

# How does the model identify a behavior?

## Preliminary analysis by EthoVision XT

The preliminary analysis of the mouse or rat behavior by EthoVision XT makes use of the following information:

- Location
- Body shape
- Movement
- Environment proximity information based on the location of the animal
- Multi-scale temporal window features. See, for example,

[https://en.wikipedia.org/wiki/Multiscale\\_modeling](https://en.wikipedia.org/wiki/Multiscale_modeling) and <https://medium.com/@data-overload/sliding-window-technique-reduce-the-complexity-of-your-algorithm-5badb2cf432f> for explanations of those concepts.

More information on the Mouse behavior recognition and Rat behavior recognition modules in EthoVision XT is found in the following paper:

<https://www.frontiersin.org/journals/neuroscience/articles/10.3389/fnins.2023.1198209/full>

## SmartAnnotator

More information on the AI model in Smart Annotator is found in the paper *Fast Annotation of Rodent Behaviors with AI Assistance: Human Observer and SmartAnnotator Collaborate through Active Learning*, page 230-235.

<https://www.measuringbehavior.org/wp-content/uploads/2024/06/Measuring-Behavior-2024-Final-web.pdf>

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