Making Precision Livestock Farming More Energy Efficient Using Compression Algorithms

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Team

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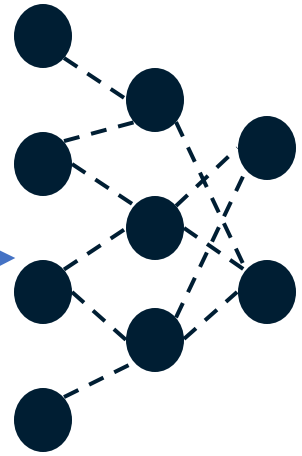
Training Process

Sick-Cattle Images

Healthy-Cattle Images

Convolutional Neural Network

Classification Algorithm



Classification Model

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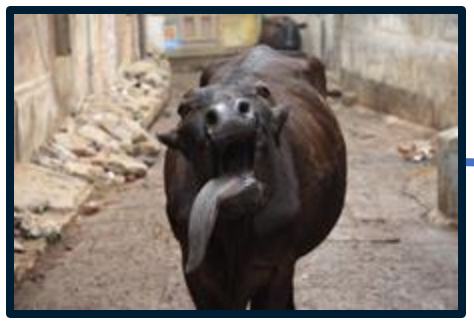
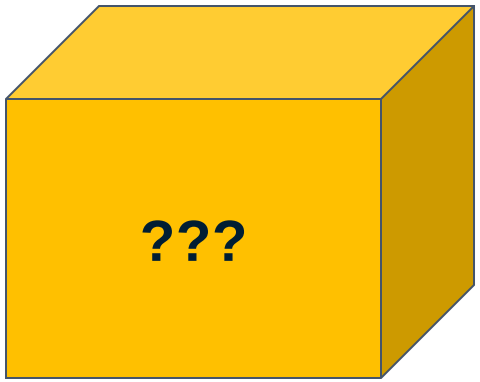
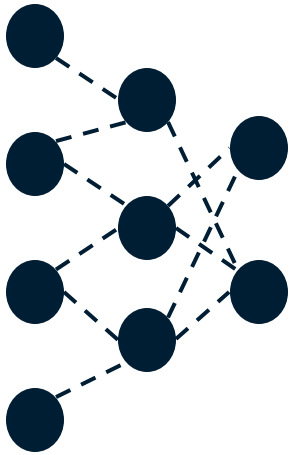
Testing Process



