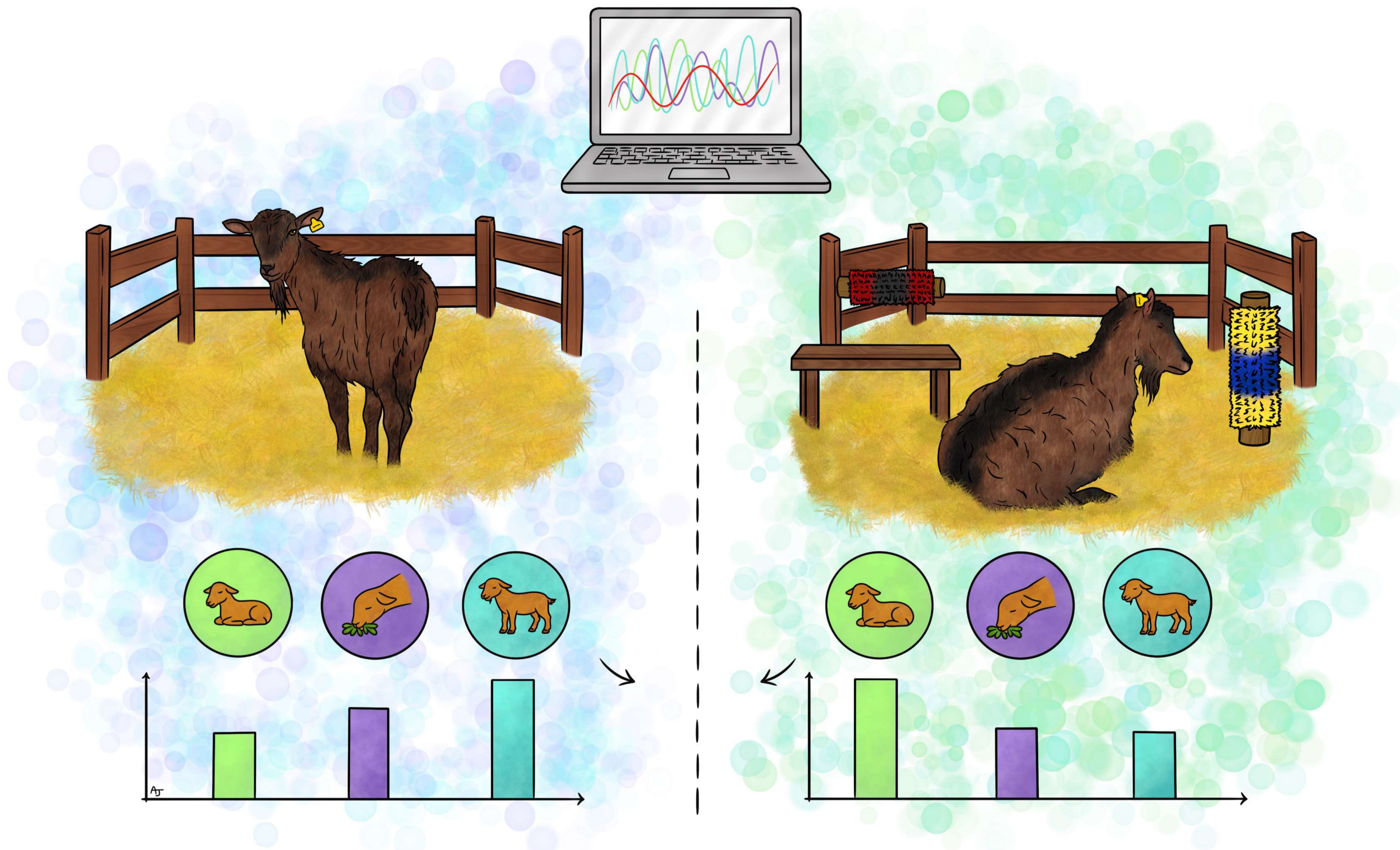


DO ENRICHED PENS MAKE DAIRY GOATS FEEL BETTER ?

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Défi sociétal : Transformation numérique et intelligence artificielle



This internship explored whether environmental enrichment can improve the daily comfort of dairy goats. Environmental enrichment means adding simple elements to the pen (for example platforms, brushes, wooden structures or hanging objects) so animals can rest, explore and interact more naturally. The idea is that an animal's daily routine can tell us a lot about its welfare. Calm resting, normal feeding and steady rumination are usually signs that the animal is comfortable and healthy.

To follow the goats' activity without disturbing them, each goat wore a small motion sensor on its ear tag (similar to a fitness tracker). We then used artificial intelligence as a tool to translate these movements into different types of activities such as feeding, ruminating, standing and lying. The artificial intelligence was trained using video observations, so it learned what each activity looks like in the sensor data, and it was able to recognize the main behaviors reliably.

We compared 28 Alpine goats housed in two conditions: a standard pen and an enriched pen. The main result was that the goats in enriched pens spent more time lying down and less time standing and feeding. Rumination stayed stable between groups. More lying and less standing suggests calmer activity rhythms and better physical comfort, while stable rumination is reassuring because it is an important sign of normal digestion and animal's well-being.

One challenge is that very short or rare behaviors, for example rubbing or playing with objects, are harder for the artificial intelligence to detect, simply because we have fewer examples to teach the model. So, increasing video annotation and combining the sensor with other measurements could help capture these subtle welfare-related behaviors in future work.



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