AI report

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Description of algorithm

- So, I use the pictures as chromosomes, and the pixels of the picture are genomes.
- My population consists of 64 chromosomes. I store one big array of tuples, where the first element is the difference with the source image, and the second element is the image itself. The program sorts them by the result of fitness function (first element of tuple), then the algorithm selects 8 best chromosomes, and creates a new population from these 8 ones by copying it 8 times.
- The fitness function checks the difference between the source image and generated one. The algorithm represents the pictures as arrays. After that, it counts the difference for certain cells. Next, the function raises to the power 2 each difference and sums all results. In the end, the sum is divided by the number of pixels in the picture. So, it gives the difference in colors and the structure of the picture accordingly.
- The program makes only mutations by creating a new square of random size in a random place on the image. So, that's how the algorithm changes some genomes (pixels).The color of the square is got from the source picture. The program takes the color of the pixel from the source image. The coordinates of the pixel are the same as the top-left vertices of the new square. After changes program recounts the fitness function for the changed image.

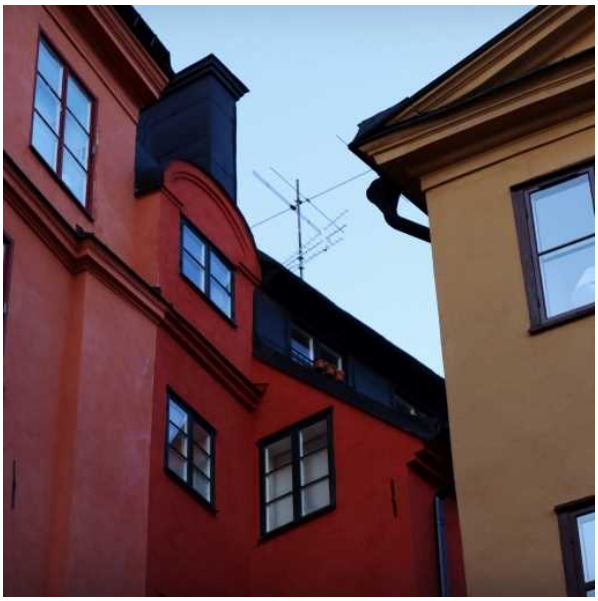
Examples of results

Source image

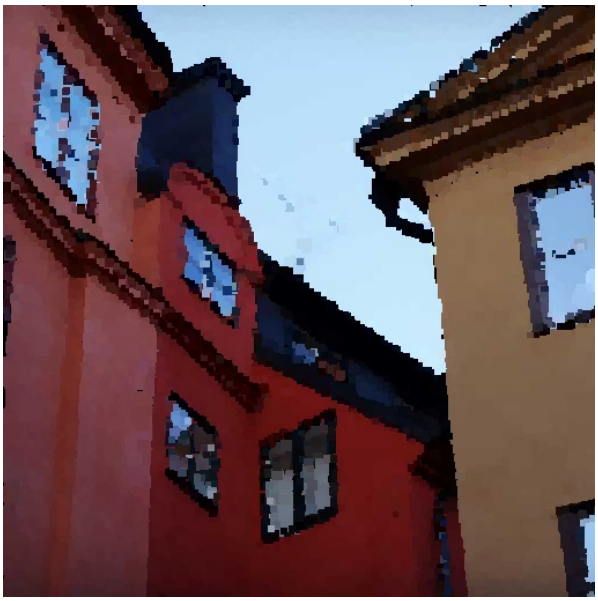
After 500000 iterations

Source image

After 100000 iterations

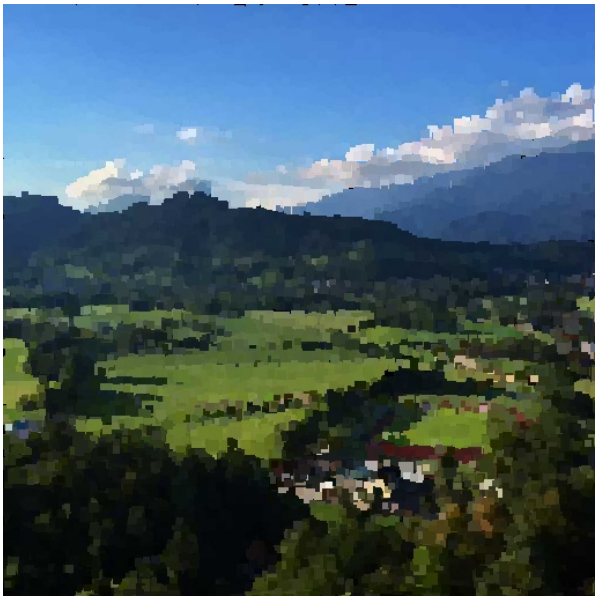


Source image



After 100000 iterations

Source image



After 100000 iterations

The algorithm generated similar images as the source ones. But the difference exists due to the small number of iterations and not a perfect algorithm.

What is art for me?

I think that art is the translation of emotions and inspirations of the creator’s life. So, when I see the creation, I try to understand the author, try to figure out the meanings. The main goal of art is to leads you to new thoughts. It’s the most important point of art for me. If it is not, whether the art is not your or you are still silly to understand it. That's why art is different for each and why good art is relevant.

In addition, I think that art is something that cannot be created by a computer because we can only teach it to simulate the works of our brain. However, inspiration is the thing that is unreachable for a pile of metal. Maybe the full simulation can approach the art, but the creation of humans is always being in the first place for me. So, I don't think that generated images are art, the art is my photos, based on which the algorithm created the images.

References

- E. Wirsansky, *Hands-on genetic algorithms with Python: applying genetic algorithms to solve real-world deep learning and artificial intelligence problems*. Birmingham, UK: Packt Publishing Ltd, 2020.