



Program

9th International Conference
on Methods and Techniques
in Behavioral Research

Measuring Behavior 2014

Program of the 9th International Conference on Methods and Techniques in Behavioral Research. (Wageningen, The Netherlands, August 27 - 29 2014).

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August 2014



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Welcome to *Measuring Behavior* 2014

We are delighted to welcome you all to the 9th *Measuring Behavior* conference, which takes place in the city of Wageningen. Wageningen is one of the oldest cities in The Netherlands, having just celebrated 750 years of city rights last year. The University was founded in 1876, building on the local Agricultural College which already existed. It is now a world-center for biological research, with several groups doing outstanding research in both animal and human behavior as well as a variety of commercial spin-off companies (including the long-term sponsor of *Measuring Behavior*, Noldus Information Technology bv).

Building on the format that has emerged from previous meetings, we have a fascinating program of presentations about a wide variety of methodological aspects of the behavioral sciences. In addition to purely scientific presentations, we also have a good number of presentations in the Demonstration Showcase in which academics and companies show off their latest prototypes.

The scientific program contains contributions focusing on purely scientific aspects (issues of replicability, dynamic aspects of behavior) and applied research (animal welfare), human behavior (eye trackers in consumer research) and animal (rodent behavior), technical sessions (video tracking of social animals and recognition of human behaviors from video), sessions presenting the latest technology (3D simulators) and topics that are of relevance to everyone (eating behavior of people). The above list just scratches the surface of what promises to be a very diverse and interesting three days.

We hope this program caters for many of your interests and we look forward to seeing and hearing your contributions and trust it will become a productive, exciting and memorable conference.

Andrew Spink (Noldus Information Technology, The Netherlands)

Gernot Riedel (University of Aberdeen, United Kingdom)

Egon van den Broek (University of Utrecht, The Netherlands)

Maurizio Mauri (University of Milan, Italy)

Conference Chairs

Acknowledgement

Sponsor

The organizers of *Measuring Behavior 2014* gratefully acknowledge the support from its main sponsor:



Conference Program at a Glance

Location

The following pages give an overview of the conference program. For the location of the different rooms, please take a look at the floor plans on page 78 and 79.

Lunch, coffee, and tea are served in the Terraszaal.

Posters are displayed in the Wolfswaardzaal. Authors will present their work on Thursday between 14:10 and 15:40.

Detailed program schedule

A description of each session including time schedule and speakers is given later throughout the program book. For a more detailed description see www.measuringbehavior.org/mb2014. Please notice that sessions do not always end at the beginning of a lunch, coffee or tea break, but sometimes stop earlier or continue into the first part of the break.

Websites

Please have a look at www.measuringbehavior.org/mb2014 for the latest info (QR code on the right). Announcements about, for example, changes to the program are posted there and also on Twitter: <https://twitter.com/mbconference>. The hashtag for Twitter is #MB2014.

The wireless network of the Conference Center is called *hvw* and you can access it without a password.



WEDNESDAY, AUGUST 27

Time	Ir. Haakzaal	Kleine Veerzaal	Dorskampzaal	Pomonazaal
09:10-10:05	Keynote speaker Professor Gernot Riedel (p. 22)			
10:10-10:50		<i>Break</i>		
10:50-12:30	Symposium Eye-Tracking, Facial expression analyses, neuro- and psychophysiological reactions in consumer behaviour studies: integration between new tools and traditional ones (p. 23)	Symposium Timing of behaviour: behavioural changes caused by the ultradian and circadian systems (p. 24)	General session Video analysis (p. 25)	Symposium Smart reasoning systems to analyse human behavior (p. 26)
12:30-14:00	<i>Lunch (Terraszaal)</i>			
14:00-15:20	Symposium Measuring eating behavior (p. 27)	Workshop The replicability of measuring behavior (p. 28)	General session Measuring emotions in humans (p. 29)	Symposium Tracking animals in social groups (p. 30)
15:20-16:00		<i>Break</i>		
16:00-17:00	Symposium Measuring eating behavior (p. 31)	Demonstrations ErasmusLadder Touchscreen chambers PeopleTracker (p. 32)		Special session Tracking animals in social groups (p. 33)
17:30-19:00	<i>Welcome reception (p. 76)</i>			

THURSDAY, AUGUST 28

Time	Ir. Haakzaal	Kleine Veerzaal	Dorskampzaal	Pomonazaal
09:00-09:55	Keynote speaker Dr. Jennifer Healey (p. 36)			
10:00-10:40	Demonstration FaceReader 6 FaceReader Online (p. 37)	Demonstration Rodent behavior recognition (p. 38)	Demonstrations MWRap NeuroVirtual 3D (p. 39)	Tutorial Theme (p. 40)
10:40-11:10	Break			
11:10-12:50	Symposium Ambulatory skin conductance data (p. 41)	General session Animal welfare (p. 42)	General session Human and primate behavior (p. 43)	Symposium Measuring effects of neuroinflammation on behaviour (p. 44)
12:50-14:10	Lunch (Terraszaal)			
14:10-15:40	Posters (p. 67; Wolfswaardzaal)			
15:40-16:10	Break			
16:10-17:10	Tutorial The Observer XT (p. 46)	General session Measuring fish and aquatic mammal behavior (p. 47)	Tutorial EthoVision XT (p. 48)	Demonstrations DSI BioPac SWEET (p. 49)
18:00-21:00	Conference dinner (p. 76). Busses leave at 17:30.			

FRIDAY AUGUST 29

Time	Ir. Haakzaal	Kleine Veerzaal	Dorskampzaal	Pomonazaal
09:00-09:55	keynote speaker Professor John Disterhoft (p. 52)			
10:00-10:40	Symposium Rodent Social Behavior (p. 53)	Symposium Human behaviour recognition from video (p. 54)	Demonstrations Viso Lolitrack (p. 55)	Tutorial Mindware (p. 57)
10:40-11:10	Break			
11:10-12:30	Symposium Rodent Social Behavior (p. 58)	Symposium Human behaviour recognition from video (p. 59)	Symposium Dynamical representations of animal behavior – why and how? (p. 60)	Symposium Measuring human behavior in 3D virtual environments (p. 61)
12:30-14:00	Lunch (Terraszaal)			
14:00-15:40	General session Rodent Behavior (p. 62)	Tutorial Biopac (p. 63)	Symposium Dynamical representations of animal behavior – why and how? (p. 64)	Symposium Measuring human behavior in 3D virtual environments (p. 65)
	Demonstration EthoVision XT (p. 62)			
15:30-16:30	Closing ceremony, awards and farewell drinks (p. 76; Sports bar Down Under)			Excursion Simulators (p. 66)

Keynote Speakers

Keynote Speakers

We are very pleased that the following renowned scientists will present a keynote lecture during the conference:

On Wednesday:

Professor Gernot Riedel

Strategies in spatial learning: new in depth psychological analysis using old tools

Professor Riedel is chair in Systems Neuroscience at Aberdeen, UK He is also a conference chair of *Measuring Behavior 2014*.

(page 22)



On Thursday:

Dr Jennifer Healey

Measuring behavior to offer better solutions: in the moment and longer term

Jennifer Healey is a research scientist with the Interactions and Experiences Research Lab at Intel.

(page 36)



On Friday:

Professor John Disterhoft

Eyeblink Conditioning: A Paradigm to Study Associative Learning Across Species

John Disterhoft directs the Northwestern University NIA funded predoctoral and postdoctoral training program on Mechanisms of Aging and Dementia, is Associate Director of the Northwestern University Alzheimer's Disease Center and is Executive Director of the Northwestern University Behavioral Phenotyping Core.

(page 52)



Symposia

Symposia

Symposia highlight the methodological and technical state of the art in important domains. Symposia include presentations invited by the symposia chairs.

The following symposia will take place:

- Eye-Tracking, Facial expression analyses, neuro- and psychophysiological reactions in consumer behaviour studies: integration between new tools and traditional ones (page 23)
- Timing of behaviour: behavioural changes caused by the ultradian and circadian systems (page 24)
- Smart reasoning systems to analyse human behavior (page 26)
- Measuring eating behavior (page 27 & 31)
- The replicability of measuring behavior (page 28)
- Tracking animals in social groups (page 30 & 33)
- Ambulatory skin conductance (page 41)
- Measuring effects of neuroinflammation on behaviour (page 44)
- Rodent social behavior (page 53 & 58)
- Human behaviour recognition from video (page 54 & 59)
- Dynamical representations of animal behavior – why and how? (page 60 & 64)
- Measuring human behavior in 3D virtual environments (page 61 & 65)

Abstracts of symposia can be found on www.measuringbehavior.org/mb2014.

Abstracts of papers, and the affiliations of co-authors can be found on www.measuringbehavior.org/mb2014/proceedings.