Cattle Image



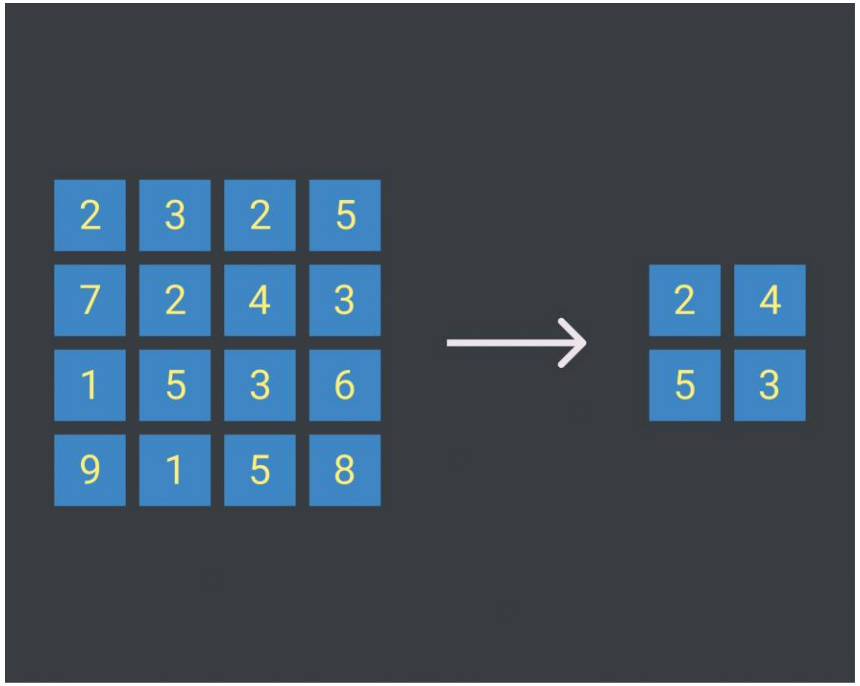
Nearest Neighbor Compression Algorithm



Classification Model

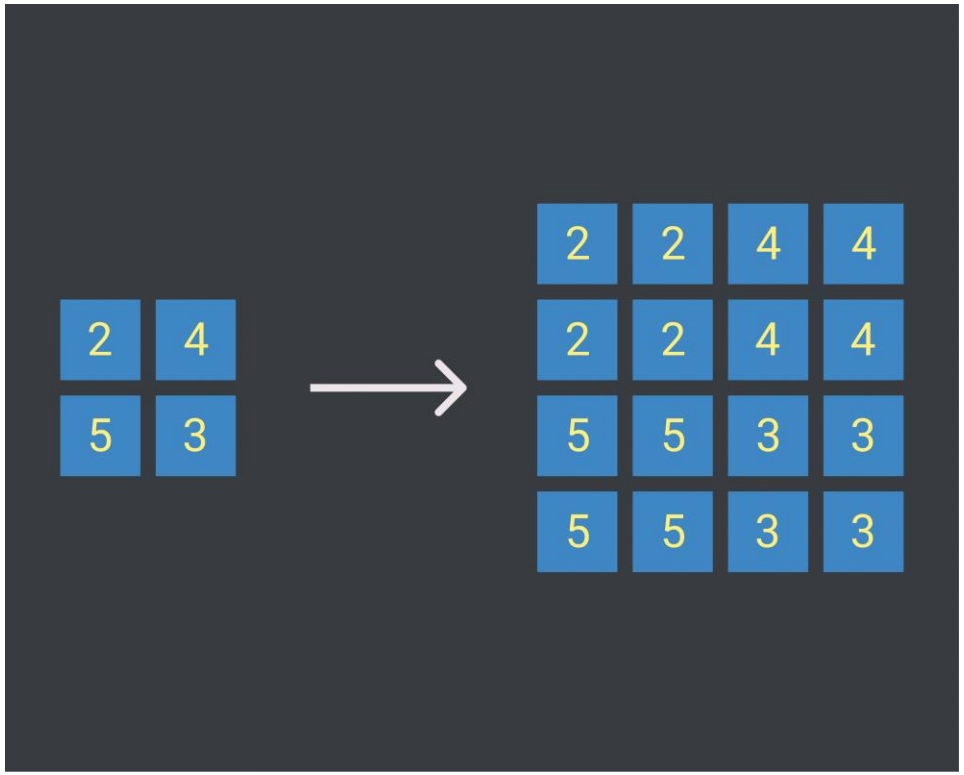
Output

Compression Algorithm Design



Nearest Neighbor compresion gets the most representative pixels of an image and puts them into a compressed image.

Compression Algorithm Design



Nearest Neighbor decompresion takes the pixels and copies them into the higher resolution image.

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Compression Algorithm Complexity

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Create the table in Powerpoint. Do not copy pixelated screenshots from the technical report please!

	Time Complexity	Memory Complexity
Image compression	$O(N^2*M*2^M)$	$O(N*M*2^M)$
Image decompression	O(N*M)	O(1)

Time and memory complexity of the (In this semester, one could be LZS, LZ77, LZ78, Huffman… please choose) algorithm. Please explain what do N and M mean in this problem. PLEASE DO IT!

Explain the tables in your own words

Include a HD picture related to the problem of animal health in precision livestock farming

