

```

1  function region_matrix = cluster_regions(avg_color_array, delta, N)
2
3      region_matrix = zeros(N,N);
4
5      is_available = ones(N,N);
6      region_ID = 0;
7
8      while(sum(is_available(:)) > 0)
9
10         region_ID = region_ID + 1;
11         [x y] = find(is_available == 1); %there will be at one since the while loop is satisfied
12         x = x(1);
13         y = y(1);
14
15         region_matrix(x,y) = region_ID;
16
17         current_vector = avg_color_array{x,y};
18         current_vector(4) = x;
19         current_vector(5) = y;
20
21         is_available(x,y) = 0;
22
23         queue(1,:) = current_vector;
24
25         while(size(queue,1) > 0)
26
27             current_vector = queue(1,:);
28             x = current_vector(4);
29             y = current_vector(5);
30
31             for i = 1 : N
32
33                 for j = 1 : N
34
35                     if(x != i || y != j) %if true, then we're comparing the current vector to a
36                                     distinct vector
37
38                         test_vector = avg_color_array{i,j};
39                         test_vector(4) = i;
40                         test_vector(5) = j;
41
42                         diff = norm(current_vector(1:3) - test_vector(1:3)); %these are RGB vectors
43
44                         if(diff <= delta && is_available(i,j))
45
46                             is_available(i,j) = 0;
47                             queue = [queue; test_vector];
48                             region_matrix(i,j) = region_ID;
49
50                         endif
51
52                     endif
53
54                 endfor
55
56             endfor
57
58             queue(1,:) = [];
59
60         endwhile
61
62     endwhile
63 endfunction

```