**Case Study**

**Project Type**

**Single Animal:** At first, the single animal counting project was build because of simplicity and robustness.

**Multi Animal:** To reduce complexity, it is not selected. However, after completing the single animal, we focused on the multi-animal option and tried to implement it in a way that would be used in a house label.

**Features And Use Case Study**

**Animal Counting**

* **Use Case:** Farm, zoos, or wildlife
* **Technology:** Computer vision algorithms using AI models like YOLO or SSD, integrated with cameras or drones to track animals in real time.
* **Challenges:** Dataset, Accuracy in low light or bad weather.

**Gender Identification**

* **Use Case:** Automatically determining the gender of animals, especially useful for livestock breeding of wildlife animals.
* **Technology:** Computer vision to identify gender.
* **Challenges:** Similarity between male and female

**Breed Identification**

* **Use Case:** Identifying animal breeds automatically for species conservation, farming or breeding.
* **Technology:** DL models trained on a dataset of different animal breeds
* **Challenges:** Datasets are rare in this case.

**Alerts and Reports**

* **Use Case:** Health report, unavoidable circumstance alert
* **Technology:** Rule-based systems combined with AI to trigger alerts based on predefined thresholds.
* **Challenges:** Avoiding false positives in alert systems.

### **Animal Behavior Analysis**

* **Use Case**: Monitoring animal behavior to detect patterns such as feeding, movement, social interactions, and unusual behaviors.
* **Technology**: Machine learning models trained to recognize specific behaviors through image, video, or sensor data.
* **Challenges**: Differentiating between normal and abnormal behavior based on species.

**Health Monitoring**

* **Use Case:** Monitoring the health of the animal by detecting a change of behavior
* **Technology:** DL methods need to be applied in thermal images or videos
* **Challenges:** The Dataset, and monitoring this scale

**Estimated Time**

**Animal Counting**

* **Research and Dataset Preparation:** 2-3 weeks
* **Model Selection and Training:** 3-4 weeks
* **Testing and Evaluation:** 1 week
* **Implementation and Integration:** 3-4 weeks