**Performance Analysis**

Performance vs. Sequence Length

3/21: Initial Algorithms

Needleman-Wunsch

|  | 5 | 10 | 20 | 30 | 40 | 50 |
| --- | --- | --- | --- | --- | --- | --- |
| 5 | 0s | 0s | 0s | 0.04s  0.04s  0.04s | 0s | 1.79s  1.78s  1.77s |
| 10 | 0s | 0s | 0s | 0.35s  0.35s  0.35s | 0.03s  0.03s  0.03s | 3.46s  3.45s  3.56s |
| 20 | 0s | 0s | 0s | 0.02s  0.02s  0.02s | 418.51s  414.81s  418.22s | 0.23s  0.23s  0.23s |
| 30 | 0s | 0.1s  0.1s  0.1s | 0s | 0.05s  0.05s  0.05s | 0.03s  0.03s  0.04s | 0.03s  0.03s  0.03s |
| 40 | 1.26s  1.26s  1.25s | 2.08s  2.06s  2.06s | 0s | 0.02s  0.02s  0.02s | 0.78s  0.77s  0.79s | 0.01s  0.01s  0.01s |
| 50 | 0.15s  0.15s  0.15s | 392.14s  394.81s  398.67s | 33.14s  33.19s  33.5s | 0.01s  0.01s  0.01s | 0.09s  0.09s  0.09s | 0.01s  0.01s  0.01s |

Smith-Waterman

|  | 5 | 10 | 20 | 30 | 40 | 50 |
| --- | --- | --- | --- | --- | --- | --- |
| 5 | 0s | 0s | 0s | 0s | 0s | 0s |
| 10 | 0s | 0s | 0s | 0s | 0s | 0s |
| 20 | 0s | 0s | 0s | 0s | 0s | 0s |
| 30 | 0s | 0s | 0s | 0s | 0s | 0s |
| 40 | 0s | 0s | 0s | 0s | 0s | 0s |
| 50 | 0s | 0s | 0s | 0s | 0s | 0s |

**When running every Smith-Waterman Test, it takes 0.02s not in release mode**

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Needleman-Wunsch - No recursion

|  | 5 | 10 | 20 | 30 | 40 | 50 |
| --- | --- | --- | --- | --- | --- | --- |
| 5 | 0s | 0s | 0s | 0s | 0s | 0.01s  0.01s  0.01s |
| 10 | 0s | 0s | 0s | 0s | 0s | 0.02s  0.02s  0.02s |
| 20 | 0s | 0s | 0s |  | 4.77s  4.68s  4.64s | 0s |
| 30 | 0s | 0s | 0s | 0s | 0.51s  0.47s  0.47s | 0S |
| 40 | 0.01s  0.01s  0.01s | 0.01s  0.01s  0.01s | 0s | 0s | 0s  0.11s  0.11s | 0.26s  0.26s  0.26s |
| 50 | 0s | 2.38s  2.23s  2.42s | 0.25s  0.25s  0.25s | 0s | 0s | 0s |