Use superindices to represent the exponents. DO NOT use the ^ symbol

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Time and Memory Consumption

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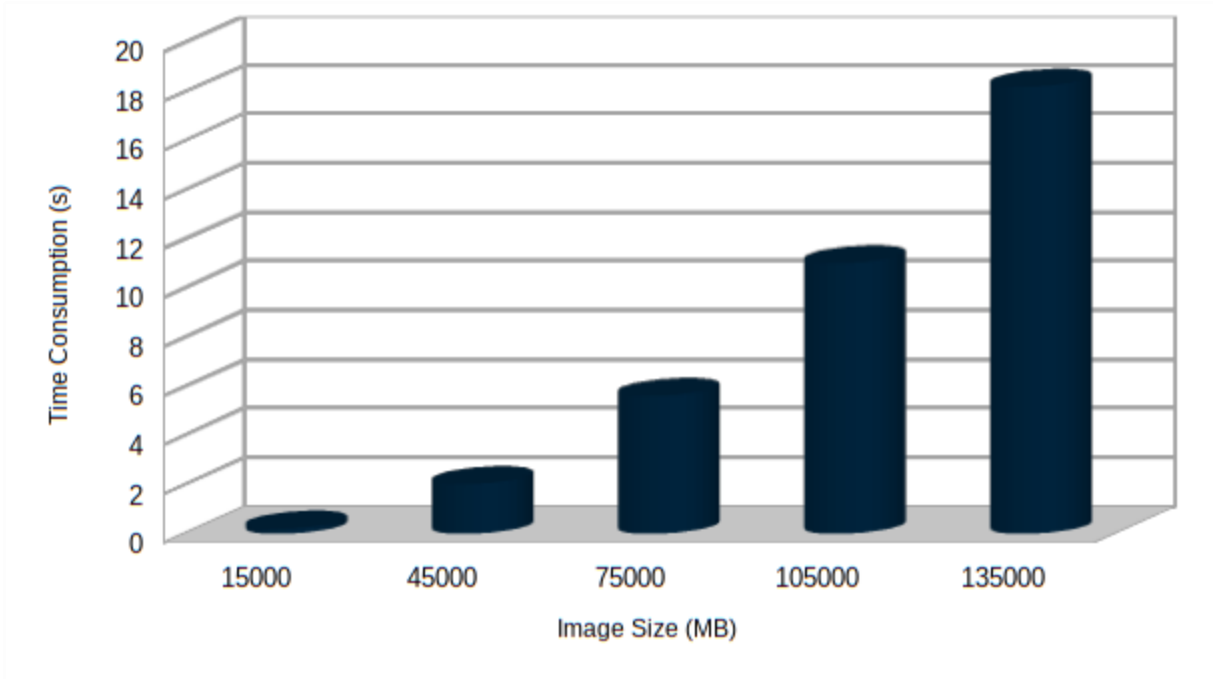
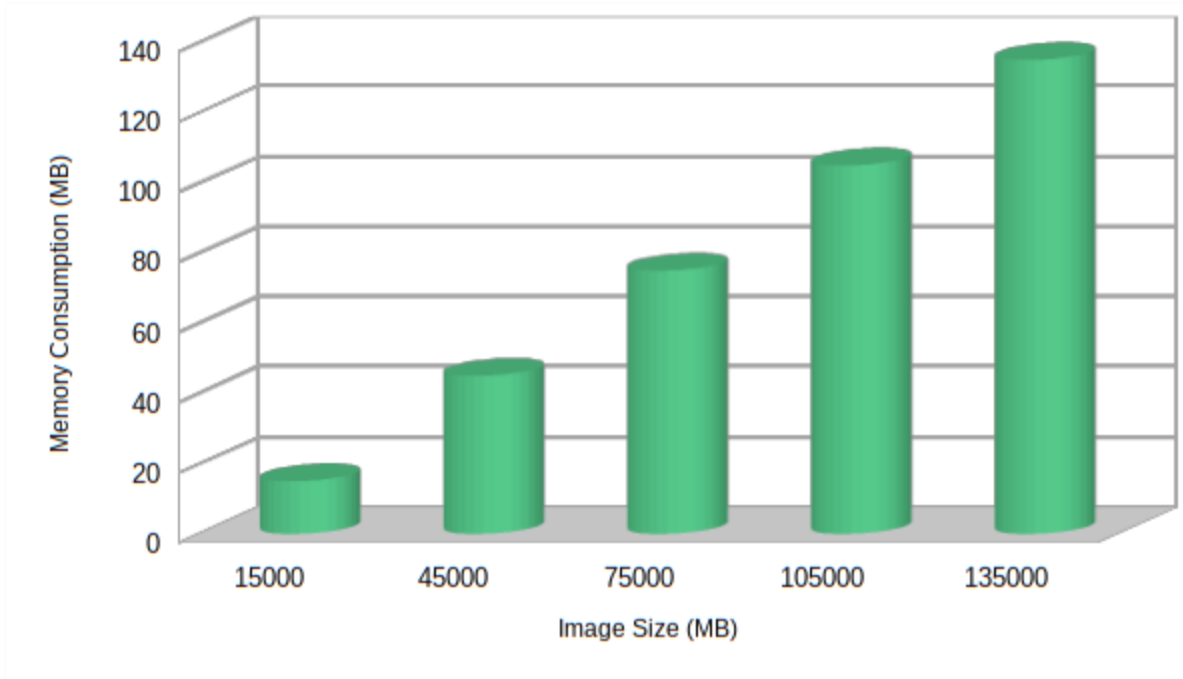
Create the plots in Excel. Do not copy pixelated screenshots from the technical report please!





