News Release

Issued: 6 August 2019

Data analysis tool to help scientists make sense of mouse's calls

Technology that can help interpret inaudible calls from laboratory mice has been developed in a bid to improve research.

The computer tool can reveal valuable insights into rodents' communication patterns and is more reliable than existing methods, which rely on human interpretation.

The system analyses audio recordings of ultrasonic vocalisations – beyond the range of human hearing. Researchers say it could support research involving mice, which play a crucial role in testing new therapies for human diseases.

Monitoring rodent communications can reveal important information about how diseases progress, particularly for neurological disorders such as Parkinson's disease and autism.

Experts previously categorised mouse communications into nine call types by manually deciphering visual representations of the soundwaves, known as spectrograms.

Researchers have now developed an automated tool that can accurately extract characteristics of the ultrasonic vocalisations to determine these different types of sounds.

The new approach used machine learning techniques to make analysis faster, more reliable, and less subjective than human interpretation, the researchers say.

It will standardise interpretations of mouse communication, helping researchers to directly compare their results between labs, types of mice, and over time, they add.

The research was led by the Universities of Edinburgh and Melbourne and the Istituto Superiore di Sanità in Rome. It is published in the journal *Scientific Reports*.

Dr Athanasios Tsanas, of the University of Edinburgh's Usher Institute, who co-led the research, said: "We developed a fully automated system that uses signal processing and statistical machine learning techniques to extract a range of diverse patterns from rodents' ultrasonic vocalisations. We then mapped those patterns onto the widely accepted types of vocalisations that experts understand.

"We hope these tools may find further use in animal model studies investigating, for example, the effect of neurological effects on communication patterns."

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Associate Professor Adam Vogel, of the University of Melbourne's Centre for Neuroscience of Speech, said: "These new methods will help scientists better measure mouse behaviour, improving how we test new medicines and how we measure changes in health and behaviour in different diseases and conditions."

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