

## Homework 1

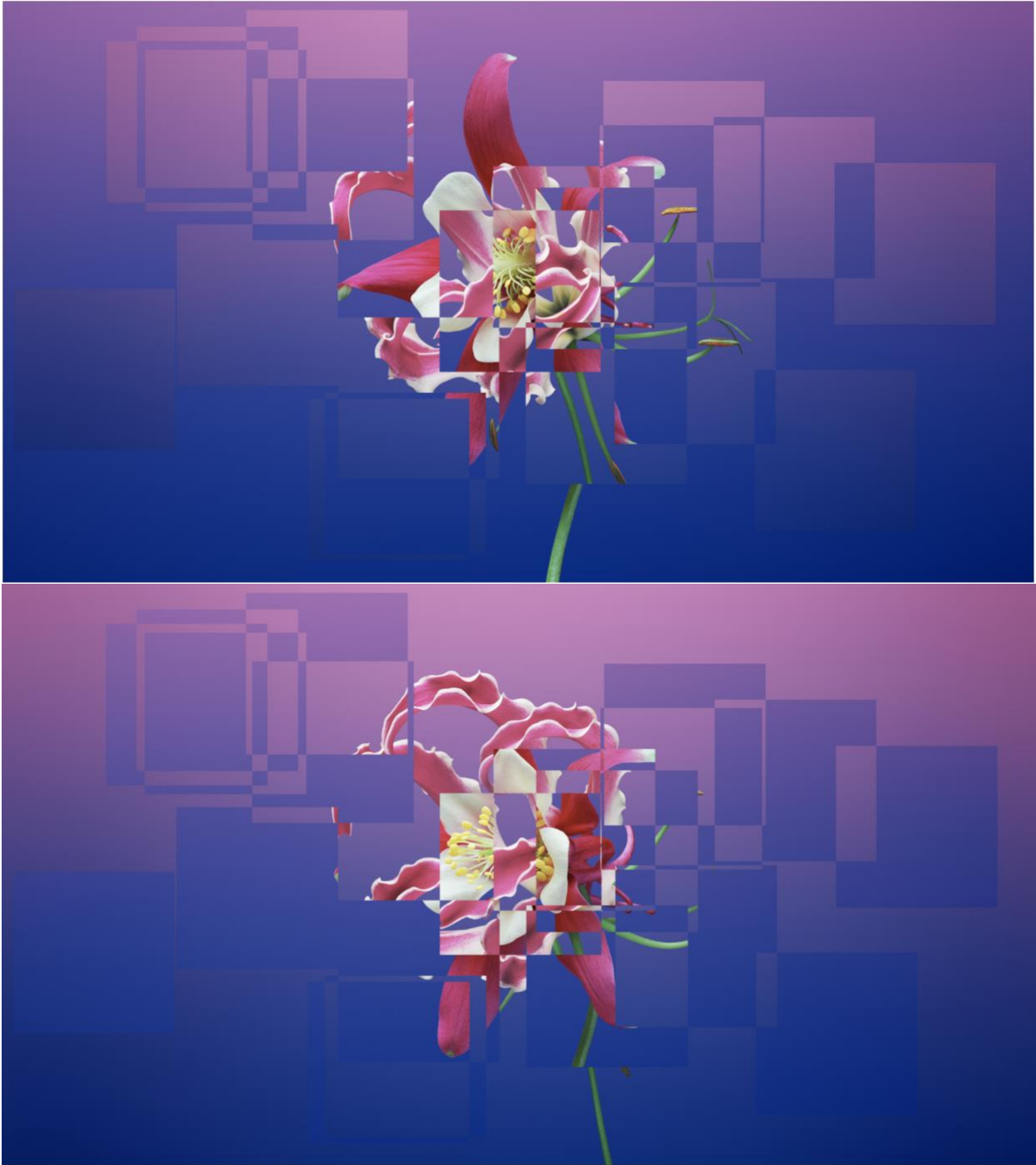
1. I think the design of the PageRank algorithm is fascinating. When I read this article, I keep thinking about the purpose of having various features of the algorithm, including “dilute”, “nofollow”, and “visibility” concepts of links. One thing that confuses me is the difference in internal and external links, because their functions in terms of PageRank calculation are similar. Anyway, the graph theory strategy works effectively and essentially in this algorithm, and I’m willing to discover more about its implementation.

Also, I think the strategy of improving the PageRank score is charming. The author of this article has an incredible experience of losing PageRank score dramatically by posting the advertisement. Therefore, I’m eager to find out ways of improving the PageRank score to make my website more valuable, or at least prevent the score from dropping. I guess this part is related to SEO.

3. I modified the version swap submatrix code a little bit. The swapped parts of the original code version are taken directly from the other picture, which means if two swap parts overlap, the area covered by the two parts is swapped together. But I think if two regions overlap, the part that gets swapped twice should simply take the original picture.

