Compression Algorithm to reduce cows space consumption.

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Team Presentation

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https://github.com/jsjacomeb/STO245-003

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Cocktail

Jäger bomb

Ingredients

- Jägermeister
- Red Bull

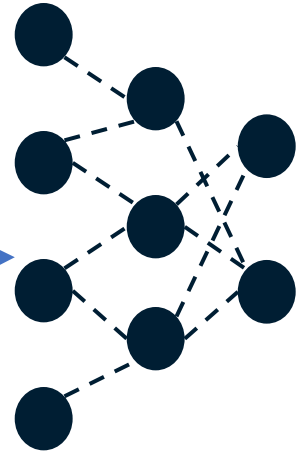
Training Process

Sick-Cattle Images

Healthy-Cattle Images

Convolutional Neural Network

Classification Algorithm



Classification Model

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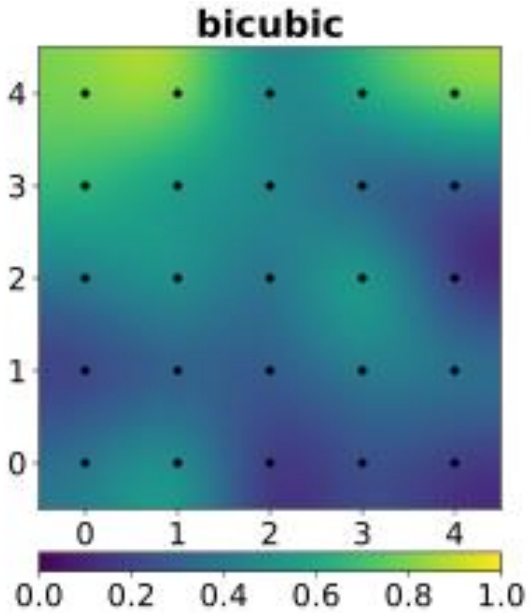
Training Process



10	20
30	40

2x2

2x

7	10	16	19
13	17	22	26
24	28	33	37
31	34	40	43

4x4

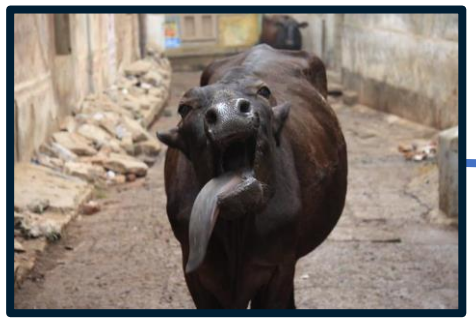
$$p(x,y) = \sum_{i=0}^{3}\sum_{j=0}^{3} a_{ij}x^i y^j.$$

Bicubic interpolution which is a extensión of the cubic interpolution which interporlated Surface is smoother than the ones from the bilinear or nearest-neighbor

Testing Process

Family Guy (tenth season, chapter 11)