General Sessions

General Sessions

General Sessions are composed of oral presentations grouped by topic.

The following General Sessions will take place:

- Video analysis (page 25)
- Measuring emotions in humans (page 29)
- Animal welfare (page 42)
- Measuring the behavior of humans and other primates (page 43)
- Measuring fish and aquatic mammal behavior (page 47)
- Measuring rodent behavior (page 62)

Abstracts and affiliations of co-authors can be found on www.measuringbehavior.org/mb2014/proceedings.



Demonstration Showcase

Demonstration Showcase

In the Demonstration Showcase, a prototype of a measuring device or technique, beta version of new software or recently launched product is shown. The demonstrations take place in one of the seminar rooms.

The following demonstrations are held during the conference:

- ErasmusLadder: a new tool for screening motor performance and motor learning abilities of laboratory mice (page 32)
- Electrophysiology in Touchscreen Chambers: Considerations for System Integration (page 32)
- Tracklab and PeopleTracker: a solution for accurate tracking and movement analysis (page 32)
- FaceReader: new developments in facial expression analysis (page 37)
- Remote analysis of facial expressions with FaceReader Online (page 37)
- Rodent Behavior Recognition (page 38)
- MWrap: a simple tool for analysing behavior observation recordings (page 39)
- NeuroVirtual 3D: A 3D simulation platform for measuring behavior (page 39)
- Monitor Blood Glucose Levels 24/7 with DSI Implantable Glucose Telemetry (page 49)
- Wearable logging device for wireless physiological and transducer signals (page 49)
- SWEET demonstrator: a crowd emotion monitor (page 49)
- Viso, the new multi room recording tool (page 55)
- LoliTrack – video behavior analysis made easy (page 55)
- EthoVision XT: Integration of external data with video track data (page 62)

Abstracts and affiliations of co-authors can be found on www.measuringbehavior.org/mb2014.

Tutorials

Tutorials

Whereas the general presentations at the conference deal with new and innovative methods in behavioral research, tutorials focus on teaching existing methods. Tutorials provide a valuable opportunity to instruct participants of *Measuring Behavior 2014* in specific methods, techniques and equipment for behavioral research. Tutorials consist of both theory and demonstrations and they cover a wide range of topics related to methods, techniques and equipment used in behavioral research.

The following Tutorials are presented during the conference:

- Analyzing individual and inter-individual behavior with Theme: detection and analysis of hidden temporal patterns and experimental effects. (page 40)
- The Observer XT (page 46)
- EthoVision XT (page 48)
- Mobile data acquisition with Mindware (page 57)
- Wireless physiological data recording and automated data analysis processing with Biopac (page 63)

Abstracts can be found on www.measuringbehavior.org/mb2014.

Session overview

WEDNESDAY

Wednesday — 09:10 - 10:05

IR. HAAKZAAL

KEYNOTE SPEAKER

Professor Gernot Riedel

Strategies in spatial learning: new in depth psychological analysis using old tools

About the speaker

Gernot Riedel is Chair in Systems Neuroscience at Aberdeen, UK. He was an undergraduate in Darmstadt and obtained a PhD in Mainz, before working as a post-doctoral research fellow in Magdeburg, York and Edinburgh. In addition, he also is honorary Professor at Wake Forest University in Winston-Salem, North Carolina, and the Nencki Institute, Warsaw. Gernot is an active member of numerous editorial boards of journals publishing behavioural science, has edited a number of special issues on selective topics related to cognition and has contributed >100 scientific publications. His research focuses on mechanisms for memory formation in animals (episodic, motor, habit), and how this knowledge can be translated to human disease. Consequently, the research group has established novel genetic and pharmacological models of major neurodegenerative and psychiatric disorders with cognitive dysfunction (Alzheimer, Parkinson, schizophrenia, depression, autism, Rett, obsessive-compulsive) and these are investigated using behavioural, cellular, biochemical, physiological and imaging endpoints in vivo and in vitro including innovative wireless EEG devices for mice and the examination of sleep and sleep anomalies as biomarkers for neurological diseases. Professor Riedel is also a conference chair of *Measuring Behavior 2014*.

Wednesday — 10:50 - 12:30

IR. HAAKZAAL

SYMPOSIUM

Eye-Tracking, Facial expression, physiological reactions in consumer behaviour studies: integration between new tools and traditional ones

Chair: Maurizio Mauri
IULM University of Milan, Italy.

Program

- 10:50 The effects of social communication: a research study on neuroscientific techniques application.
Maurizio Mauri, Andrea Ciceri, Giulia Songa, Fabiola Sirca, Francesco Onorati and Vincenzo Russo
IULM University, Behavior & Brain Lab, Italy.
- 11:10 Integration of traditional and innovative methods in studying advertisement effectiveness via paper, tablet and website: a neuromarketing experiment.
Maurizio Mauri, Mauro Ferraresi, Vincenzo Russo, Andrea Ciceri, Giulia Songa, Francesco Onorati and Fabiola Sirca
IULM University, Behavior & Brain Lab, Italy.
- 11:30 The influence of arousal on advertising effectiveness.
Daniel Belanche, Carlos Flavian and Alfredo Perez-Rueda
University of Zaragoza, Spain.
- 11:50 The impact of emotions on recall: a psychophysiological study on social ads.
Anna Missaglia, Maurizio Mauri, Annalisa Oppo and Vincenzo Russo
IULM University of Milan, Italy.
- 12:10 Unraveling presence via video games
Remco Kuyjper and Egon L. van den Broek
Utrecht University, The Netherlands.
- 12:30 *End of session*

Wednesday — 10:50 - 12:30

KLEINE VEERZAAL

SYMPOSIUM

Timing of behaviour: behavioural changes caused by the ultradian and circadian systems

Chairs: Roelof Hut and Eddy van der Zee
University of Groningen, The Netherlands.

Program

- 10:50 Circadian and homeostatic sleep regulation: measuring clock - homeostat interactions.
Tom De Boer
Leiden University Medical Center, The Netherlands.
- 11:10 Cross wavelet analysis to study periodic behaviour of animals in relation to environmental cues.
Maitreyi Sur, Andrew K. Skidmore, Tiejun Wang, Klaus-Michael Exo, Bruno Ens and Albertus G. Toxopeus
University of Twente, Department of Natural Resources, Faculty of Geo-Information Science and Earth Observation, The Netherlands.
- 11:30 Time-Place Learning in Mice: A circadian system dependent learning and memory task.
Cornelis Kees Mulder, Menno Gerkema and Eddy Van Der Zee
University of Groningen, The Netherlands.
- 11:50 Activity pattern relates to body temperature variation of differently sized South African antelopes.
Frank Van Langevelde, Anil Shrestha, Sip Van Wieren, Steven De Bie and Herbert Prins
Wageningen University, The Netherlands.
- 12:10 Inhibitory avoidance learning in zebrafish (*Danio rerio*).
Remy Manuel, Marnix Gorissen, Lars Ebbesson, Jan Zethof, Hans van de Vis, Gert Flik and Ruud van den Bos
Radboud University Nijmegen, The Netherlands.
- 12:30 *End of session*

Wednesday — 10:50 - 12:30

DORSKAMPZAAL

GENERAL SESSION

Video analysis

Program

- 10:50 Automatic statistics extraction for amateur soccer videos.
Jan van Gemert, John Schavemaker and Koen Bonenkamp
University of Amsterdam, The Netherlands.
- 11:10 Real-time classification of gorilla video segments in affective categories using crowd-sourced annotations.
John Schavemaker, Emmanuel Thomas and Anton Havekes
TNO, The Netherlands.
- 11:30 Social media offers new insights into human and animal behaviour: how to harness them scientifically.
Charlotte Burn
The Royal Veterinary College, United Kingdom.
- 11:50 Coding hand movement behavior and gesture with NEUROGES supported by automatic video analysis.
Oliver Schreer, Stefano Masneri, Harald Skomroch and Hedda Lausberg
Fraunhofer Heinrich-Hertz-Institute, Germany.
- 12:10 The development of a non-invasive behavioral model of thermal heat stress in laboratory mice (*Mus musculus*).
Justin Mufford, Mark Paetkau, Nancy Flood, Gilly Regev-Shoshani, Christopher Miller and John Church
Thompson Rivers University, Canada.
- 12:30 *End of session*

Wednesday — 10:50 - 12:30

P O M O N A Z A A L

S Y M P O S I U M

Smart reasoning systems to analyse human behavior

Chairs: Rianne Kaptein and Wessel Kraaij
TNO, The Netherlands.

