



Revolutionizing  
Behavior Research



# AggressionScan

## Features:

- Complete Top-View based Social Aggression Behavior Analysis software
- Includes ability to do Aggressive Behavior Detection
- Can be coupled with our SocialScan module to provide both traditional social interaction as well as Aggression Analysis
- High-Throughput capability up to 4 arenas simultaneously
- Ability to analyze social behavior of up to 2 animals in the same arena
- Real-time or offline
- Continuous lengthy recordings and analysis possible
- Easy plug-n-play functionality
- No user intervention required during experiment but manual intervention possible to correct IDs of animals that may have been inadvertently swapped
- Detailed statistics about events that occurred during the experiment
- Automated Binned Data Output
- Automatic Graphing and Charting included!
- Full color-analysis
- Automatic adaptation to changing environment, non-uniform lighting, etc.
- Result review, Visualization of Acquired Experiments
- Extensive Experiment Database Management included!
- Batch-mode allows user to run multiple videos successively without human intervention

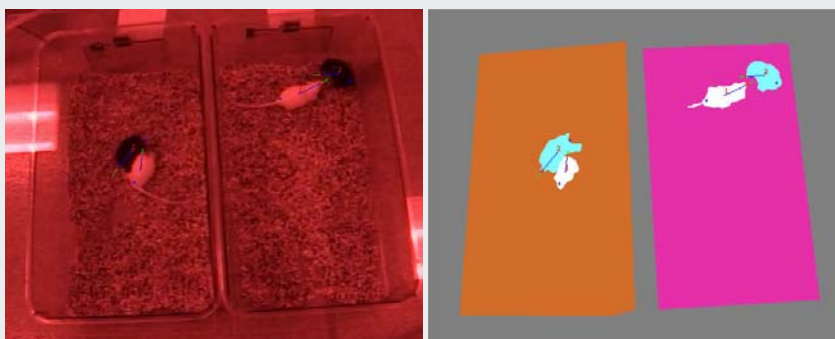
## Events AggressionScan can detect:

- Fight
- Approach Aggressively
- Withdraw
- Chase
- Immobile
- Explore
- Stare

AggressionScan is a member of our *SocialScan Suite* that quantitatively and qualitatively measures Aggressive Social behaviors of up to two (2) animals that are housed in a single arena. This product captures and tracks these animals (mice or rats) in an arena, and automatically determines various aggressive social interactions amongst them.

This system can automatically determine if any two animals are aggressively approaching each other, if one is withdrawing (avoiding) the other, one is chasing the other, or fighting with each other. When the animals are not directly interacting with each other, AggressionScan can score an animal as being Immobile, or Exploring independently without regard to the other animal. It can also measure Stare events where one animal is watching or tracking the movements of the other animal.

AggressionScan has several unique and important features in analyzing aggressive social behaviors between two animals. First, the system can differentiate two animals without artificially coloring (labeling) them, as long as they have some perceivable difference in terms of color or size. The system will automatically determine who is who, even after two animals get together and then separate. The system can automatically differentiate two animals even when they are in contact, an extremely important feature to have.



(a) Video Image

(b) Illustration View

Aggression Behavior Analysis

Second, the system can automatically identify the head and tail of each of animal; therefore there is no need to artificially color their head and tail parts. The system will determine the aggressive social interactions based on the automatically detected heads and tails of animals, and their relative spatial positions and movements.



## AggressionScan

(Continued from front)

### Applications:

- Aggression
- Social Staring/Anxiety
- Resident Intruder Analysis
- And many more!

### Results:

- Objective Social Aggression Behavior Analysis Results
- Automatic Export to Excel
- Complete Experiment Database Management
- Summary of All Occurred Events, Times of occurrence, Durations, Latency to occurrence, various measures during occurrence
- Binned data at user-defined bin intervals

### Product Options:

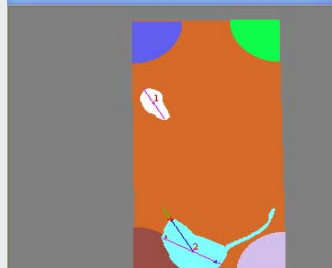
- High-Throughput Option (H Option)
- Realtime Option (R Option)
- High-Throughput Realtime Option (HR Option)

### Requirements:

- Windows-based PC
- Intel High-speed Processor
- Special Videocard for realtime analysis
- Large HDD space for storage
- Good lighting conditions
- IR-switchable camera or red-light for night
- Video-multiplexer for multi-camera feed



Illustration



Social Staring

The techniques for automation of the categorization and quantification of aggressive social interactions between animals have been applied to achieve high throughput screening. System architecture has been optimized for high throughput screening at 4 arenas per system. It is possible to perform analysis of up to 4 arenas per camera, with the cages placed in a 2x2 grid. However, it is preferable to have a dedicated camera for each arena and the 4 cameras multiplexed together into a single video stream for high-throughput analysis.

The High-Throughput product option is necessary to analyze more than a single arena simultaneously. The Realtime Option is necessary to perform realtime analysis where the live video feed into the computer is compressed, encoded, saved to the hard drive while simultaneously full analysis of the video is performed.

Many advanced features are incorporated, including supporting full color analysis, automatic adaptation to non-uniform or changing environment, automated handling of light/dark areas, variable speed playback of specific video segment for specific detected behavior, etc.

AggressionScan can be purchased as an add-on to our SocialScan software or can also be purchased stand-alone without SocialScan. If purchased together with SocialScan, a significant package discount is available. Contact us to learn more!

Complete Turn-key systems including all necessary Hardware and Software are available. Custom design of your environment to facilitate analysis, including lighting condition setup, IR/red light setup, cage enclosures, video integration, and video-feed to computer is also available.

### Unique Capabilities:

- Complete Hardware and Software Solution
- Analyzes 720x480 at 30 frames per sec
- Social Behavior Analysis without need to color animals unless absolutely necessary!
- Controls other hardware devices via I/O ports
- Detects animals in low contrast also!
- Works with rodents of all colors/sizes
- Records video into storage during analysis