

```

1  %copyright Charles Davi 2024
2  %BLACK TREE AUTOML
3  %HUMANITY'S FASTEST DEEP LEARNING SOFTWARE
4
5  %===== ↵
6  %===== ↵
7  %VECTORIZED COMPUTATIONAL GENOMICS - mtDNA Dataset Command Line
8  %===== ↵
9  %===== ↵
10
11 %===== ↵
12 %CALCULATES THE RATE OF MUTATION PER 1000 YEARS
13 %===== ↵
14
15 %class in question
16 C = 21;
17
18 %finds the rows for the class in question
19 x = find(dataset(:,N+1) == C);
20 num_items = num_rows_vector(C);
21
22 %takes the first genome
23 index = x(1);
24
25 %runs nearest neighbor on it
26 [nearest_neighbor, match_count, match_vector, match_matrix] = ↵
    Genetic_Nearest_Neighbor_Single_Row(index, dataset, N);
27
28 %removes all ancient and archaic rows
29 %also removes all rows below a particular threshold
30
31 ancient_vector = [16 20 21 22 23 26 31 32 36 37 38 39 57 59];
32 num_items = size(ancient_vector,2);
33
34 %this should be a number significantly above .25 (i.e., chance)
35 threshold = .6;
36
37 for i = 1 : num_items
38
39     %finds all rows in the current class
40     current_class = ancient_vector(i);

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41     x = find(dataset(:,N+1) == current_class);
42
43     %effectively removes rows in question
44     match_vector(x) = -1;
45
46     %finds all rows with a match count less than the threshold
47     x = find(match_vector < threshold*N);
48
49     %effectively removes rows in question
50     match_vector(x) = -1;
51
52     endfor
53
54     %actually removes rows to be deleted
55     x = find(match_vector == -1);
56     match_vector(x) = [];
57
58     percentage_vector = 1 - match_vector/N;
59
60     "average change"
61     100*mean(percentage_vector)
62
63     "minimum change"
64     100*min(percentage_vector)
65
66     "maximum change"
67     100*max(percentage_vector)
68
69     "standard deviation"
70     100*std(percentage_vector)
71
72
73
74
```