Program

- 10:50 Biofeedback protocols for stress management in high-performance work environments.
Marianna Munafò, Daniela Palomba and Marco Casarotti
Inside S.r.l., Italy.
- 11:10 Context- and time-triggered in-situ questionnaires on a mobile phone.
Matei Capatu, Georg Regal, Johann Schrammel, Elke Mattheiss and Manfred Tscheligi
CURE - Center for Usability Research & Engineering, Austria.
- 11:30 Real-time lifelogging for behavioural analysis using Google Glass.
Tengqi Ye, Rami Albatal and Cathal Gurrin
Dublin City University, Ireland.
- 11:50 A comparison of human and machine learning-based accuracy for valence classification of subjects in video fragments.
Yorick Holkamp and John Schavemaker
Delft University of Technology, The Netherlands.
- 12:10 Fishualization: a group feedback display.
John Schavemaker, Saskia Koldijk, Leon Wiertz, Suzan Verberne, Maya Sappelli, Rianne Kaptein and Erik Boertjes
TNO, The Netherlands.
- 12:30 *End of session*

Wednesday — 14:00 - 15:20

IR. HAAKZAAL

SYMPOSIUM

Measuring eating behavior

Time: 14:00 - 17:10

Chair: Agnès Giboreau
Institut Paul Bocuse, France.

Program

- 14:00 An implicit behavioral approach to understand user satisfaction while preparing and consuming food at home.
David Labbe, Aurore Ferrage and Nathalie Martin
Nestlé Research Center, Switzerland.
- 14:20 Objective measures of individual eating styles across different food and meal types.
Ioannis Ioakimidis, Mona Tang Bach, Billy Langlet and Per Södersten
Karolinska Institute/NVS/Applied Neuroendocrinology, Sweden.
- 14:40 Fat thoughts and fat content do not affect eating behavior in women.
Per Södersten
Karolinska Institutet, Sweden.
- 15:00 The potential of the Intelligent Buffet in measuring food intake in a laboratory setting.
Bent Egberg Mikkelsen and Michal Dobroczyński
AAU, Denmark.
- 15:20 *Break*

Program continues at 16:00; See page 31

Wednesday — 14:00 - 15:20

KLEINE VEERZAAL

SYMPOSIUM

The replicability of measuring behavior

Chairs: Ilan Golani and Neri Kafafi
University of Tel Aviv, Israël.

Program

- 14:00 What's always wrong with my mouse?
Neri Kafafi, Tal Lahav and Yoav Benjamini
Tel Aviv University, Israël.
- 14:20 Estimating replicability of behavioral phenotyping results in a single laboratory.
Yoav Benjamini, Tal Lahav and Neri Kafafi
Tel Aviv University, Israël.
- 14:40 The demand for replicability of behavioral result: from burden to asset.
Ilan Golani, Yair Wexler and Yoav Benjamini
Tel Aviv University, Israël.
- 15:00 Mouse Phenome Database: A resource to address phenotypic heterogeneity,
research reproducibility and replicability.
Molly Bogue and Elissa Chesler
The Jackson Laboratory, United States.
- 15:20 *End of session*

Wednesday — 14:00 - 15:20

DORSKAMPZAAL

GENERAL SESSION

Measuring emotions in humans

Program

- 14:00 Measuring facial expression and emotional experience under diverse social context in a negative emotional setting.
Ying Jiang and Detlef Ruschin
Technical University of Berlin / Fraunhofer Heinrich-Hertz-Institute, Germany.
- 14:20 Habitats assen pilot: testing methods for exploring the correlation between sound, morphology and behavior.
Edda Bild and Matt Coler
INCAS³, The Netherlands.
- 14:40 Monitoring the physiology of the creative process.
Ysbrand D. van der Werf and Jan B.F. van Erp
Netherlands Institute for Neuroscience, The Netherlands.
- 15:00 Continuous affect state annotation using a joystick-based user interface.
Karan Sharma
German Aerospace Center, Germany.
- 15:20 *End of session*

Wednesday — 14:00 - 15:20

POMONAZAAL

SYMPOSIUM

Tracking animals in social groups

Time: 14:00 - 17:00

Chairs: Marc Naguib and Bas Rodenburg
Wageningen University, The Netherlands.

Program

- 14:00 Automatized tracking of free-ranging wild song birds using the Encounternet.
Marc Naguib and Lysanne Snijders
Wageningen University, Behavioural Ecology Group, The Netherlands.
- 14:20 Miniature wireless microphones reveal vocal relationships in a group of small
laboratory animals.
Andries Ter Maat
MPIO-Seewiesen, Germany.
- 14:40 Long-term behavioural repeatability in wild Eurasian perch (*Perca fluviatilis*) in a
natural lake: a high-resolution biotelemetry study.
Shinnosuke Nakayama, Kate Laskowski, Peer Doering-Arjes, Thomas Klefoth and
Robert Arlinghaus
Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Germany.
- 15:00 Validation of the TrackLab positioning system in a cow barn environment.
Lilli Frondelius, Matti Pastell and Jaakko Mononen
MTT Agrifood Research Finland, Finland.
- 15:20 *Break*

Program continues at 16:00; See page 33

Wednesday — 16:00 - 17:00

IR. HAAKZAAL

SYMPOSIUM

Measuring eating behavior

Time: 14:00 - 17:00

Chair: Agnès Giboreau
Institut Paul Bocuse, France.

Program, continued from page 27

- 16:00 The Dietary Intake Monitoring System (DIMS) - an innovative device for capturing patient's food choice, food intake and plate waste in a hospital setting.
Kwabena Ofei, Michal Dobroczyński, Mette Holst, Henrik Rasmussen and Bent Mikkelsen
Aalborg University Copenhagen, Research Group for Meal Science & Public Health Nutrition, Department of Development and Planning, Denmark.
- 16:20 Measuring food behavior in the restaurant of the future.
René de Wijk and Stefanie Kremer
Wageningen UR, The Netherlands.
- 16:40 How to use a Living Lab restaurant to study satiety and food intake in a real meal situation?
Agnès Giboreau
The Center for Food and Hospitality Research, Institut Paul Bocuse, France.
- 17:00 *End of session*

Wednesday — 16:00 - 17:00

KLEINE VEERZAAL

DEMONSTRATIONS

Program

- 16:00** ErasmusLadder: a new tool for screening motor performance and motor learning abilities of laboratory mice.
Reinko Roelofs
Noldus Information Technology, Wageningen, The Netherlands.
- 16:20** Electrophysiology in touchscreen chambers: considerations for system integration.
Greg Prescott
Campden Instruments, United Kingdom.
- 16:40** Tracklab and PeopleTracker: a solution for accurate tracking and movement analysis.
Ben Loke and Nico van der Aa
Noldus Information Technology, Wageningen, The Netherlands.
- 17:00** *End of session*

Wednesday — 16:00 - 17:00

POMONAZAAL

SYMPOSIUM

Tracking animals in social groups

Time: 14:00 - 17:00

Chairs: Marc Naguib and Bas Rodenburg
Wageningen University, The Netherlands.

Program, continued from page 31

- 16:00 Modeling feeding behavior and associated welfare and productivity of pigs: an agent-based approach.
Iris J.M.M. Boumans, Gert Jan Hofstede, Imke J.M. De Boer and Eddie A.M. Bokkers
Wageningen University, The Netherlands.
- 16:20 Tracking individual laying hens in group housing.
T. Bas Rodenburg and Marc Naguib
Wageningen University, The Netherlands.
- 16:40 Discussion
Bas Rodenburg and Marc Naguib
Wageningen University, The Netherlands.
- 17:00 *End of session*

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Session overview

THURSDAY

Thursday — 09:00 - 09:55

IR. HAAKZAAL

KEYNOTE SPEAKER

Dr Jennifer Healey

Measuring behavior to offer better solutions: in the moment and longer term

About the speaker

Jennifer Healey is a research scientist with the Interactions and Experiences Research Lab at Intel. Dr. Healey joined Intel as part of the Digital Health Group in 2005 to work on applications for mobile physiological sensing devices and has since been involved in developing a context aware mobile phone system and intelligent, context aware in-vehicle infotainment systems. Her interests in Measuring Behavior include both in the moment assessments to determine whether or not a driver is ready to take control of a self-driving car and long term modeling of relationships between people and technology.

Dr. Healey received her BS, MS and PhD at MIT from the Department of Electrical Engineering and Computer Science in 2000. Her thesis work on “Wearable and Embedded Systems for Recognizing Emotion from Physiology” was conducted at the MIT Media Lab under Prof. Rosalind Picard.