Time Consumption

Memory Consumption

Please, include measurement units in both X axis and Y axis, for instance, MB, s, KB, minutes...

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Average Compression Ratio

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	Compression Ratio
Healthy Cattle	100 : 1
Sick Cattle	98 : 1

Average compression ratio for Healthy Cattle and Sick Cattle.

Explain the tables in your own words

Include a HD picture related to the problem of animal health in precision livestock farming

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Classification Evaluation Metrics

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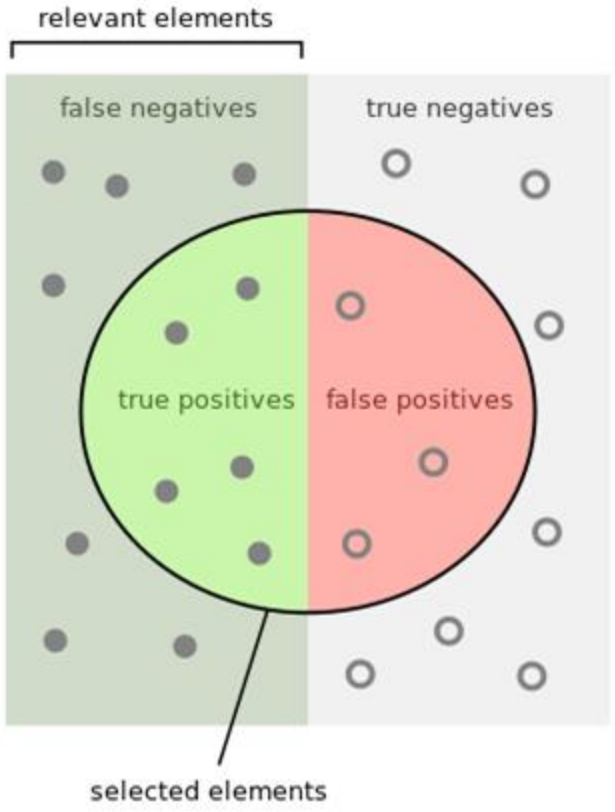
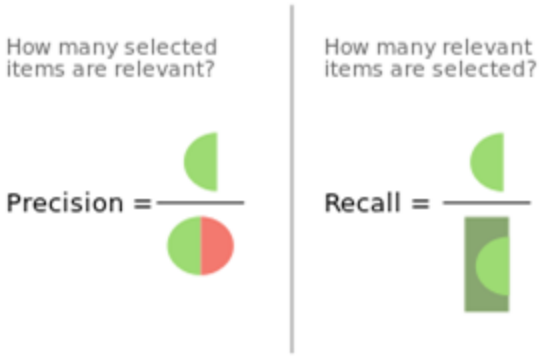
Use vectorized figures to explain the algorithm the evaluation metrics, so they are not pixelated like mines

Use these Colors for Your figures





Explain Accuracy too…

Create a graphical representation using the notation proposed in this slide

If possible, avoid equations for simple concepts that can be explained through diagrams

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Classification Evaluation Metrics

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	Testing data set (original images)	Testing data set (compressed images)
Accuracy	0.3	0.2
Precision	0.25	0.21
Recall	0.12	0.11

