

Livestock Counting in the Field



Large workforce to count all animals



High time requirement



Pauses in operations to perform the counting task



Reduced cattle weight due to animal stress



The Process



- The first step consisted of a detailed semi-manual annotation process of the initial 1,000 images used to train the model.
- The first model was then trained using YOLOv8.
- A semi-supervised learning process was subsequently applied by adding unlabeled images for inference.
- Images with the best inference results underwent human verification and were progressively added back into the training dataset until all available training images had been processed.
- Finally, the last batch of models was trained using different augmentation techniques and noise injection methods to improve model generalization, achieving the results presented in the next slide.

Counting Statistics



**Identified
Animals**

100 ms



**Average Image
Processing
Time**



**Animal
Recognition
Accuracy**

First Results for Cattle Detection on a client



img_name	Model	Final
A9.jpg	150	150
B21.jpg	155	155
B24.jpg	150	149
C25.jpg	148	148
C26.jpg	151	151
C35.jpg	144	146



The person riding the horse was detected as cattle, and the marking was manually removed.

The two animals were not detected by the model, and the marking was manually adjusted.



Customer Perception



Feedbacks

“We would like to share with you feedback from the client and the audit team regarding the drone inventory [...]. I had the opportunity to personally speak with the audit team and they were extremely satisfied with the accuracy, efficiency, and quality of the results. They emphasized the importance and positive perception the client had of the work carried out [...].”

Written feedback from the client:

“My opinion regarding the drone counting methodology is as follows:

- Much faster.
- Practical.
- Reduction in the number of employees involved in handling.
- Economic gain from not having to move the animal into the corral (the animal loses around 5 kg of carcass weight during handling).
- 100% reliability in the counting.

No suggestions for improvement; the process is very well aligned and reliable.”