Thursday — 10:00 - 10:40

IR. HAAKZAAL

DEMONSTRATIONS

Program

- 10:00** FaceReader: new developments in facial expression analysis.
Tim den Uyl and Hans Theuws
VicarVision, Noldus Information Technology, The Netherlands.
- 10:20** Remote analysis of facial expressions with FaceReader Online.
Hans van Kuilenburg and Hans Theuws
Human Insight Services / VicarVision, Noldus Information Technology, The Netherlands.
- 10:40** *End of session*

Thursday — 10:00 - 10:40

KLEINE VEERZAAL

DEMONSTRATION

Program

- 10:00** Rodent Behavior Recognition.
Elsbeth van Dam, Oscar Fernandez, Malte Lorbach
Noldus Information Technology, The Netherlands.
- 10:20** *End of session*

Thursday — 10:00 - 10:40

DORSKAMPZAAL

DEMONSTRATIONS

Program

- 10:00** MWrap: a simple tool for analysing behavior observation recordings.
Melinda Babits, Miklós Bán
MTA-DE “Lendület” Behavioral Ecology Research Group, University of Debrecen,
Hungary.
- 10:20** NeuroVirtual 3D: A 3D simulation platform for measuring behavior.
Pietro Cipresso
Applied Technology for Neuro-Psychology Lab, IRCCS Istituto Auxologico Italiano -
Milano, Italy.
- 10:40** *End of session*

Thursday — 10:00 - 10:40

P O M O N A Z A A L

TUTORIAL

Analyzing individual and inter-individual behavior with Theme: detection and analysis of hidden temporal patterns and experimental effects

Instructor

Prof. Magnus S. Magnusson

Human Behavior Laboratory, University of Iceland. Founder and COB of PatternVision Ltd, Iceland.

Benefits of the tutorial

You will acquire understanding and skills regarding the analysis of behavior and interactions seen as the intra- and inter-individual construction and repetition of a particular type of (typically) hidden temporal patterns called t-patterns. The importance of such pattern detection for the detection of effects of independent (experimental) variables also allowing more economical data collection (coding).

Features

Participants will:

- Learn about the use of this methodology and technology through presentation of example studies from both human and animal research.
- Learn how to analyze behavioral and interaction patterns you have detected and answer various questions about their content, complexity, meaning and functional aspects.
- Learn to detect how structure in behavior and interactions may be influenced by independent variables.
- Learn about the new features in Theme 6.0 allowing amongst other the prediction (and retro-diction) of particular behaviors and detected behavior patterns.

Audience

Intended for researchers interested in gaining new insight into the structure and function of behavior and the detection of complex hidden effects of external factors.

Thursday — 11:10 - 12:50

IR. HAAKZAAL

SYMPOSIUM

Ambulatory skin conductance

Chairs: Joyce Westerink and Martin Ouwerkerk
Phillips Research, The Netherlands.

Program

- 11:10 Comparing cardiac and skin sympathetic nervous system activity.
Eco De Geus, Annebet Gerssen-Goedhart and Gonneke Willemsen
VU University, The Netherlands.
- 11:30 The use of skin conductance in the detection of deception.
Ewout Meijer
Maastricht University, The Netherlands.
- 11:50 LifelogExplorer: A tool for visual exploration of ambulatory skin conductance
measurements in context.
Rafal Kocielnik
Eindhoven University of Technology, The Netherlands.
- 12:10 Watch it!; a study into the associations between skin conductance and aggressive
behavior.
Henk Nijman, Peter de Looft, Erik Kuijpers, Joost à Campo, Mariëlle Stevens,
Manon Budy, Paulien Ligtvoet and Martin Ouwerkerk
Altrecht Aventurijn, The Netherlands.
- 12:30 MoodRadar-DAVID: facilitating insightful care by combining caretaker expertise
and real time insight in electrodermal fluctuations.
Matthijs Noordzij and Marleen Laroy-Noordzij
University of Twente, The Netherlands.
- 12:50 *End of session*

Thursday — 11:10 - 12:50

KLEINE VEERZAAL

GENERAL SESSION

Animal welfare

Chair: Penny Hawkins
RSPCA, United Kingdom.

Program

- 11:10 Environmental enrichment and data quality: results of a global survey.
Penny Hawkins
RSPCA, United Kingdom.
- 11:30 Measuring positive emotions in dairy cows using ear postures.
Helen Proctor and Gemma Carder
World Animal Protection, United Kingdom.
- 11:50 Pigs suffering from injurious behaviours like flank biting and tail biting are more interested in manipulating a novel rope than uninjured control animals.
Marc Bracke and Karlijn Ettema
Wageningen Livestock Research, The Netherlands.
- 12:10 Broiler vocalisation analysis used to predict growth.
Ilaria Fontana, Emanuela Tullo, Andy Butterworth and Marcella Guarino
University of Milan, Italy.
- 12:30 Discussion.
Penny Hawkins
RSPCA, United Kingdom.
- 12:50 *End of session*

Thursday — 11:10 - 12:50

DORSKAMPZAAL

GENERAL SESSION

Measuring the behavior of humans and other primates

Program

- 11:10 Behavioural nutrition & big data: how geodata, register data & GPS, mobile positioning, Wi-Fi, Bluetooth & thermal cameras can contribute to the study of human food behaviour.
Bent Egberg Mikkelsen, Anders K. Lyseen, Michal Dobroczyński and Henning Sten Hansen
Aalborg University, Denmark.
- 11:30 Making choices in space.
Hans Skov-Petersen and Jette Bredahl Jacobsen
University of Copenhagen, Denmark.
- 11:50 Subjective versus objective captured Social Networks: Comparing standard self-report questionnaire data with observational RFID technology data.
Lisa Thiele, Martin Atzmüller, Simone Kauffeld and Gerd Stumme
Technische Universität Braunschweig, Germany.
- 12:10 Do foster mothers from socially hierarchical primate species “selfishly” adopt orphans?
Fan Xu
Chongqing Medical University, China.
- 12:30 The science behind measuring behavior.
Peter Pohl
Child Psychology Practice Garmisch, Germany.
- 12:50 *End of session*

Thursday — 11:10 - 12:50

POMONAZAAL

SYMPOSIUM

Measuring effects of neuroinflammation on behaviour

Chairs: Uli Eisel and Regien Schoemaker
University of Groningen, The Netherlands.

Program

- 11:10 Effects of inflammatory markers on the behaviour in depressed patients.
Aye Mu Myint
Ludwig-Maximilian University, Germany.
- 11:30 Measuring depression-relevant behavioural states in mouse models for the inflammation hypothesis of depression.
Christopher Pryce, Damiano Azzinnari, Giorgio Bergamini, Federica Klaus, Flurin Cathomas, Rene Fuertig, Angelo Ceci and Bastian Hengerer
University of Zurich, Switzerland.
- 11:50 The role of Neutrophil Gelatinase Associated Lipocalin in linking depression and heart failure.
Leonie Gouweleeuw, Uli Eisel, Pieter Naude and Regien Schoemaker
University of Groningen, The Netherlands.
- 12:10 Unraveling the role of neuroinflammation in surgery-induced cognitive impairment.
Iris Hovens, Regien Schoemaker, Eddy van der Zee and Barbara van Leeuwen
University of Groningen, The Netherlands.
- 12:30 Summary and discussion.
Uli Eisel and Regien Schoemaker
University of Groningen, The Netherlands.
- 12:50 *End of session*

Thursday — 14:10 - 15:40

WOLFSWAARDZAAL

POSTERS

For an overview of the posters, see page 67

Thursday — 16:10 - 17:10

IR. HAAKZAAL

TUTORIAL

The Observer XT

Instructor

Leanne Loijens

Noldus Information Technology, The Netherlands.

Benefits of the tutorial

You will learn important concepts for efficient and accurate coding and analysis of behaviors using The Observer XT.

Audience

This tutorial is intended for researchers who are new to using The Observer XT for systematic coding of behaviors and for those who have not yet used software for this purpose.

Thursday — 16:10 - 17:10

KLEINE VEERZAAL

GENERAL SESSION

Measuring fish and aquatic mammal behavior

Program

- 16:10 Mating behaviors of free-ranging dusky dolphins (*Lagenorhynchus obscurus*).
Dara Orbach, Theresa Kirchner and Bernd Würsig
Texas A&M University at Galveston, United States.
- 16:30 Automated analysis of eye-body coordination during prey captures by newborn
life bearing fish.
Martin Lankheet, Twan Stoffers and Bart Pollux
Wageningen University, The Netherlands.
- 16:50 Measuring consciousness in turbot (*Scophthalmus maximus*) and common sole
(*Solea solea*) subjected to electrical stunning before slaughter.
Marc Bracke, Aleksandra Daskalova, Hans van de Vis and Egbert Lambooj
Wageningen Livestock Research, The Netherlands.
- 17:10 *End of session*

Thursday — 16:10 - 17:10

DORSKAMPZAAL

TUTORIAL

EthoVision XT

Instructor

Micha Oudakker, Noldus Information Technology, The Netherlands.

Benefits of the tutorial

Video Tracking 2.0 – How new HD video technology can help you in automating your behavioral experiments!.

Audience

This tutorial is intended for researchers who are new to using EthoVision XT for video tracking and for those who have not yet used software for this purpose.

