Magnetic Ear Tag Reporter
Automated system for detection of animal behavior

VCU researchers have developed an automated system for the detection of certain rodent behaviors, such as head twitch. Detection of head twitch is a time consuming process as researchers need to take the time to observe and evaluate them. Additionally, bias can potentially skew results. The automated system developed by our researchers both eliminates the bias and increases the throughput. This system can be employed to study a wide variety of animal behaviors.

The technology

This system utilizes minimally-invasive magnetic ear tags that are placed on the animal. The animal is tested inside a chamber, where the movement of the head is registered as changes in voltage signal. These signals can then be processed by a dedicated script that can detect the specific behaviors of interest. The script looks for changes in amplitude of the signal and frequency bands that are exclusive to various behaviors and also allows for a post-hoc analysis to validate the frequency of the behavior. While the current script is focused on head twitch response in mice, it can be adapted to analyze a wider variety of small animal behaviors and supervised machine learning.

Benefits

» Automated detection
» Eliminates observer bias
» Improves accuracy of behavior recording
» Cost efficient

Applications

» Phenotypical drug screening
» Detection of rodent behaviors:
  – Head-twitch
  – Grooming
  – Object exploration
  – Social interaction
  – Transition through mazes/chambers
» Suitable for machine learning

Patent status:
Patent pending: U.S. and foreign rights are available.

License status:
This technology is available for licensing to industry for further development and commercialization.

Category:
Biomedical

VCU Tech #:
18-091

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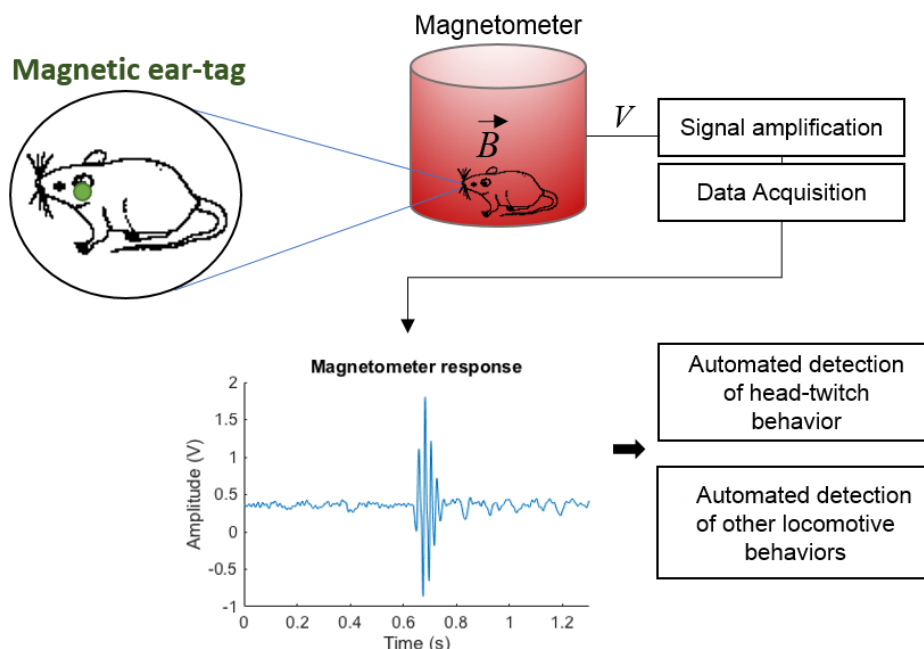mkmorgan@vcu.edu
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Figure 1. *A process diagram of the different components that make up the system for behavior analysis*