

```

1  %copyright Charles Davi 2022
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 %TESTS EACH GENOME OF THE CLASS IN QUESTION AGAINST TWO OTHERS
13 %FOR ANCESTRY
14 %AVERAGES ARE USED
15 %=====
16 tic;
17 %class in question
18 C = 36;
19 %finds the rows for the class in question
20 x = find(dataset(:,N+1) == C);
21 num_items = num_rows_vector(C);
22
23 %comparison class 1
24 C1 = 7;
25
26 %finds the rows for comparison class 1
27 y = find(dataset(:,N+1) == C1);
28
29 %comparison class 2
30 C2 = 39;
31
32 %finds the rows for comparison class 2
33 z = find(dataset(:,N+1) == C2);
34
35 %initializations
36 avg1 = [ ];
37 avg2 = [ ];
38 avg3 = [ ];
39
40 %compares every element of the class in question to the two

```

## comparison classes

```
41
42 for i = 1 : num_items
43
44     index = x(i);
45
46     [nearest_neighbor, match_count, match_vector, match_matrix] = Genetic_Nearest_Neighbor_Single_Row(index, dataset, N);
47
48     avg1 = [avg1 match_vector(y)']; %stores all matches for comparison class 1
49
50     avg2 = [avg2 match_vector(z)']; %stores all matches for comparison class 2
51
52
53 endfor
54
55
56 %compares the two comparison classes using comparison class 2
57 num_items = size(z,1);
58
59 for i = 1 : num_items
60
61     index = z(i);
62
63     [nearest_neighbor, match_count, match_vector, match_matrix] = Genetic_Nearest_Neighbor_Single_Row(index, dataset, N);
64
65     avg3 = [avg3 match_vector(y)']; %stores all matches for comparison class 1
66
67 endfor
68
69
70 %removes any entries above threshold % of the genome
71 threshold = .9*N;
72 outliers = find(avg1 >= threshold);
73 avg1(outliers) = [ ];
74
75 outliers = find(avg2 >= threshold);
76 avg2(outliers) = [ ];
77
78 outliers = find(avg3 >= threshold);
79 avg3(outliers) = [ ];
80
81 %calculates the averages for each of the three comparisons
```

```
82 a = mean(avg1);
83 b = mean(avg2);
84 c = mean(avg3);
85
86 %both inequalities must be satisfied
87 clc
88 if(a > c && b > c)
89     "Ancestry Test Passed"
90
91 else
92     "Ancestry Test Failed"
93
94 endif
95
96 toc
97
```