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function [cluster_array] = EMC_anchor_clustering(dataset, final_delta,
final_cluster_indexes, N)
%=====
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%CONSTRUCTS MACROSCOPIC CLUSTERS
%=====
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%initial values-----
num_clusters = size(final_cluster_indexes,2);

num_items = size(dataset,1);
max_item = dataset(num_items, 1:N);

counter = 1;
prior_index = 0;
num_taken = 0;

%main loop-----
while(num_taken < num_items)

    current_index = find(dataset(:,1) < Inf);
    current_item = dataset(current_index(1), 1:N);

    max_diff = norm(current_item - max_item);
    num_iterations = ceil(max_diff/final_delta);

    index_vector = find(sum((dataset(:,1:N) .- current_item).^2,2) <= (final_delta)^2);
    prior_num_matches = size(index_vector,1);

    min_diff = Inf;

    for i = 2 : num_iterations

        index_vector = find(sum((dataset(:,1:N) .- current_item).^2,2) <= (i*final_delta)^2);
        current_num_matches = size(index_vector,1);

        diff = current_num_matches - prior_num_matches; %must be a positive number

        if(diff < min_diff)

            min_diff = diff;
            offset = i*final_delta;

        endif

    endfor

    prior_num_matches = current_num_matches;

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endfor

index_vector = find(sum((dataset(:,1:N) .- current_item).^2,2) <= offset^2);
cluster_array{counter} = index_vector;

dataset(index_vector,:) = Inf; %this removes the items that just matched

num_indexes = size(index_vector,1); %this is the number of vectors within delta
counter = counter + 1;

temp_vector = dataset(:,1);
temp = find(temp_vector == Inf);
num_taken = size(temp,1);

endwhile

endfunction

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