ALGORITHM TO OPTIMIZE ENERGY CONSUMPTION IN PRECISION LIVESTOCK FARMING

UNIVERSIDAD EAFIT

Team

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https://github.com/DavidRuizE/ST0245-001/tree/master/proyecto

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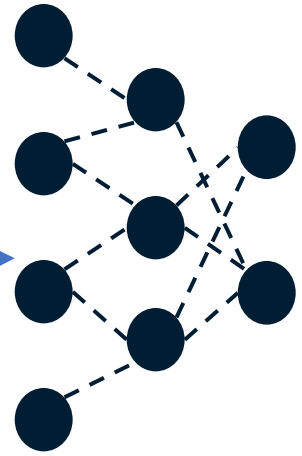
Training Process

Sick-Cattle Images

Healthy-Cattle Images

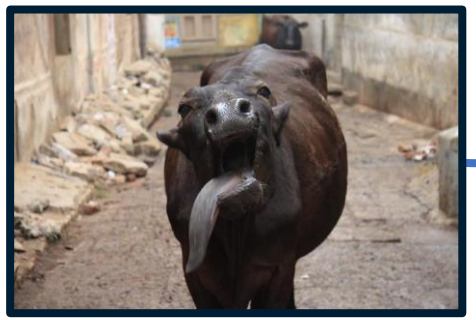
Red neuronal convolucional

Classification Algorithm



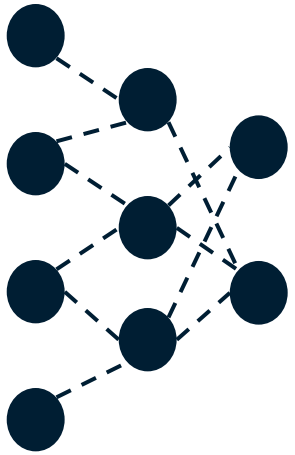
Classificaton Model

Testing Process



Cattle Image

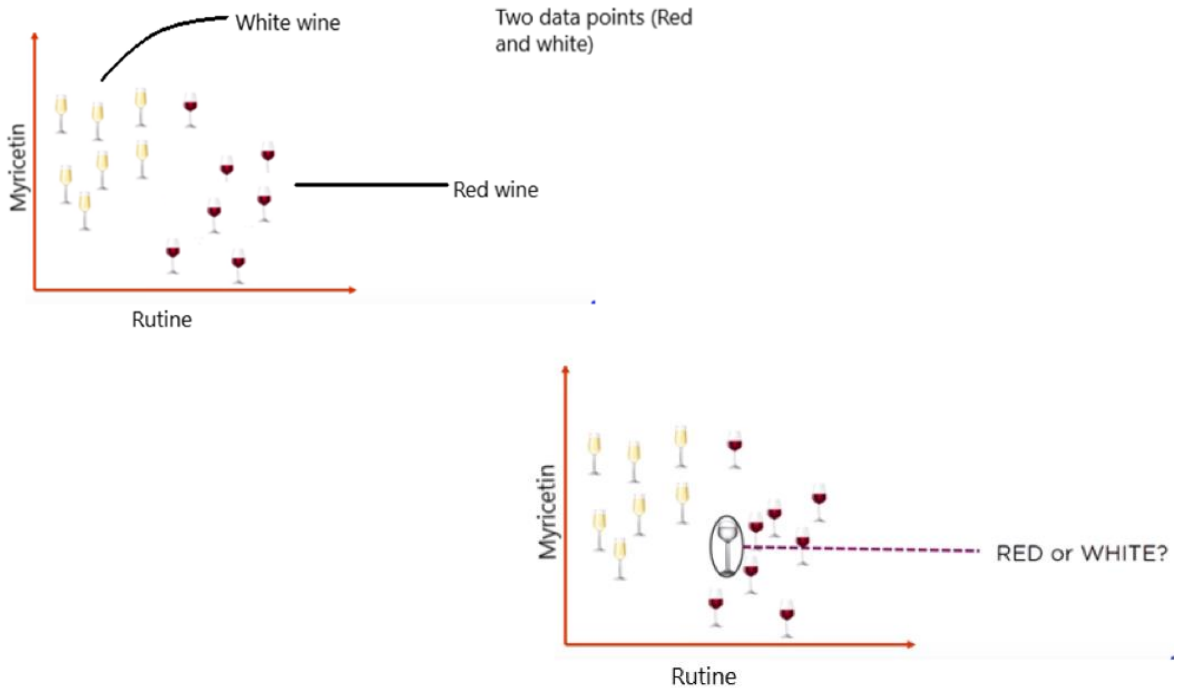
Huffman and Image Scaling Algorithm