Compression Algorithm



Cattle Image

Seam Carving

Seam Carving Compression Algorithm

Classification Model

Is sick

Output

Compression Algorithm Design

Calculate the weight/density/energy of each pixel

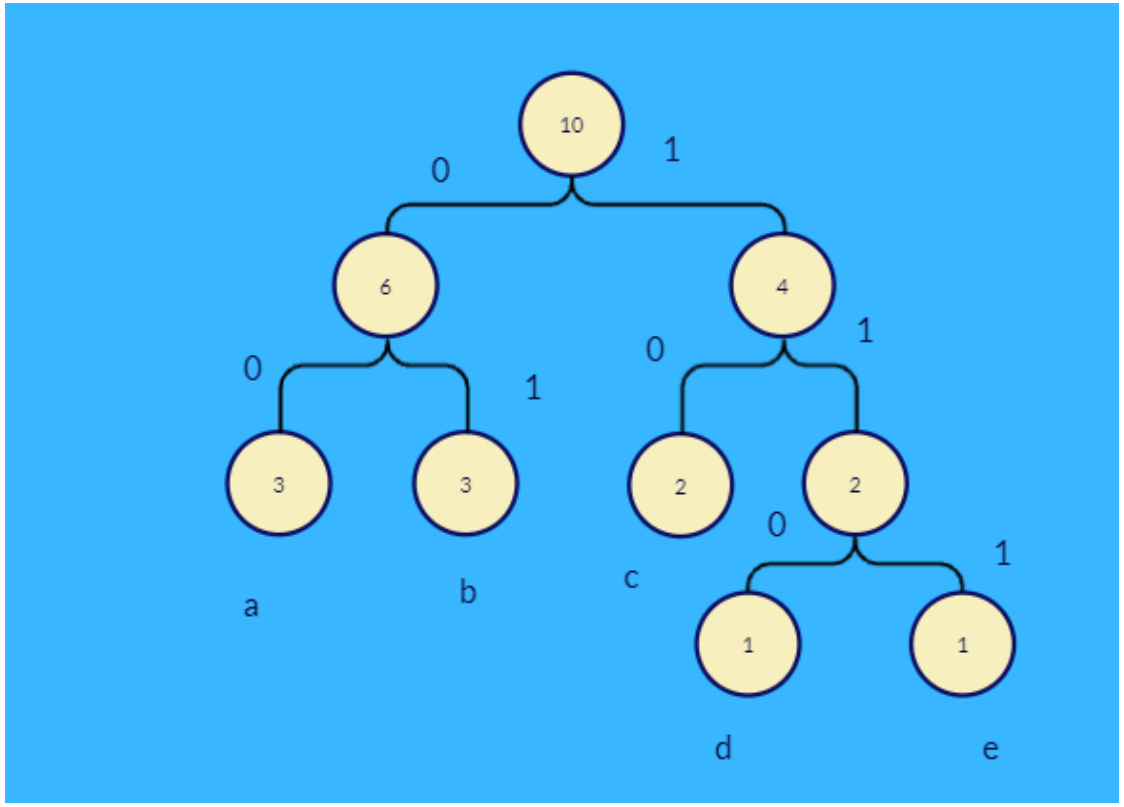
4	8	31	5	6	32
1	5	4	8	1	3
2	1	54	6	8	7

Make a list of Seam, and the ones with les energy are considered unnecesary

4	8	31	5	6	32
5	9	9	13	6	9
7	6	63	12	14	13

Remove the ones considered unnecesary

Compression Algorithm Design



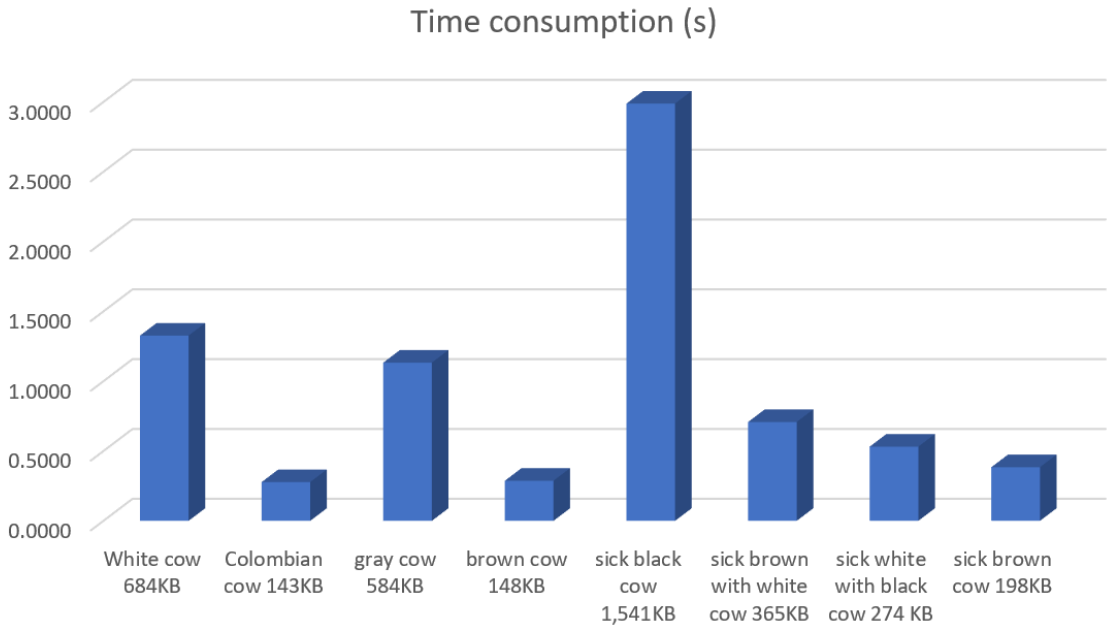
This is the Huffman coding that is going to be the lossless one, were the character's frequency is the tree's frequency.

