Introduction to AI: Assignment 2 Ilnur Davletshin group 5

Chromosome is represented by the list of genes where each gene is a specific polygon with a different size, location and color

In each iteration I have population of 20 chromosomes
Size of population = 20. Size of genes inside of chromosome = 10000. It can be changed

In selection I create population where first chromosome is the best fit and the second one created by crossover and mutating 2 chromosomes

FItness algorith is a combination both weighted Euclidean distance functions, where the weight factors depend on how big the "red" component of the colour is

In crossover I iterate over list of genes of 2 chromosomes. So inside of our loop we choose which one to select and mutate.
In mutation, leaning on gene parameter we decide what to do: change position in a small area, change position within image size, change its color
We can evaluate gene parameters right before drawing them. Before drawing it we compute its fitness error inside its region with original and previous drawn image. More precisely, when comparing with an image drawn before, they are compared by applying fitness function. After that, if fitness error of new gene is smaller than the previous, then we draw it. if it's bigger we compute fitness between previous drawn image and the original. If fitness quite small, we lock this gene. In other words we don't allow modifying this gene and always pass to descendants. Passing to descendants means that we will draw it into mostFitCanvas and after small mutation will pass to new generation

For solution we have special canvas and only locked genes can be passed to it.
Since the area occupied by this color is larger than the size of the gene, we can slightly change its position and use it during crossover.
Such algorith requires a lot of computation but with multithreading it works pretty well

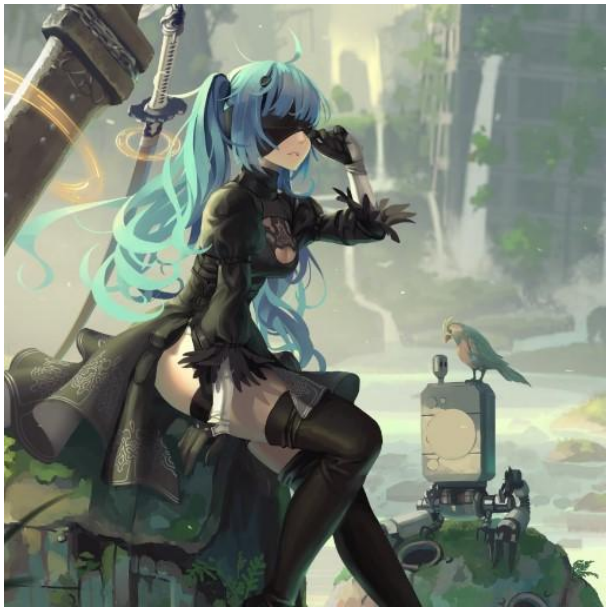
And no, it doesn't take color from original

For me Art is a kind of development the pursuit of an ideal, something that makes human progress, go to something new. It gives new emotions, experiences, thus enriching our inner world.
I view my work as art only in terms of how and how quickly my algorithm recreates the picture. The task was to recreate the picture, and therefore I applied my strength only to the efficiency of the algorithm.

All images listed below are made in 2 minutes

I was trying to submit it before the deadline but I couldn’t because my algorithm was slow and during drawing test images I decides to improve it


https://youtu.be/WgMaCNMnyi8

https://youtu.be/ELwATLabR0o


https://youtu.be/_exr77jQwIA


https://youtu.be/tKUvSPO3tQc

https://youtu.be/bzIxtod5JVg