A good example:

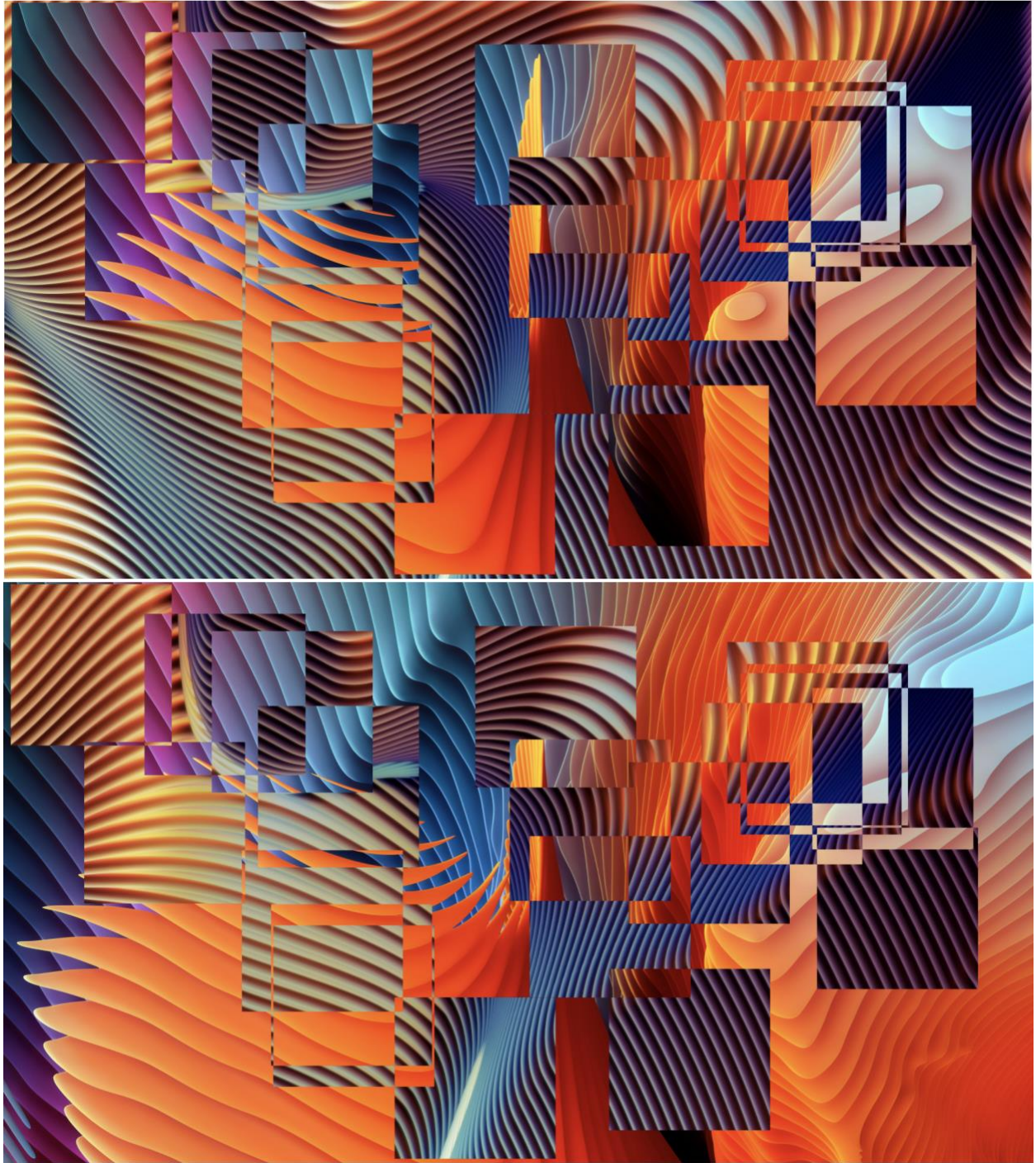




A bad example: (it looks chaotic)







For someone without the experience of swapping submatrices, two pictures with similar background colors and similar shapes of contents usually produce better pictures using this program. However, most other pictures won't produce a good picture. A typical example is, if two pictures have a different color in any corresponding positions, then the outcome is usually bad.

4. I think ranking is fun – I would like to make an order of everything in our world, therefore I can focus on those objects with the highest or lowest rank because they are the most typical. By ranking and sorting different objects, I can analyze and hopefully discover the general pattern of those high-rated objects, which is usually the rule behind high ranks.

I would prefer to rank economic indexes for countries or regions around the globe, such as GDP, GDP growth, or unemployment rate. The rank reflects the level of economic development of countries. Suppose I collect and analyze the data throughout a time span. In that case, I may predict the future economic potentials of those countries, and seeing predictions come true is undoubtedly an enjoyable thing.