Compression Algorithm Complexity

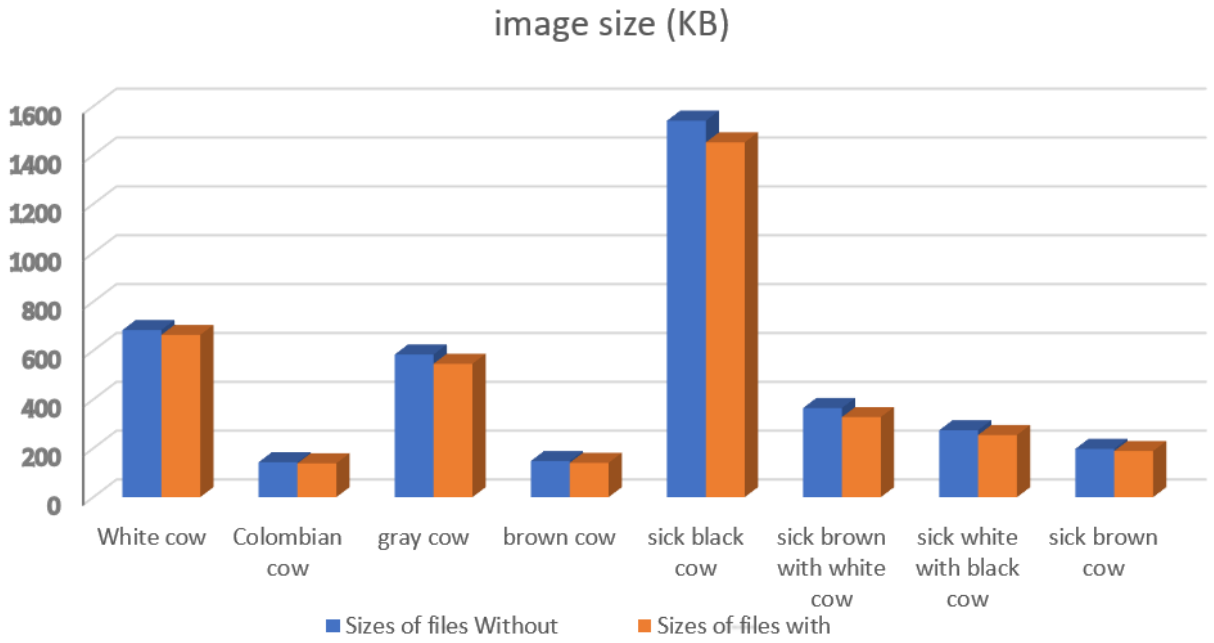
	Time Complexity	Memory Complexity
Image Compression	O(nLog(n))	O(n)
Image Decompression	O(nLog(n))	O(n)

