



Revolutionizing Behavior Research



SocialScanTop

Features:

- Complete Top-View based Social Behavior Analysis software
- Includes ability to do Social Interaction, Social Recognition, Social Preference and Social Staring
- High-Throughput capability up to 4 arenas simultaneously
- Ability to analyze social behavior of up to 4 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
- Detailed statistics about events that occurred during the experiment
- Automated Binned Data Output
- Automatic Graphing and Charting included!
- Validated to be more than 90% accurate with respect to human scoring
- 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

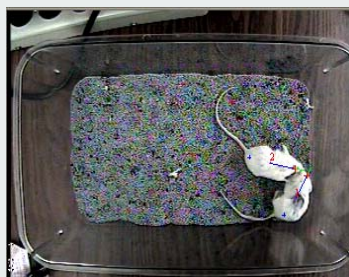
Events SocialScanTop can detect:

- | | |
|-------------------------|---------------------|
| • Active Contact | • Sniff at nose |
| • Passive Contact | • Sniff at body |
| • Contact by Body Parts | • Sniff at genitals |
| • Approach | • Social Distance |
| • Leave | • Mount |
| • Follow | • Stare |

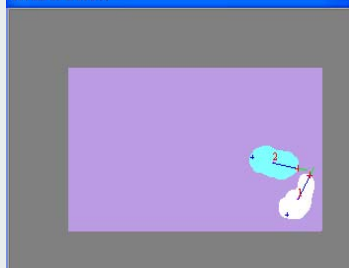
SocialScanTop is a member of our *SocialScan Suite* that quantitatively and qualitatively measures social behaviors of up to four (4) animals that are housed in a single arena. This product captures and tracks these animals (mice or rats) in an arena, and automatically determines various social interactions amongst them.

This system can automatically determine if any two animals are approaching each other, leaving (avoiding) each other, one is following the other, or simply, in contact with each other, or if one is sniffing at the other's head, mid-body or genital area. More advanced events have been recently added. One such event is Staring, where one animal is staring at another (as in resident intruder, social anxiety tests). Social Contact can now be divided into Active Contact or Passive Contact. User also has the capability to target specific body-part to body-part contact, if needed. The Social Distance between pairs of animals is dynamically updated and events based on this measure can be detected (e.g., how many times does Animal A get to within 10 cm of Animal B). Finally, Mount is a specialized social event where one animal approaches the other from behind and initiates contact.

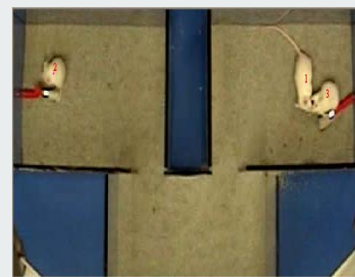
SocialScanTop has several unique and important features in analyzing social behaviors among animals. First, the system can differentiate two animals without artificially coloring (labeling) them, as long as they have some perceivable difference in terms of color or size. The system will automatically 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.



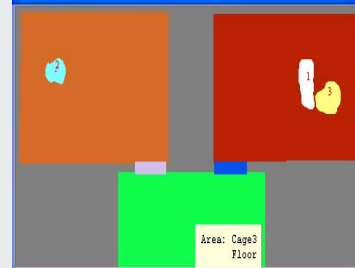
Illustration



Social Interaction



Illustration



Social Recognition



SocialScanTop

(Continued from front)

Applications:

- Social Interaction
- Social Recognition
- Social Preference
- Social Staring/Anxiety
- Aggression
- Courtship and Mating
- And many more!

Results:

- Objective Social 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

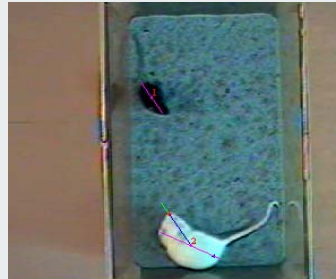
Product Options:

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

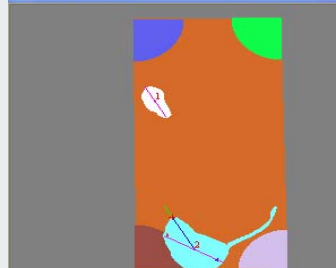
Requirements:

- 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

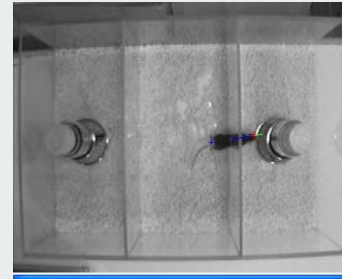
Second, the system can automatically identify the head and tail of each of animal; therefore there is no need to artificially color their head and tail parts. The system will determine the social interactions of approach, avoidance, sniffing, and contact based on the automatically detected heads and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



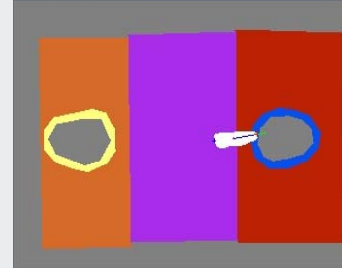
Illustration



Social Staring



Illustration



Social Preference

The techniques for automation of the categorization and quantification of 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. Moreover, with multiple cameras hooked up to SocialScanTop systems, the number of cages analyzed simultaneously can be increased further, if super high-throughput analysis is needed, while slightly compromising on quality due to decreased resolution per arena.

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.

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 640x480 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