Tecnológico de Monterrey

Fundamentos de computación

Homework 10

Student:
Isabel Serrato
Jacob Rivera

Professor:
Dr. Hugo Terashima

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1 Results

This table presents the results of 10 perceptrons with different seeds. The accuracy of the perceptron is measured between 0 and 1.

seed	accuracy
897	1
8486	1
5814	1
6440	1
708	1
2904	1
7223	1
7884	1
5986	1
9561	1

What can you conclude from the results? Is it possible to replicate the behavior of this cipher(to decrypt) by using a neural network?

The results had an appalling perfection even using random seeds, which means that all of these neural networks can do the work of the encrypt function without the decided key. And by splitting the datasets in inverse manner, you could train a neural network to decrypt the data as well.

2 Challenge

We could observe that the weights matrix is the part which stores the majority of the information, as such, we can see that one value of each one of columns is predominant above all of the others. If we take the index of each one of this dominant values, we see that none is repeated. And when tested with our chosen dataset, we saw that this indexes represented the key + 1. So in order to obtain the key for a similar problem, we only have to obtain the index of each dominant value of the columns and subtract 1 to each one. The key obtained from the challenge is:

$$\{22, 12, 9, 6, 24, 3, 15, 18, 20, 19, 14, 21, 13, 8, 2, 17, 11, 0, 7, 4, 23, 10, 5, 16, 1\}$$