Classification Model

Output

Lossy Compression Algorithm Design



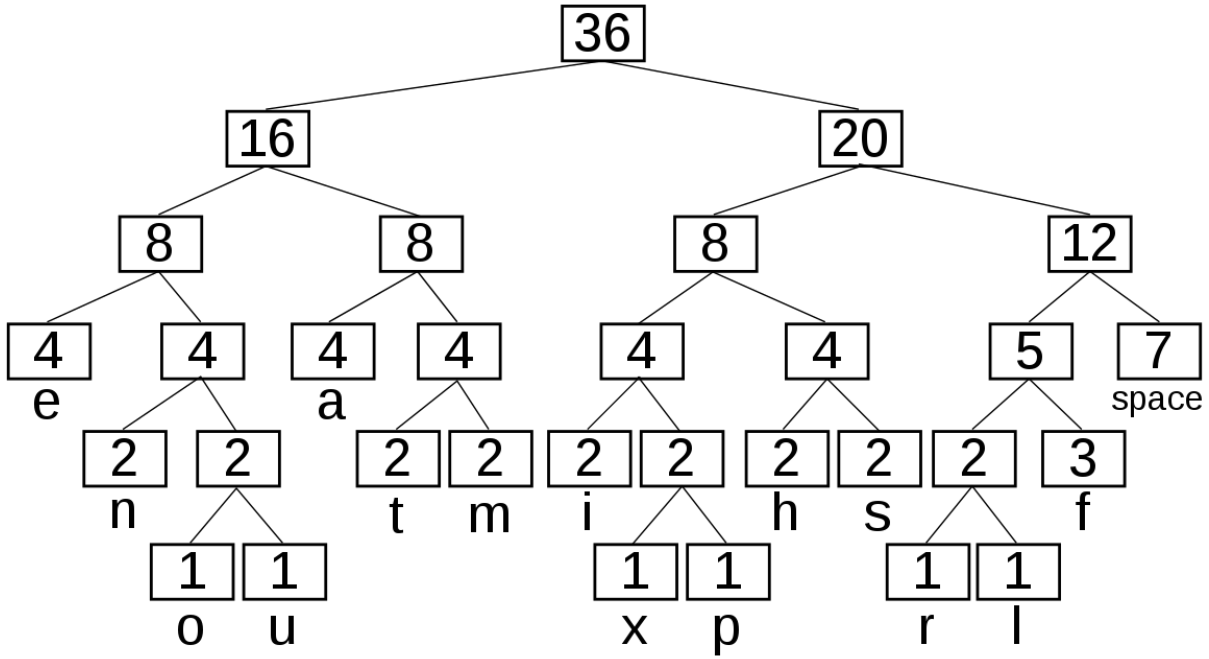
In this image scaling algorithm, we use the nearest neighbor algorithm as reference. This algorithm takes the nearest data depending on the scaling ratio and groups them.

Lossy Compression Algorithm Design

	Time Complexity	Memory Complexity
Compression	O (n*m)	O(n*m)
Decompression	O(n*m)	O(n*m)

N & M are the lines and columns of the data inputted

Lossless Compression Algorithm



A tree is created base on a frequency that represent the data shown, and with this it forms a binary code.

