```
function [region_matrix N S_mat prob_mat img_data_array score_vector delta_vector] =
AB_test_image(I, category_tree, anchor_tree, delta_tree)

  [region_matrix N S_mat prob_mat] = identify_features(I);

  %generates the average color of all notable features in the image, returned as an
array of RGB vectors
  img_data_array = calculate_average_feature_color(I,N,region_matrix, prob_mat, 0,
0);

  [x num_items] = size(img_data_array);

  %tests the new image against Category A
  for i = 1 : num_items

    new_data_item{1} = img_data_array{i};

    [category_index predicted_z final_delta] = predict_best_fit_tree(anchor_tree,
delta_tree, new_data_item, 0, 1);

    if(predicted_z != Inf)

      width = category_index(1);
      depth = category_index(2);

      [x num_tree_items] = size(category_tree{width,depth});

      temp_array = category_tree{width,depth};

      avg_category_number = 0;

      for j = 1 : num_tree_items

        temp_vector = temp_array{j};
        avg_category_number = avg_category_number + temp_vector(4);

      endfor

      score_vector(i) = avg_category_number/num_tree_items;
      delta_vector(i) = final_delta;

    else

      score_vector(i) = Inf;
      delta_vector(i) = Inf;

    endif
```

```
endfor

endfunction
```