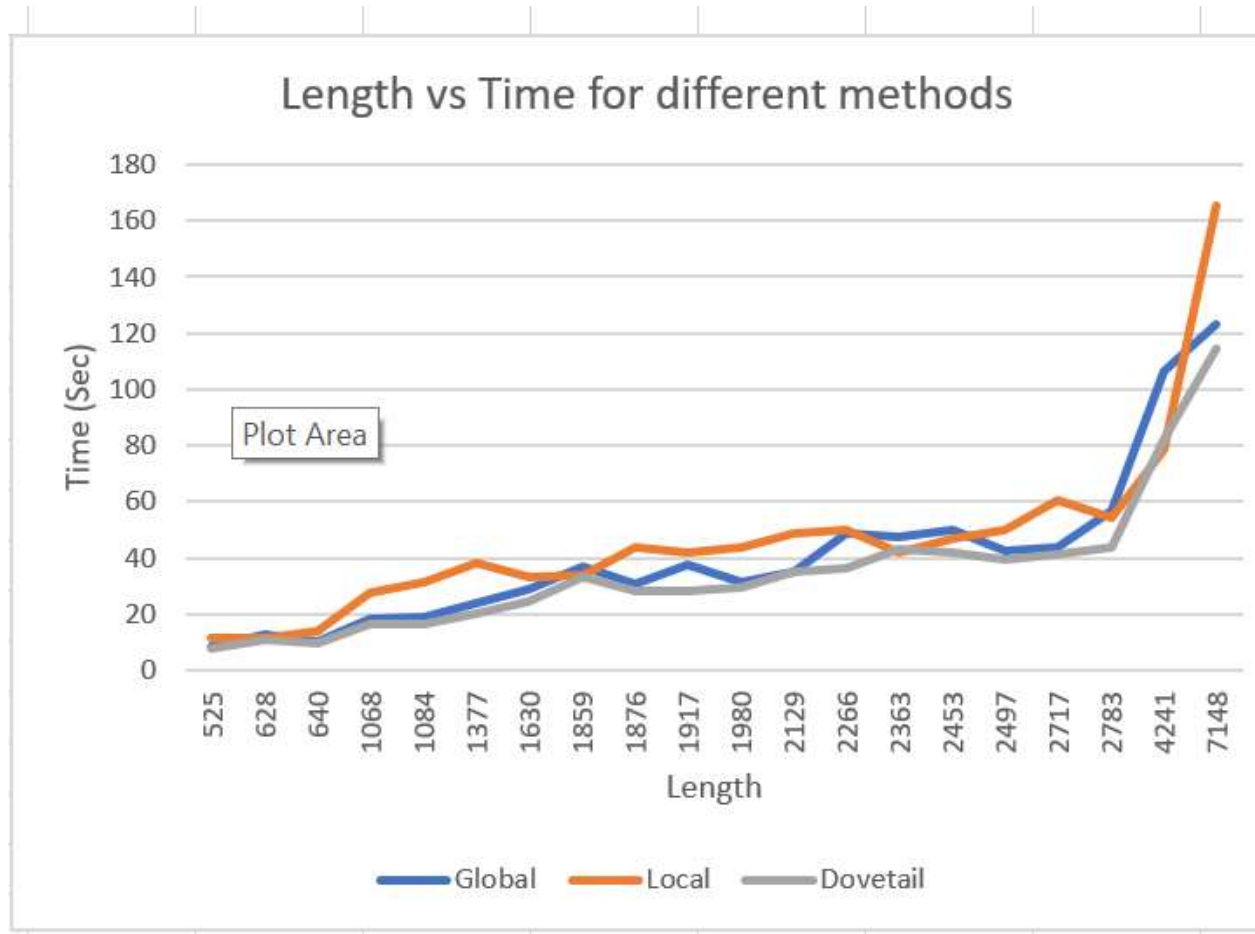


Abhinav Reddy Podduturi
1599-2633



The above graph is as expected. $\text{Score}(\text{Local}) \geq \text{Score}(\text{End Space}) \geq \text{Score}(\text{Global})$. Since we are picking the best among all the possible combinations of subsequences, local alignment gives the highest score. And since the start and end positions can vary in End space alignment, it gives better score than global alignment.



The run time is increasing linearly with length of the query sequence for each method.

Time complexity of all the three methods is $O(m*n)$ where m and n are lengths of database sequence and query sequence respectively. Total run time for each query to run on the entire database is

$T = n*m_1 + n*m_2 + n*m_3 + \dots + n*m_l$ where m_1, m_2, \dots, m_l are lengths of all the database sequences.

$T = n*(m_1 + m_2 + m_3 + \dots + m_l)$

$T = n*C$ where $C = m_1 + m_2 + m_3 + \dots + m_l$. C is a constant since the sum of lengths of all the database sequences is constant for all the queries. This is in agreement with the above graph.

All three methods have almost similar run time due to fact that all three methods have the same runtime complexity.