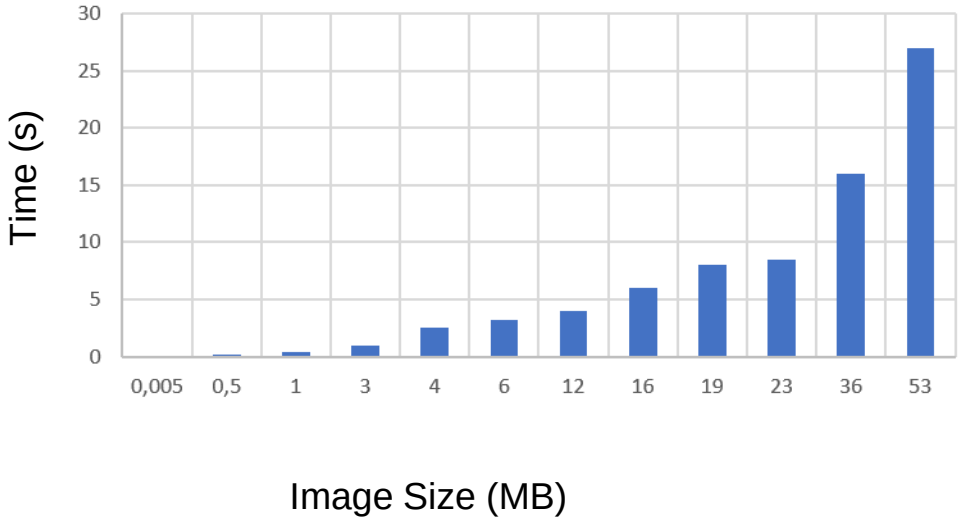
Lossless Compression Algorithm

	Time Complexity	Memory Complexity
Compression	O(m*n* Log(n*m))	O(K)
Decompression	O(m*n* Log(n*m))	O(K)

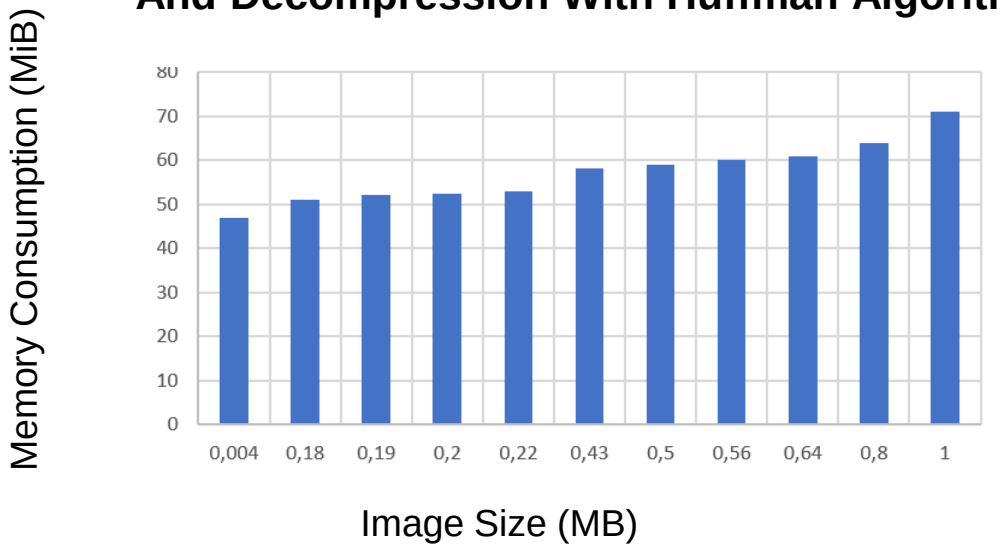
N & M are the lines and colums of the inputted data. K is the number of the unique pixels

Time and Memory Consumption

Time Consumption For The Compression And Decompression With Huffman Algorithm



Memory Consumption For The Compression And Decompression With Huffman Algorithm



Time Consumption

Memory Consumption

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Average Compression Ratio

	Compression Ratio
Healthy Cattle	2.49 : 1
Sick Cattle	2.51 : 1

Average compression ratio for Healthy Cattle and Sick Cattle whit Huffman Algorithm.


THANK YOU!