Thursday — 16:10 - 17:10

POMONAZAAL

DEMONSTRATIONS

Program

- 16:10** Monitor Blood Glucose Levels 24/7 with DSI Implantable Glucose Telemetry.
Stefano Gaburro, Data Sciences International (DSI), St. Paul, United States.
- 16:30** Wearable logging device for wireless physiological and transducer signals.
Aleksandar Dimov
BIOPAC Systems Inc., Goleta, United States.
- 16:50** SWEET demonstrator: a crowd emotion monitor.
John Schavemaker, Ben Loke, Mike Kelia, Bas Huijbrechts, Paul Ivan, Arjen de Rijke,
Tom Regelink, Lucas Noldus, Martin Kersten and Marten den Uyl
TNO, Noldus Information Technology, Vicar Vision, CWI, TASS, MonetDB, The
Netherlands.
- 17:10** *End of session*

Noldus

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Session overview

FRIDAY

Friday — 09:00 - 09:55

IR. Haakzaal

KEYNOTE SPEAKER

Professor John Disterhoft

Eyeblink Conditioning: A Paradigm to Study Associative Learning Across Species

About the speaker

John Disterhoft has extensive research experience investigating the neural mechanisms of learning in young and aging animals and in the learning deficits associated with aging and Alzheimer's Disease. The portion of his research program investigating slow outward currents during learning in aging has received two consecutive MERIT award designations from the National Institute on Aging. The other portion of his research program involves studying the activity of many single neurons in conscious animals during learning and memory consolidation.

He directs the Northwestern University NIA funded predoctoral and postdoctoral training program on Mechanisms of Aging and Dementia, is Associate Director of the Northwestern University Alzheimer's Disease Center and is Executive Director of the Northwestern University Behavioral Phenotyping Core.

Friday — 10:00 - 10:40

IR. HAAKZAAL

SYMPOSIUM

Rodent social behavior

Time: 10:00 - 12:30

Chairs: Suzanne Peters, Berry Spruijt and Helen Pothuizen
Utrecht University, DeltaPhenomics, The Netherlands.

Program

- 10:00 Computerized video analysis of social interactions in mice.
Fabrice de Chaumont, Sylvie Granon and Jean-Christophe Olivo-Marin
Intitut Pasteur, France.
- 10:20 JAABA: An interactive machine learning system for automatic annotation of
animal behavior.
Kristin Branson
HHMI Janelia Farm Research Campus, United States.
- 10:40 *Break*

Program continues at 11:10; See page 58

Friday — 10:00 - 10:40

KLEINE VEERZAAL

SYMPOSIUM

Human behaviour recognition from video

Time: 10:00 - 12:10

Chairs: Remco Veltkamp and Nico van der Aa
University of Utrecht, Noldus Information Technology, The Netherlands.

Program

10:00 Laban movement analysis for action recognition.
Arthur Truong, Hugo Boujut and Titus Zaharia
ARTEMIS Department, Institut Mines-Telecom, Telecom SudParis, France.

10:20 Articulated tracking of humans by video technology.
Nico van der Aa, Coert van Gemeren, Lucas Noldus and Remco Veltkamp
Noldus Information Technology bv, The Netherlands.

10:40 *Break*

Program continues at 11:10; See page 59

Friday — 10:00 - 10:40

DORSKAMPZAAL

DEMONSTRATIONS

Program

- 10:00 Viso, the new multi room recording tool.
Niek Wilmink,
Noldus Information Technology, The Netherlands.
- 10:20 LoliTrack – video behavior analysis made easy.
Britta Gribsholt
Loligo® Systems, Denmark.
- 10:40 *End of session*

LoliTrack

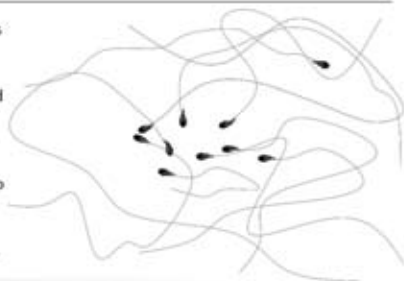


VIDEO BEHAVIOR ANALYSIS MADE EASY

LoliTrack is affordable software for Windows offers unique features like tracking identical looking animals in the same group, school or swarm and analyzing the individual behavior. Tracking is based on contrast – no markers are needed.

The software analyzes any (.avi) video file and export all data to Excel. Use your own PC and video camera.

Easy-to-use software developed for non-engineers.



TYPICAL APPLICATIONS

- Micro plate analysis (e.g. Zebrafish)
- Behavioral phenotyping (focal animals)
- Rodent assays (e.g. mazes, open field tests)
- Group behavior (e.g. insects, fish, micro organisms)
- Locomotory behavior (e.g. home cage, aquarium, field)
- Social and sexual behaviors (IID, animal orientation)

FEATURES

- Batch analysis for multiple trial files
- Create videos with data overlay
- Define zones and Pals
- Auto threshold function
- Save settings file
- Mask tool
- Calibration tool (meters, cm or mm)
- Excel compatible file format
- Raw data file with time-stamped X & Y coordinates
- Data summary file with calculated parameters

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mail@loligosystems.com

Friday — 10:00 - 10:40

P O M O N A Z A A L

TUTORIAL

Mobile data acquisition with Mindware

Instructor

Gene Barbanera

Mindware, United States.

Benefits of the tutorial

This tutorial will introduce the audience to the mobile acquisition of physiological signals. These signals will be collected with a portable Impedance Cardiograph (the MindWare Mobile) and will cover HRV, Cardiac Impedance, and EDA. The tutorial will feature real-time data collection with a MindWare instructor as well as an introduction into artifact scoring.

Features

- Mobile data acquisition.
- High level heart rate variability, cardiac impedance, and electrodermal activity demonstrations.
- Live signal collection.
- Introduction to artifact scoring.

Audience

All researchers and individuals with an interest in behavioral studies or psychophysiological research. Information will be valuable to all levels of expertise.

Friday — 11:10 - 12:30

IR. HAAKZAAL

SYMPOSIUM

Rodent social behavior

Time: 10:00 - 12:30

Chairs: Suzanne Peters, Berry Spruijt and Helen Pothuizen
Utrecht University,, DeltaPhenomics, The Netherlands.

Program, continued from page 53

- 11:10 Automated discovery of behavioural patterns in rodents.
Diego Sona, Matteo Zanutto, Francesco Papaleo and Vittorio Murino
Istituto Italiano di Tecnologia, Italy.
- 11:30 Temporal structure of rat behavior in the social interaction test.
Maurizio Casarrubea, Fabiana Faulisi, Aurora Cudia, Dario Cancemi, Filippina Sorbera, Magnus S. Magnusson, Maurizio Cardaci and Giuseppe Crescimanno
University of Palermo Dept. of Experimental Biomedicine and Clinical Neurosciences (BioNec), Human Physiology Section "G. Pagano", Laboratory of Behavioral Physiology, Italy.
- 11:50 Automated classification of rat social behavior.
Suzanne Peters, Ilona Pinter, Raymond de Heer, Johanneke van der Harst and Berry Spruijt
Utrecht University, Dept. Behavioral Biology, Fac. Science / Delta Phenomics b.v., The Netherlands.
- 12:10 Discussion.
Suzanne Peters and Berry Spruijt
Delta Phenomics and Utrecht University, The Netherlands.
- 12:30 *End of session*

Friday — 11:10 - 12:30

KLEINE VEERZAAL

SYMPOSIUM

Human behaviour recognition from video

Time: 10:00 - 12:10

Chairs: Remco Veltkamp and Nico van der Aa
University of Utrecht, Noldus Information Technology, The Netherlands.

Program, continued from page 54

- 11:10 Observing human behaviour to identify risk in task performance.
Ronald Poppe and Mark Ter Maat
University of Twente, The Netherlands.
- 11:30 A multimodal benchmark tool for automated eating behaviour recognition.
Varun Kakra, Nico van der Aa, Lucas Noldus and Oliver Amft
Noldus Information Technology, The Netherlands.
- 11:50 Video surveillance for behaviour monitoring in home health care.
Ben Krose, Tim Van Oosterhout and Gwenn Englebienne
Universiteit van Amsterdam, The Netherlands.
- 12:10 *End of session*

Friday — 11:10 - 12:30

DORSKAMPZAAL

SYMPOSIUM

Dynamical representations of animal behavior – why and how?

Time: 11:10 - 15:40

Chairs: Alex Gomez-Marin and Ilan Golani
Champalimaud Center for The Unknown, Lisbon, Portugal,
Tel Aviv University, Israël.

