



Revolutionizing Behavior Research



MazeScan

Features:

- Complete Top-View based Maze Behavior Analysis software
- Works with any type of maze including Elevated Plus Maze, Zero Maze, Radial Arm Maze, Y-Maze, T-Maze
- Integratable with any of *LocoScan*, *ObjectScan*, and *WaterMazeScan* into *TopScan* framework
- High-Throughput capability with 4 or more arenas simultaneously
- 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 MazeScan can detect:

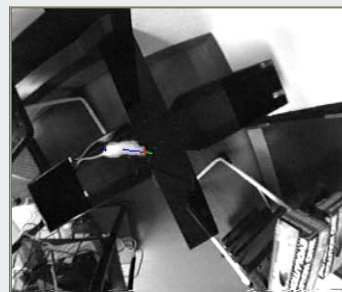
- | | |
|-------------------------|------------------|
| • Area Cross | • Disappear |
| • Area Stay | • % Body In |
| • Body-across-two-zones | • Cross Hidden |
| • Stretch Attend | • Supported Rear |
| • Head Dip | |

MazeScan automates the analysis of experiments conducted on all types of mazes including Elevated Plus Maze, Zero Maze, Radial Arm Maze, Y- or T-Maze, etc.

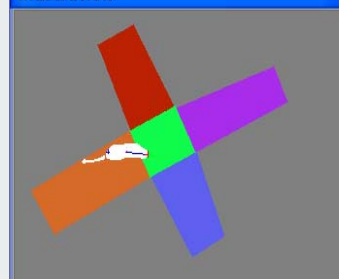
Elevated Plus Maze test rests on the premise of the naturalist conflict between the tendency of rodents to explore a novel environment and the aversive properties of a brightly lit open area. Rodents prefer the closed arms but will venture out into the open arms, only if they wish to do so. Similarly, a Zero Maze is comprised of a brightly lit open area alternating with dark covered areas that form the annulus of an elevated circular runway. Entries into the open areas and time spent in the open areas are quantified over the experiment session.

Instead of the investigator manually scoring entries into each arm/area and time spent in each arm/area on a series of successive trials, MazeScan performs this scoring automatically either from stored video or from a real time video source. It can intelligently analyze several minutes of rodent behaviors on a maze, and can generate such desired data as total number of entries into all arms/area, entries into each arm/area, time spent in each arm, etc. No human intervention is required.

The most important feature of MazeScan is the ability to detect 4 distinct rodent body parts – Nose, Forelimbs, Center, and Tail base. The user has the ability to detect events based on any of these 4 body parts being in any zone/area. Together with *LocoScan*, MazeScan can be a powerful tool for rodent behavior analysis.



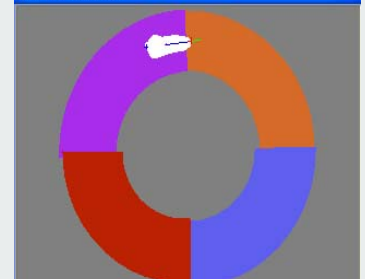
Illustration



Elevated Plus Maze



Illustration



Zero Maze



MazeScan

(Continued from front)

Applications:

- Elevated Plus Maze
- Zero Maze
- Radial Arm Maze
- Y-Maze
- T-Maze
- And many more!

Results:

- Objective Maze 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:

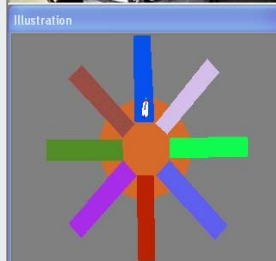
- High-Throughput Option (H Option)
- Realtime Option (R Option)
- High-Throughput Realtime Option (HR Option)

Requirements:

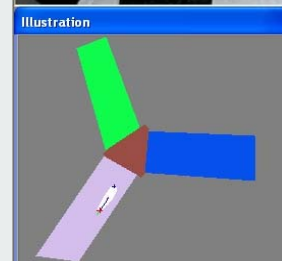
- Windows-based PC
- Intel High-speed Processor
- Special Videocard for realtime analysis
- Large HDD space for storage
- Good lighting conditions
- IR-switchable camera or red-light for night
- Video-multiplexer for multi-camera feed

In addition to detecting traditional parameters such as entries into each arm/area and time spent in each arm/area, MazeScan provides the capability to detect novel parameters such as Stretch-Attend behavior (SAP), Protected SAP (p-SAP) and Unprotected SAP (u-SAP), Head-Dipping behavior, Supported Rearing, and Body-across-two-zones (partial incursions into particular zones). An example for Body-across-two-zones is as follows: the animal might maintain its hind quarters in a closed arm while poking its nose into an open arm. If only the center of mass of the animal were used, such detailed events simply cannot be detected. Because MazeScan provides the capability to detect nose in one place with another body part in another place, we can determine such events where the body straddles multiple zones.

All detected events are output as a list. Double-clicking each item on the list will playback the video segment corresponding to that occurrence, facilitating validation and detailed study. MazeScan also includes a sophisticated and easy to use experiment data management mode that organizes results of all animals/trials in an experiment in a database. From this database, the advanced feature-based group export function allows exporting of all or multiple results from a given experiment into a comprehensive Excel file. The powerful Visualization Mode allows full review of the analysis, ability to load alternative parameter settings, and export of various statistical measures and graph data.



Radial Arm Maze



Y-Maze

With the high-throughput option, MazeScan can analyze anywhere from 4 to 8 arenas on a single system, depending on how large the arenas are. 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
- Detects animals in low contrast also!
- Works with rodents of all colors/sizes
- Works with any maze (Elev. Plus Maze, Zero Maze, Radial Arm Maze, Y- & T-Mazes)
- Integrates with 3rd party devices/bio-signals
- Records video into storage during analysis