HPC Observations:

(End output of timed and parallelized code block is an array containing values (0-9) corresponding to matched labels at their respective indices using k-means. Output array dim : [512,1])

**Case 1: (1 task = 1 test image vs 1 training image)**

N1 = total tasks = 512 x 512 = 262144

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Num of Batches  (Chunks) | Batch\_size  (N1/num of batches) | Regular  (sec) | Mem-mapped  (sec)  (test-set mm only) | Mem-mapped  (sec)  (test+train) |
| 8 | 32768 | 14.892875 | 14.411720 | 17.050108 |
| 64 | 4096 | 14.680337 | 14.624040 |  |
| 512 | 512 | 14.503011 | 14.302047 | 16.404555 |
| 4096 | 64 | 14.969963 | 14.805438 | 17.695889 |
| 32768 | 8 | 18.212560 | 20.053059 | 22.491158 |
| 262144 (Round Robin) | 1 | 42.678130 | 40.778220 | 44.380234 |

**Case 2: (1 task = 1 test image vs 512 training images)**

N2 = total tasks = 512

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Num of Batches  (Chunks) | Batch\_size  (N2/num of batches) | Regular  (sec) | Mem-mapped  (sec)  (test only) | Mem-mapped  (sec)  (test+train) |
| [fn with sum] | [fn with sum] | [fn with sum] |
| 8 | 64 | 12.484409 | 13.475682 | 12.939430 |
| 64 | 8 | 12.418557 | 14.641358 | 13.088847 |
| 512 | 1 | 12.905492 | 13.459336 | 13.438713 |
| Non-Parallel | | **38.622740** | **38.329688** | **38.652083** |

**Case 3: (1 task = 512 test images vs 1 training image)**

N3 = total tasks = 512

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Num of Batches  (Chunks) | Batch\_size  (N2/num of batches) | Regular  (sec) | Mem-mapped  (sec)  (test-set mm only) | Mem-mapped  (sec)  (test+train) |
| [fn with sum] | [fn with sum] | [fn with sum] |
| 8 | 64 | 12.737711 | 12.692451 | 13.178845 |
| 64 | 8 | 13.133942 | 12.954677 | 13.628722 |
| 512 | 1 | 13.278155 | 12.842739 | 13.597085 |
| Non-Parallel | | **39.558962** | **38.349410** | **39.192323** |

**Time taken to create memmap dump:**

* **Test set -** 00.038054 sec
* **Train set -** 00.098017sec
* **Total - 0.136071 sec**

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