Program

- 11:10 Sampling the movement phenospace: Towards a biophysics of behavior in the wiggling of *C. elegans*.
Greg Stephens
VU Amsterdam, The Netherlands.
- 11:30 Syntax in *C. elegans* locomotion.
Andre Brown
MRC/Imperial College London, United Kingdom.
- 11:50 Locomotion in tethered *Drosophila melanogaster* through virtual worlds.
Tomás Cruz and Eugenia Chiappe
Champalimaud Neuroscience Programme, Portugal.
- 12:10 Deconstructing the value-based serial decision making process in *Drosophila* foraging.
Verónica M Corrales C, Aldo A Faisal and Carlos Ribeiro
Champalimaud Neuroscience Program, Portugal.
- 12:30 *Break*

Program continues at 14:00; See page 64

Friday — 11:10 - 12:30

POMONAZAAL

SYMPOSIUM

Measuring human behavior in 3D virtual environments

Time: 11:10 - 17:00

Chairs: Jorrit Kuipers and Tobias Heffelaar

Green Dino, Noldus Information Technology, The Netherlands.

Program

- 11:10 From 2D to 3D in ATC? Can operators be trained?
Kees Nieuwenhuis
Thales Nederland B.V., The Netherlands.
- 11:30 Studying the features of collaboration in the VirCa immersive 3D environment.
Balázs Péter Hámornik, Anita Komlódi, Máté Köles and Károly Hercegfı
Budapest University of Technology and Economics, Hungary.
- 11:50 Design and evaluation of HMI concepts for cooperative adaptive cruise control.
Jacques Terken and Qonita Shahab
Technische Universiteit Eindhoven, The Netherlands.
- 12:10 Automation of training and assessment with DATA Centred Design (DDT).
Jorrit Kuipers
Delft Technical University / Green Dino BV, The Netherlands.
- 12:30 *Break*

Program continues at 14:00; See page 65

Friday — 14:00 - 15:40

IR. HAAKZAAL

GENERAL SESSION

Measuring rodent behavior

Program

- 14:00 A novel task to assess reversal learning in mice in a home cage environment.
Esther Rimmelink, Maarten Loos, Guus Smit and Matthijs Verhage
Sylics, The Netherlands.
- 14:20 The difference is droll – Towards a cognitive bias test in mice.
Lars Lewejohann and Vanessa Kloke
Behavioral Biology, University of Osnabrück, Germany.
- 14:40 Optimization and pharmacological validation of a set shifting procedure for
assessing executive function in rat.
Rejane Troudet and Eric Detrait
UCB, Belgium.
- 15:00 *End of session*

DEMONSTRATION

Program

- 15:00 EthoVision XT: integration of external data with video track data.
Ruud Tegelenbosch
Noldus Information Technology, The Netherlands.
- 15:20 *End of session*

Friday — 14:00 - 15:40

KLEINE VEERZAAL

TUTORIAL

Wireless physiological data recording and automated data analysis processing

Instructor

Aleksandar Dimov

BIOPAC Systems, Goleta, United States.

Benefits of the tutorial

In this tutorial you will learn how to collect wireless physiological data, as well as various data analysis techniques including novel stimulus-response, electrodermal activity, Heart rate variability, GPS and actigraphy analysis.

Features

Participants will be introduced to:

- Using different platforms for recording physiological data.
- Performing signal-specific data analysis.
- Automating analysis protocols completely.
- Event-based analysis of physiological data.
- Importing marker data from The Observer XT.

Audience

This tutorial is of interest to anyone who wants to collect physiological data and wants to automate the analysis.

Friday — 14:00 - 15:40

DORSKAMPZAAL

SYMPOSIUM

Dynamical representations of animal behavior – why and how?

Time: 11:10 - 15:40

Chairs: Alex Gomez-Marin and Ilan Golani

Champalimaud Center for The Unknown, Lisbon, Portugal.

Tel Aviv University, Israël.

Program, continued from page 60

- 14:00 Automatic high throughput measurement of feeding behavior in Drosophila.
Pavel Itskov, Jose-Maria Moreira, Ekaterina Vinnik, Goncalo Lopes, Steve Safarik,
Michael Dickinson and Carlos Ribeiro
Champalimaud Foundation, Portugal.
- 14:20 Is the dynamic coordination between translation and rotation during the
shutdown and build up of locomotor behavior homologous in insects and
vertebrates?
Alex Gomez-Marin, Efrat Oron, Anna Gakamsky, Dan Valente, Yoav Benjamini and
Ilan Golani
Champalimaud Neuroscience Programme, Portugal.
- 14:40 Quantifying exploratory behavior in mice: the vertical dimension.
Yair Wexler, Ilan Golani, Liad Shekel and Yoav Benjamini
Tel Aviv University, Israël.
- 15:00 Quantifying continuous behavior to account for neural variability.
Asma Motiwala, Thiago Gouvea, Tiago Monteiro, Christian Machens and Joe
Paton
Champalimaud Neuroscience Program, Portugal.
- 15:20 Home cage-based long-term monitoring of fear in mice: novel approach to
determine individual differences in risk assessment and avoidance.
Oliver Stiedl, Torben Hager, René F. Jansen, Anton W. Pieneman, Suriya N.
Mannivanan, Ilan Golani, August B. Smit and Matthijs Verhage
VU University Amsterdam, The Netherlands.
- 15:40 *End of session*

Friday — 14:00 - 15:40

POMONAZAAL

SYMPOSIUM

Measuring human behavior in 3D virtual environments

Time: 11:10 - 17:00

Chairs: Jorrit Kuipers and Tobias Heffelaar

Green Dino, Noldus Information Technology, The Netherlands.

Program, continued from page 61

- 14:00 Using a virtual grocery store to simulate shopping behaviour.
Erica van Herpen, Tian Yu, Eva van den Broek and Hans van Trijp
Wageningen University, The Netherlands.
- 14:20 Driver state estimation: from simulation to the real world.
Tobias Heffelaar, Renkske Landman, Menno Merts, Jasper Michiel van Hemert,
Arjan Stuiver and Lucas Noldus
Noldus Information Technology, The Netherlands.
- 14:40 Measuring behaviour in a manoeuvring simulator.
Wendie Uitterhoeve
MARIN, The Netherlands.
- 15:00 Multi variable strategy reduces symptoms of simulator sickness.
Jorrit Kuipers
Delft Technical University / Green Dino, The Netherlands.
- 15:20 *Break*

Posters

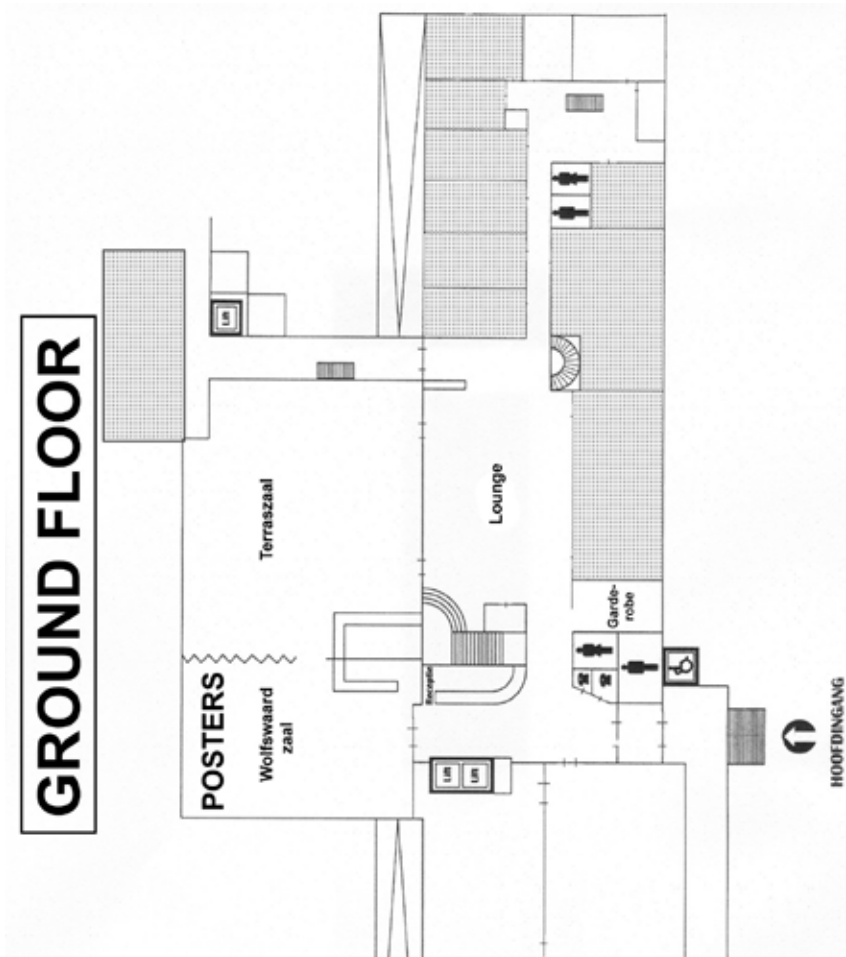
Posters

Date: Thursday

Time: 14:10 - 15:40

Location: Wolfswaardzaal

Abstracts and affiliations of co-authors can be found on www.measuringbehavior.org/mb2014/proceedings



