BEHAVIOURAL VIDEO ANALYSIS TO ASSESS GASTRIC ELECTRICAL STIMULATION

Supervising staff

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Context

To treat obesity, a promising method is gastric stimulation. The BEAMS department has investigated this therapy in the past years, and in vivo testing has been reached. Dogs have been implanted successfully, and by monitoring the amount of food ingested during the stimulation period with respect to the reference period, significant differences have been shown.

During the test periods of several weeks, each dog has been monitored by video cameras to analyse their behaviour. Those data remain currently unused, and a lot of information could be extracted from it in terms of reaction to the stimulation.

Rather than watching the videos with a human eye and writing down the different times stamps and behaviours, an engineering approach is most suitable: creating a behaviour tracking algorithm, in coordination with veterinary surgeons and behavioural experts.

Work

This master thesis aims to propose an algorithm tracking different characteristics of the behaviour linked to the satiety feeling or wellbeing of the dogs. This will allow a comparison of the different periods of the tests (reference, gastric-stimulation, reference post-stimulation etc) and enlighten the effects of the gastric stimulation.

Major steps included:

- Familiarize yourself with the format of the monitoring and the common image processing tools
- Meet the behavioural experts and rediscuss what is feasible and/or interesting to analyse
- Develop an algorithm to extract data such as timestamps and linked actions
- Improve the algorithm step by step, behaviour by behaviour
- Analyse the statistical differences between the different periods of the experiment