

The behavioral testing of rodent models is a very important part of neuroscientific research. While variables such as velocity and time spent in an area of interest are reliably detected with EthoVision XT video tracking software, more detailed data on specific behavioral events (such as grooming) required additional human observation. This traditional method has its downfalls and automation in behavioral recognition seems crucial for advances in neuroscience.

That is why Noldus is introducing **EthoVision XT Rat Behavior Recognition.**

WHY USE AUTOMATED BEHAVIOR RECOGNITION

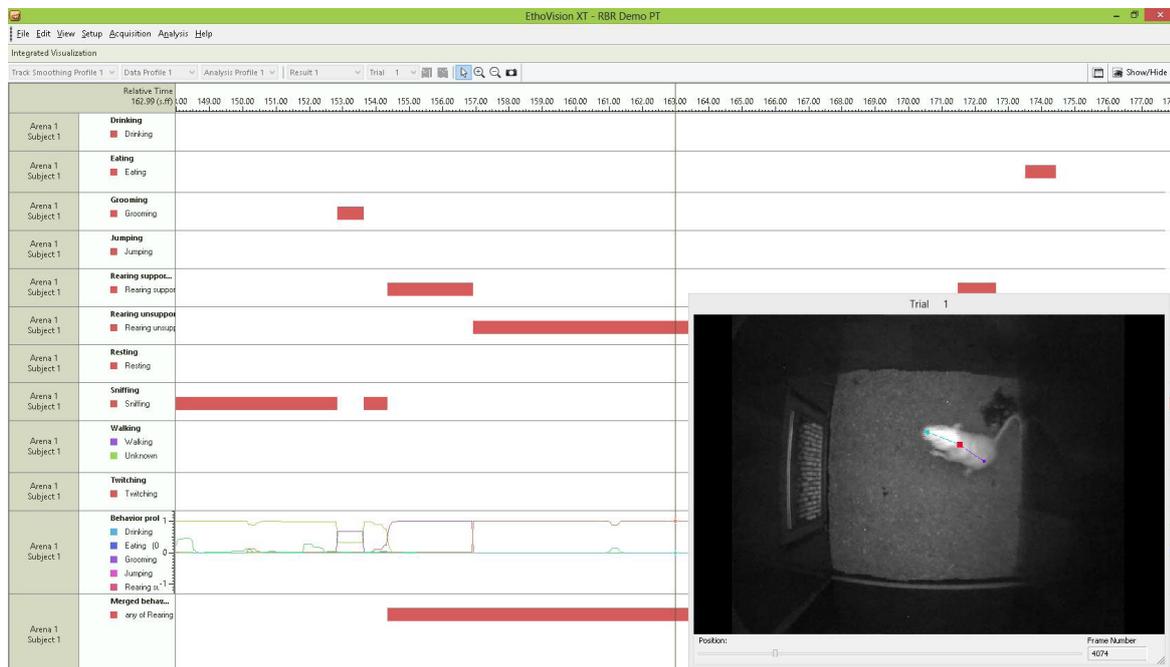
The last couple of years have brought many advances in video tracking software. Variables such as distance moved, speed of movement, path shape, zone visits, and body elongation are automatically recognized. In many cases, these variables are better recognized automatically than by human observation. However, recognition of more complex behaviors (such as grooming and sniffing) is still mostly done by humans. This is labor intensive and subject to individual interpretation. Noldus now introduces Rat Behavior Recognition, a new addition to EthoVision XT video tracking software which automatically recognizes ten rat behaviors.

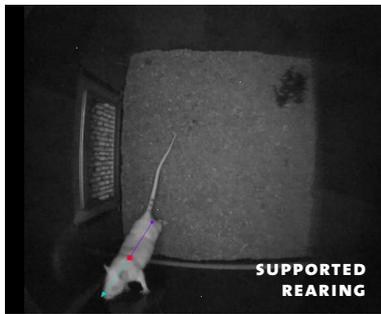


- GROOMING
- JUMPING
- SUPPORTED REARING
- UNSUPPORTED REARING
- TWITCHING
- SNIFFING
- WALKING
- RESTING
- EATING
- DRINKING

HIGH ACCURACY

Rat Behavior Recognition is the only behavioral recognition software available for rats. Validation studies have shown that the Rat Behavior Recognition Module is as accurate as human observation – both can reach an accuracy of about 70%, but the software is more consistent and tireless (van Dam *et al.*, 2013). Human observation is subjective and a human will never make





the exact same observation twice. Rat Behavior Recognition is consistent, scoring behavior the same way, every time, all the time.

Behavior recognition is based on several factors. These include the location and movement of the nose point, center point, and tail base of the rat, its body shape and contour, and information about the cage in which testing takes place (such as where the walls, the feeder, and the drinking bottle are located). Motion statistics, intensity, and periodicity are also taken into account.

TIRELESS OBSERVATIONS

A trained expert can score for about 2 hours before he loses concentration. Rats are fast-moving animals, so depending on which behaviors you are interested in, scoring 5 minutes of video can take up to an hour! Automatic Rat Behavior Recognition is tireless, making long-term observation a lot more efficient.

A PRACTICAL SOLUTION

Hand-labeled lists of behaviors take many hours to compile. This makes them expensive, but they are often essential to start any behavioral study. The Rat Behavior Recognition software does not require these

lists. It can be used without any previous training, in different set-ups (open field, home cage), and with different strains of rats. Additionally, it works with a practical top-view camera position.

ADDITIONAL AUTOMATICALLY RECOGNIZED BEHAVIORS

In addition to the ten behaviors included in the software, you can also order custom-tailored Rat Behavior Recognition software which automatically detects exactly those behaviors you are interested in. Please contact us at www.noldus.com/contact-us for more information.

REFERENCE

Dam, E. van; Harst, J.E. van der; Braak, C.J.F. ter; Tegelenbosch, R.A.J.; Spruijt, B.M.; Noldus, L.P.J.J. (2013). An automated system for the recognition of various specific rat behaviors. *Journal of Neuroscience Methods*, **218**, 214-224.



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