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%=====
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%=====
%VECTORIZED NORMALIZATION
%=====

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%=====
%LOADS THE DATASET
%=====

%=====
%LOADS UCI WINE DATASET
%=====

%clears the memory and the command prompt
clear
clc
%-----

file_path = 'Users/charlesdavi/Desktop/Datasets/UCI/UCI_Credit_Card.csv';
dataset = csvread(file_path);
dataset(:,1) = []; %deletes the first column which contains row numbers
num_rows = size(dataset,1);
N = size(dataset,2) - 1;

%=====
%NORMALIZES DATASET
%=====

%calculate the average of each dimension-----
digit_vector = log10(mean(abs(dataset(:,1:N))))
max_dim = ceil(max(digit_vector))
min_dim = floor(min(digit_vector))

s = std(digit_vector);

temp_vector = digit_vector > s;
max_dimensions_vector = find(temp_vector == 1);

%normalizes the largest category of dimensions-----
num_items = size(max_dimensions_vector,2);
weight_vector = ones(1,N+1); %used to normalize the dataset

%sets the original accuracy
[accuracy output_matrix error_vector] = find_NN_dataset(dataset, []);
max_accuracy = accuracy;

for i = min_dim : max_dim

    for j = 1 : num_items

        current_index = max_dimensions_vector(j);
        current_num_digits = digit_vector(current_index);

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diff = i - current_num_digits;

weight_vector(current_index) = 10^diff;

endfor

weight_vector

modified_dataset = dataset.*weight_vector;
[accuracy output_matrix error_vector] = find_NN_dataset(modified_dataset, []);

if(accuracy > max_accuracy)

    max_accuracy = accuracy;
    final_weight_vector = weight_vector;
    final_dataset = modified_dataset;

endif

endfor
```