

# USE OF ALGORITHMS TO IDENTIFY ANIMAL HEALTH STATUS

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## ABSTRACT

The problem is about the lack of information technologies in the livestock sector, since the counts of the cows are made manually. Therefore, there are things that already have to be done by the technology without affecting the work of the peasants. Besides, all the problem to change from manual work to a computerized work goes back in a problem associated, for example, the entrance to a gym that was with a security guard that could let you go in or not was a bit tedious, but now with the implementation of technology already can go in without the need of the surveillance of somebody and this is possible thanks to the electronic cards.

## Keywords

Compression algorithms, machine learning, deep learning, precision livestock farming, animal health.

## 1. INTRODUCTION

The manual work in some fields is becoming obsolete since the technology is taking big force and precision inside a lot of things included the mobility of data and information, therefore, this is giving more usability to the technology.

### 1.1 Problem

For that treats in this problem is delicate largely by the tall consumption so much of dairy as of meat, therefore, the good classification is paramount since if there is not good classification the product will be in bad state

### 1.2 Solution

In this work, we used to convolutional neural network to classify animal health, in cattle, in the context of precision livestock farming (PLF). To common problem in PLF is that networking infrastructure is very limited, thus dates compression is required.

### 1.3 Article structure

In what follows, in Section 2, we present related work to the problem. Later, in Section 3, we present the dates sets and methods used in this research. In Section 4, we present the algorithm design. After, in Section 5, we present the results. Finally, in Section 6, we discuss the results and we propose some future work directions.

## 2. RELATED WORK

In what follows, we explain four related works on the domain of animal-health classification and image compression in the context of PLF.

### 3.1 Binary code that solve the compression lost dates

The loss of information was one of the problems related since compressing an information (image) lost a part of the image therefore they fixed this problem with the help of the binary code and space in the memory for like this can do that the information compress and decompress complete.

### 3.2 Helping hardware that helps in livestock farming

The welfare of the calves is something fundamental because it will be the livestock afterwards and has to be healthy for a good product, therefore, to the hand with the hardware invented a necklace to measure some parameters for like this have monitored the children essentially

## 3. MATERIALS AND METHODS

In this section, we explain how the dates was collected and processed and, after, different image-compression algorithm alternatives to solve improve animal-health classification.

### 3.1 it Dates Collection and Processing

We collected Dates from Google Images and Bing Images divided into two groups: healthy cattle and sick cattle. For healthy cattle, the search string was “cow”. For sick cattle, the search string was “cow + sick”.

In the next step, both groups of images were transformed into grayscale using Python OpenCV and they were transformed into Comma Separated Values (CSV) files. It was found out that the datasets were balanced.

The dataset was divided into 70% for training and 30% for testing. Datasets Plough available at <https://github.com/mauriciotoro/st0245-eafit/tree/master/proyecto/datasets>.

Finally, using the training dates set, we trained to convolutional neural network for binary image-classification using Google Teachable Machine available at <https://teachablemachine.withgoogle.com/train/image>.

## **3.2 Lossy Image-compression alternatives**

In what follows, we present different algorithms used to compress images.

### **3.2.1 Seam carving**

### **3.2.2 Image scaling**

### **3.2.3 Discrete cosine transform**

### **3.2.4 fractal compression**

## **3.3 Lossless Image-compression alternatives**

In what follows, we present different algorithms used to compress images.

### **3.3.1 Borrows & Wheeler Transform**

### **3.3.2 LZ77**

### **3.3.3 Huffman coding**

### **3.3.4 LZ78 and LZS**

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