- 4 Count your Chickens ... Measuring behaviour using a series of JPEG pictures.
Erik Luc Decker and Anja Riber
Aarhus University, Denmark.
- 6 Transportation safety architecture - Measuring senses of safeness.
Maarten Douwe Bredero
Architect Maarten Douwe Bredero, The Netherlands.
- 8 Guiding principles for behavioural laboratory animal science: a new resource for better science and animal welfare.
Penny Hawkins
RSPCA, United Kingdom.
- 9 Results of the Open Field Test at different light intensities in C57 mice.
Francisco Javier Martin Arenas and C. Oscar Pintado
Universidad de Sevilla, Spain.
- 10 Comparison of auditory thresholds obtained with a conditioned and an unconditioned response in rats.
Jennifer Lee
University of Toledo, United States.
- 11 How to measure episodic memory in 12-month-old infants: implications for future research.
Katarzyna Bobrowicz and Ryszard Bobrowicz
University of Warsaw, College of Liberal Arts, Poland.
- 13 How to measure episodic-like memory in rats and cats: implications for future research.
Ryszard Bobrowicz and Katarzyna Bobrowicz
University of Warsaw, Interfaculty Individual Studies in Humanities, Poland.
- 19 Local field potential – A link between behavior and physiology.
Marta Woloszynowska-Fraser and Gernot Riedel
University of Aberdeen, United Kingdom.
- 27 Sound Analysis of Dairy Cows.
Geert Meen, Max Schellekens, Michelle Slegers, Lenny van Erp, Nina Leenders and Lucas Noldus
University of Aberdeen, United Kingdom.

- 28 New media supported, child-oriented Pilates as intervention to stabilize posture and to correct postural defects on pupils aged 10 - 12.
Dietlind Deutschmann, Manuel Parfant, Hans-Peter Holzer, Martin Ebner, Gerd Ivanic, Martin Svehlik and Andreas Weiglein
Medical University Graz, Austria.
- 30 New approach to analyse navigational search strategies used by mice during a water maze task.
Pierre-Henri Moreau, Valeria Melis, Barry Crouch, Charlie Harrington and Gernot Riedel
University of Aberdeen, United Kingdom.
- 31 Automated analysis of spatial search strategies in the Open-field Water Maze and Barnes Maze.
Barry Crouch and Gernot Riedel
University of Aberdeen, United Kingdom.
- 34 Non-genomic effects of testosterone on social behavior in laboratory rats.
Julius Hodosy, Barbora Filova, Veronika Borbelyova, Janka Babickova, Emese Domonkos and Peter Celec
Comenius University Bratislava, Institute of molecular biomedicine, Slovakia.
- 36 Effects of increased prenatal testosterone on anxiety-like behavior and spatial memory of laboratory rats.
Veronika Borbelyova, Barbora Konečná, Emese Domonkos, Julius Hodosy and Peter Celec
Comenius University Bratislava, Institute of molecular biomedicine, Slovakia.
- 41 Prior test experience produces changes of t-patterns spatial distribution in the Elevated Plus Maze test.
Maurizio Casarrubea, Fabiana Faulisi, Andrea Santangelo, Vincent Roy, Arnaud Arabo, Magnus S. Magnusson, Filippina Sorbera and Giuseppe Crescimanno
Dept. of Experimental Biomedicine and Clinical Neurosciences (BioNec), Human University of Palermo, Physiology Section "G. Pagano", Laboratory of Behavioral Physiology, Italy.
- 47 Thermal response behaviors in larval zebrafish: startle escape, thermotaxis and thermal arousal.
Tohei Yokogawa, Michael Iadarola and Harold Burgess
NIH-National Institute of Child Health and Human Development, United States.

- 61 Measuring stock cube uses in a kitchen. A naturalistic approach: grid analysis for the culinary preparation with different ingredients.
Consuelo Iborra-Bernad, Estelle Petit and Agnès Giboreau
Center for Food and Hospitality Research, Institut Paul Bocuse, France.
- 62 Validation of a behavioral task to study perceptual supplementation in rats.
Vincent Roy, Ophélie Menant, Romain Hacquemand, Katia Rovira and Olivier Gapenne
EA 4700, Psy-NCA, France.
- 68 Rethinking statistical analysis of associative learning in an olfactometer.
Nicolas Busquet and Diego Restrepo
University of Colorado -Anschutz Medical Campus, United States.
- 70 Measuring human movement patterns and behaviors in public spaces. A method based on thermal cameras, computer vision, and geographical information system technologies.
Søren Zebitz Nielsen, Rikke Gade, Thomas B. Moeslund and Hans Skov-Petersen
University of Copenhagen, Denmark.
- 71 Argos observation system. Computer program enhancing observation of classroom proceedings in primary school.
Jolanta Pisarek and Michał Modzelewski
Educational Research Institute, Poland.
- 88 Measuring equilibrium and motor learning deficits during aging with the Elevated Unsteady Board in mice with precocious cerebellar degeneration.
Pascal Hilber
University of Rouen, psy.nca lab, France.
- 90 Effects of Clozapine, Aripiprazole and Bitopertin in rats social withdrawal assessed in an automatic social interaction test.
Serena Deiana, Holger Rosenbrock and Roberto Arban
Boehringer Ingelheim Pharma GmbH & Co. KG, Germany.
- 95 Pre-processing of electromyography startle data: a novel semi-automatic method.
Laury van Bedaf, Lieke Heesink and Elbert Geuze
UMC Utrecht, The Netherlands.
- 97 Cued fear conditioning: Minimizing 'contextual leftover'-freezing by maximizing changes of context.
Hansfried Van Craenendonck and Luc Ver Donck
Janssen, Belgium.

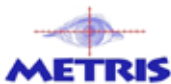
- 98 Validation of automated detection of impaired motor function of rats on the rotarod.
Michel Mahieu, Roland Willems and Luc Ver Donck
Janssen Research and Development, Belgium.
- 107 Characterization of burrowing deficits in the MIA model of osteoarthritis.
Luke Bryden, Natalia Gorodetskaya, Janet Nicholson and Anton Pekcec
Boehringer Ingelheim Pharma GmbH & Co KG, Germany.
- 108 Correlation of natural rat behaviors in trait impulsivity.
Alfie Wearn, Anton Pekcec, Janet Nicholson and Natalia Gorodetskaya
Boehringer Ingelheim, Germany.
- 110 Reanalyzing explorative behavior in the Open Field test.
Michael Tsoory, Shachar Dagan, Nicolas Panayotis and Mike Fainzilber
Weizmann Institute of Science, Israël.
- 118 Defining parameters in automated quantitative gait analysis for evaluation of progressive neurodegeneration in animal models of ataxia and motor coordination impairments.
Elisavet Kyriakou and Johanneke van der Harst
Delta Phenomics, The Netherlands.
- 120 Tracking behaviour in a large number of experimental units.
Attila Hettyey, Gergely Nagy, Zoltán Tóth, Anikó Kurali, Kata Pásztor, Tamás Urszán, Veronika Bókony and Gábor Herczeg
MTA ATK NÖVI, Hungary.
- 121 Combining psycho-physiological and social signal processing methods in health communication: Acute stress detection.
Kim Groeneveld and Marie Postma-Nilsenova
Tilburg University, The Netherlands.
- 124 Implicit measurement go mobile: the priming glasses.
Ewald Strasser, Christiane Moser and Manfred Tscheligi
University of Salzburg, Austria.
- 128 Low-cost activity trackers for domestic cats and their use in comparing play with free-range behavior.
Matthew Sullivan
Manchester Metropolitan University, United Kingdom.
- 134 Quantification of predator response in groups of fish.
Wouter van der Bijl, Alexander Kotrschal and Niclas Kolm
Stockholm University, Sweden.

