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function [cluster_size, boundary_matrix, delta_vector, sorted_dataset] =
MASS_supervised_clustering_mut_exc(dataset,N)

%sorts dataset
num_rows = size(dataset,1);
sorted_dataset = sortrows(dataset,1:N);

available_rows = 1 : num_rows;
cluster_size = ones(num_rows,1);
boundary_matrix = Inf*ones(num_rows,N+1);
delta_vector = zeros(num_rows,1);

i = 1;

%applies prediction
while(!isempty(available_rows))

    current_row = available_rows(i);
    available_rows(i) = [];

    j = 1;

    %if true, then it's not the end of the list
    if(current_row != num_rows)

        current_vector = sorted_dataset(current_row,:);
        current_class = current_vector(N+1);
        break_loop = 0;

        num_available_rows = size(available_rows,2);

        %finds the cluster until first error
        while(break_loop == 0 && (i + j) <= num_available_rows)

            test_row = available_rows(i + j);
            test_vector = sorted_dataset(test_row,:);
            test_class = test_vector(N + 1);

            %if true, then we increment the cluster size
            if(test_class == current_class)

                cluster_size(current_row) = cluster_size(current_row) + 1;

                available_rows(i + j) = [];

                temp_delta = norm(current_vector .- test_vector);

                %if true, then this is the vector furthers from the cluster origin
                if(temp_delta > delta_vector(current_row));

                    delta_vector(current_row) = temp_delta;
                    boundary_matrix(current_row,:) = test_vector;

                endif

            %otherwise, we break the loop
            else

                break_loop = 1;

            endif

            j = j + 1;
            num_available_rows = size(available_rows,2);

        endwhile
    endwhile

```

endif

endwhile

endfunction