Evaluation metrics using a testing dataset of ?? healthy cattle and ?? sick cattle images. Compressed images were obtained with ??? algorithm (Please, complete with your algorithm)

Include a HD picture related to the problem of animal health in precision livestock farming

Explain the tables in your own words

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Report Accepted on arXiv

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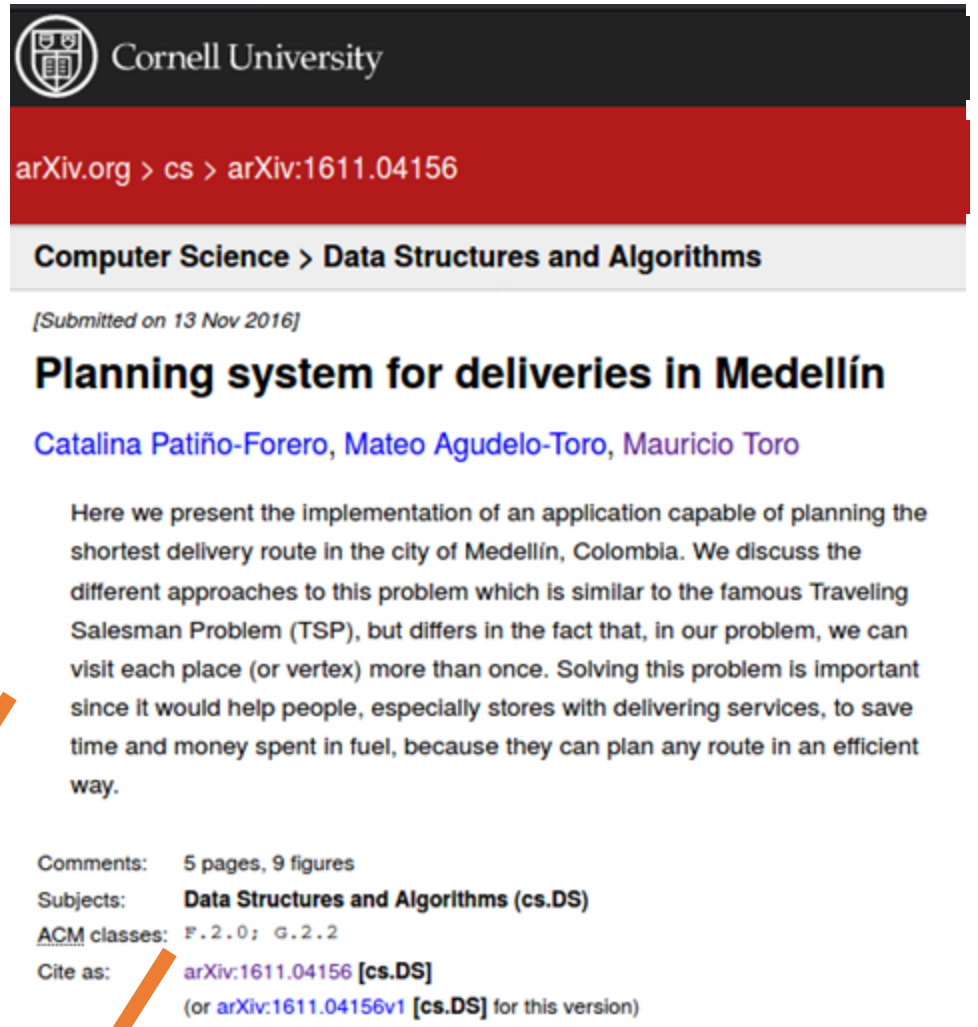
Include the citation of the report in arXiv and link. Alternatively, use OSF

C. Patiño-Forero, M. Agudelo-Toro, and M. Toro. Planning system for deliveries in Medellín. ArXiv e-prints, Nov. 2016. Available at: https://arxiv.org/abs/1611.04156

Include a screenshot



Include the teaching assistant and professor, please

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Please do not forget the acknowledgements to your scholarship (if you have one)

THANK YOU!

Supported by

The first two authors are supported by a Sapiencia grant financed by Medellín municipality. All the authors would like to thank the "Vicerrectoría de Descubrimiento y Creación", of Universidad EAFIT, for their support on this research