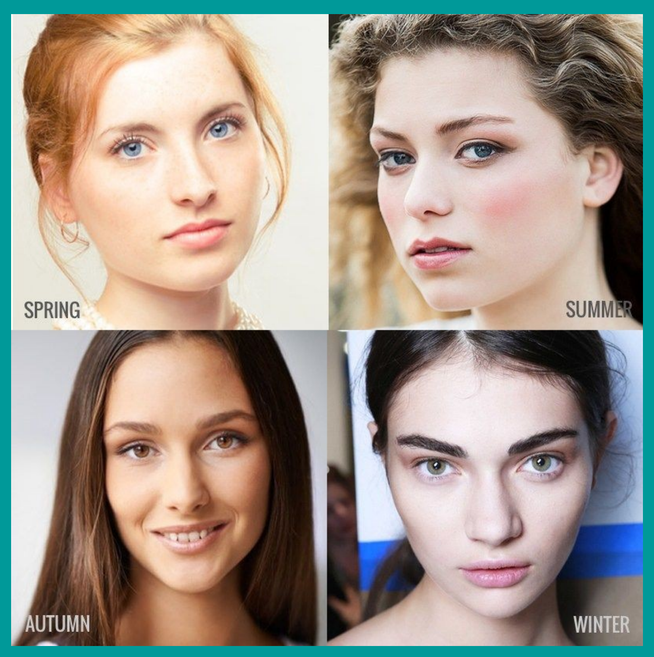
Deep Learning

Teddy Lazebnik

Seasonal Color Classification: Can we train a model to do it from a picture?

Alona Kalenkovich

מכון טכנולוגי חולון
Holon Institute of Technology



Stylists sometimes use in their work the idea of classifying appeareances by color to find out which colors would suit the person the best.

One of those classifications is the four seasons:

Summer – muted and cool colors

Winter – bright and cool colors

Spring – bright and warm colors
Autumn – muted and warm colors

In my project, I tried to find out whether such classification is purely subjective, or has some statistical background behing it.

If it is real, can we train a neural network to determine the type by a photo?

Since there are two (independent?) parameters, there were two options to approach this task:

1) Classify by brightness and temperature independently and then combine the results to a single prediction

2) Deside that those parameters are unseparatable and classify all the data together

The second approach was discovered to be the right one.

Also, althoght this is an image classification, the simpliest FNN model, when applied to histograms of the images gave better results, that more sophisticated CNN models.

Given a FNN model with tho layers of 1024 pixels and an image represented in RGB or HSV mode, the model gives a correct prediction in 82% percent of the cases.

Since it is possible to divide the given images into the right categories, it seems that this color classiification system does has some `real world` justification.

One can conclude that if with this humble dataset, it is possible to divide the given photos into the relevant categories, given a bigger dataset, it is possible to build a model that will provide an even more accurate result, so replacing a stylist for this matter with a computer program is possible.

Also, it seems that the assumption that dividing to two binary categories was inefficient, althought this way each class had more samples. So it is possible that this classification is somewhat different from just those two different parameters.

Of course, this does not prove that the suggested color would be hthe most flattering, since flattering is a highly subjective matter.