Time and Memory complexity of Huffman

Time and Memory Consumption



Time Consumption



Memory Consumption

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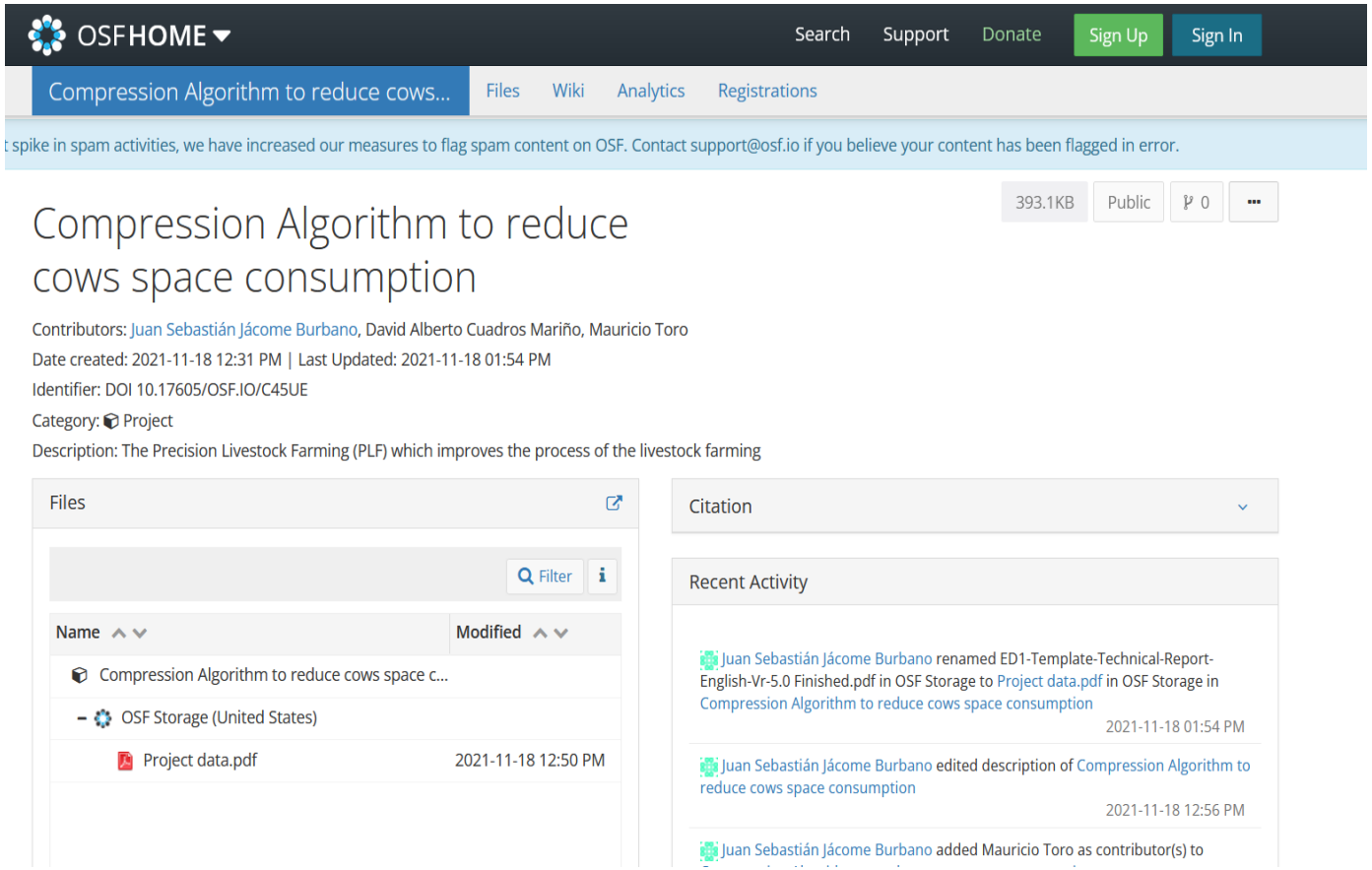
Average Compression Ratio

	Compression Ratio
Healthy Cattle	31: 625
Sick Cattle	349:5000

Average compression ratio for Healthy Cattle and Sick Cattle.

Report Accepted on OSF.io

J. Jácome-Burbano, D. Cuadros-Mariño, and M. Toro. Compression algorithm to reduce cows space consumption. OSF.io, Nov. 2021. Available at: https://osf.io/c45ue/?view_only=0fe0b6b1ccc340f49ce7e8e1d9fb66fe



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THANK YOU!