

Assignment 5

Exercise *E(i)*. Explain...what happens when you increase or decrease the value of *n_colors*?

Proof. As we can see from the image results produced from this python script (located in the Images folder), the picture is getting further and further discolored the more *n_colors* is decreased. Another noticeable fact is the the amount of color in the picture is also decreasing, with the minimum of 2 being comprised mainly of what seems like only 2 colors. □

Exercise *E(ii)*. Explain...in what other possible applications do you think this can be useful?

Proof. □

Exercise *E(iii)*. Why do you think the resulting picture was funny at the end?

Proof. In a purely aesthetical way it is easy to say that because we have a certain expectation as to how our own pictures should look; however, with the final result being determined by a process that we do not fully understand our expectations were thrown out of the window. Therefore we find the final result funny because it is not what we expect of something that we can control. □

Exercise *E(iii)*. Explain your results. What do you think is happening? What is your interpretation of the number of neurons with respect to the performance of the network?

Proof. As the neural network grows I'm assuming that more neurons are being dedicated to specific functions, allowing the network to make more calculated assumptions reducing the processing power needed. Given the data that was return, I believe it is safe to assume that relationship between the number of neurons and performance is proportional. As the number of neurons increase the Testing set CV score leave larger, given that larger negative numbers are worth less than the smaller ones. Example

- Neurons 1, eta 0.1. Testing set CV score: -10.332821

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- Neurons 1, eta 0.2. Testing set CV score: -7.895644
- Neurons 1, eta 0.4. Testing set CV score: -3.448646
- Neurons 3, eta 0.1. Testing set CV score: -3.284196
- Neurons 47, eta 0.2. Testing set CV score: -2.714787
- Neurons 80, eta 0.1. Testing set CV score: -2.523600
- Neurons 82, eta 0.1. Testing set CV score: -2.265865
- Neurons 89, eta 0.1. Testing set CV score: -2.121566

□