- 141 Water T-maze as a screening assay for cognitive enhancement.
Angela Chen, Dorothy Flood, Duane Burnett and Liza Leventhal
FORUM Pharmaceuticals, United States.
- 148 Differential-reinforcement-of-low-rates-of-responding-task performance in a
transgenic rat model of Huntington disease.
Giuseppe Manfré, Huu Phuc Nguyen, Valérie Doyère and Nicole El Massioui
University of Tuebingen, Department of Medical Genetics, Germany.
- 149 Body weight gain is impaired in rats and mice during automated homecage
system observations.
Laura Emily Clemens, Damaris Jasmin Franke, Janine Colina Denise Magg, Erik Karl
Håkan Jansson and Huu Phuc Nguyen
University of Tuebingen, Germany.
- 150 Careful adjustment of food deprivation levels is important when assessing
motivation in obese transgenic animals.
Erik Jansson, Laura Clemens, Olaf Riess and Huu Phuc Nguyen
University of Tübingen, Institute of Medical Genetics and Applied Genomics,
Germany.
- 152 Optimization and pharmacological validation of a set shifting procedure for
assessing executive function in rat.
R. Troudet, A. Michaux, E. Hanon, Y. Lamberty, and E.R. Detrait
UCB, Belgium.
- 156 Validation of a virtual reality tool to test consumer response in supermarket
settings.
MR Andersen, P Brisson, PL Hald, D Godtfredsen, S Serafin, and BE Mikkelsen
AAU-Multisensory Lab, Aalborg University, Denmark.

Exhibitors

The following companies will present their products & services at *Measuring Behavior 2014*: Exhibitions take place in the Terraszaal (see map on page 78).

See <http://www.measuringbehavior.org/mb2014/exhibitors-2014> for more information about the exhibitors.



Conference Venue

Measuring Behavior 2014 will be held in Wageningen, the City of Life Sciences. Wageningen has a large university and many research institutes, with a considerable number of groups working on research related to both animal and human behavior.

Venue

Measuring Behavior 2014 will take place at Hotel and Conference Center Hof van Wageningen. The conference center offers plenty of conference and hotel rooms, exhibition halls, and restaurants and is therefore an ideal host for our conference.

The central position of Hof van Wageningen (see map on page 77) makes it very easy to reach, as its close to the A12, A15, A30 and A50 motorways. There is also a bus station 250 m away. Private parking spaces are available (€3,50 every time you leave the car park).

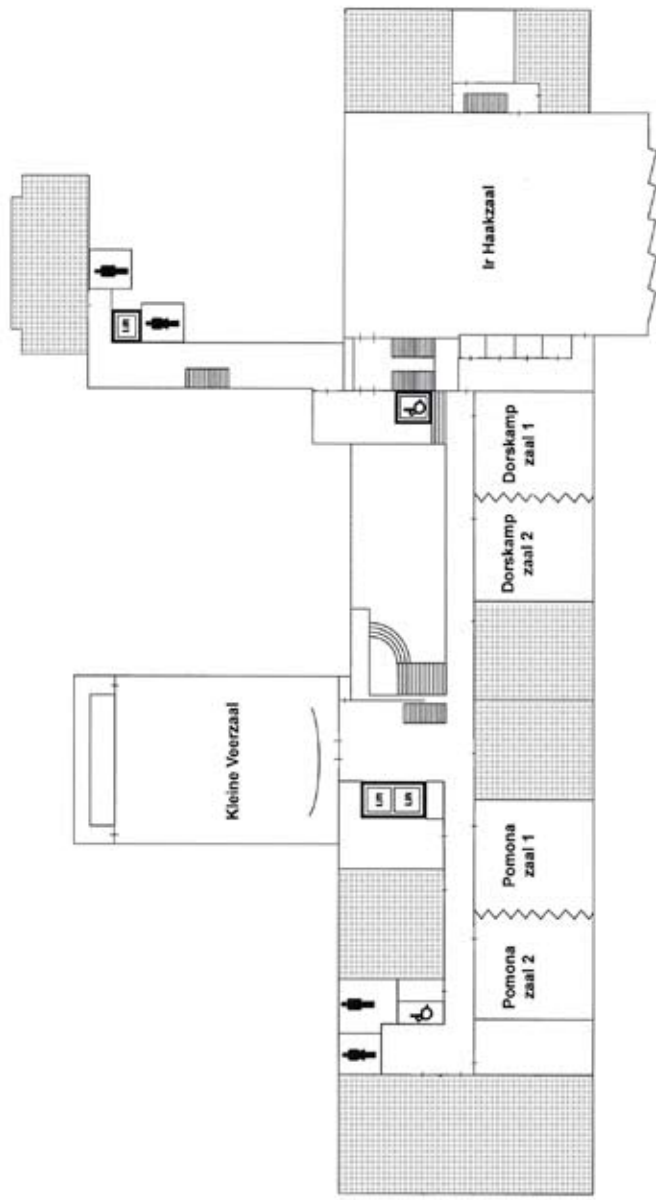
Address

Hof van Wageningen
Hotel and Conference Center
Lawickse Allee 9
6701 AN Wageningen
The Netherlands

GROUND FLOOR



FIRST FLOOR



Wageningen

The city of Wageningen, in the East of The Netherlands, with its long tradition of multi-disciplinary applied and pure research in the life sciences, is a very appropriate location for the Measuring Behavior conference. Nowadays the city has approximately 38 000 inhabitants. The international nature of the Wageningen University — around 100 different nationalities are attending — means that the town has a cosmopolitan feel, despite its relatively small size.

Wageningen known as the City of Life Sciences and is the central city in Food Valley, a region where around 15 000 professionals are involved in research and technology development associated with food related sciences. Wageningen University and Research Centre forms an integral part of this region and is world class in the field of agricultural science and biology in general. The annual Food4You festival is only one of the many innovative food & health events that are organized in Wageningen.

In 2013 Wageningen celebrated 750 years of city rights. The city was established in 838 A.D. though there has been evidence of human activity in the area some 5,000 years B.C.E. Wageningen received its city rights in 1263. Since then the city became famous as the site of the German surrender on May 5, 1945 which officially ended the Second World War in The Netherlands.



Information for Presenters

Language

The official language at the conference is English.

Oral presentations

Oral presentations are grouped in General Sessions and Symposia. The durations of the talks is 20 minutes, including discussion. It is advised that authors reserve approximately 5 minutes for discussion and questions from the audience. Talks in all parallel sessions start and finish at the same time. Session chairs will ensure strict timekeeping to enable you to move between sessions.

The conference organization will provide each presentation room with a laptop and a projector. Presenters should bring their presentation on a CD or USB stick, or they can use their own laptop. Please prepare your presentation by trying it out on the computer during the last break time before your presentation. Your session chair will be present in the room during that break, please introduce yourself to him or her.

The best student paper will get an award.

Poster presentations

Location

The posters will be displayed in the Wolfswaardzaal. The number of your poster is the number that was used in the reviewing process. To find the number of your poster, see pages 67-73 or check at the registration desk.

Mounting

The poster boards are 120 by 120 cm, so your poster can be any size that is smaller than that. The posters should be mounted on the first day and will remain on display for the entire conference. Materials to mount the posters will be provided at the Registration Desk.

Presentation and poster viewing

In principle, posters stay on display throughout the conference, so poster viewing is possible until Friday 15:30. During the poster session, on Thursday between 14:10 and 15:40, the presenter is requested to remain at his or her poster as much as possible.

Practical Information

Language

The official language at the conference is English. The local language is Dutch, but most residents of Wageningen speak English.

Identification

In The Netherlands, you are obliged by law to carry photographic identification (e.g. a passport).

Parking

You can park your car in the car park next to the WICC. You can buy parking coins (€ 3,50- every time you leave the car park) from machines in the lounge.

Liability and insurance

The conference fees do not include provisions for the insurance of participants against personal injuries, sickness, theft or property damage incurred during the conference. It is recommended that delegates make prior arrangements for health, accident and other insurance they deem necessary. Neither the Conference Organization nor its sponsors are responsible for any loss, injury or damage - however caused - to persons or belongings.

Credit cards

All major hotels and most restaurants accept credit cards.

Currency exchange and ATM machines

Currency can be exchanged at banks, post offices, and airports. Opening hours are generally from 9:00 to 17:00 on working days. There are ATM machines throughout the city of Wageningen. There is an ATM machine near the conference center at Plantsoen 55 and in the Hema in the Hoogstraat (see map on page 83).

Internet facilities

Free wireless internet is available at the conference center.

Wireless network: hww

No password needed.

Electricity

Electricity is supplied at 230V (50 Hz) everywhere in The Netherlands. Adapters may be required for your personal equipment.

Lunch

A light lunch is included in the conference fee and will be served daily between 12:30 and 14:00 on Wednesday and Friday and between 12:50 and 14:10 on Thursday. Lunch is served in the Terraszaal on the ground floor (see map on page 78). You can buy hot meals in restaurant Eatcetera on the ground floor of the hotel.



Coffee and Tea breaks

Coffee and tea, and other refreshments are free of charge during breaks in the morning and afternoon sessions: Coffee, tea and lunch is served in the Terraszaal on the ground floor (see map on page 78).

Transport and Tourist information

The conference center is within walking distance from the city center and Wageningen busstation. There are direct bus connections between the busstation and railway stations Ede-Wageningen (88 and 52), Arnhem Central Station (51, 52), Rhenen (50, 80, and 45), and Tiel (45). Tickets for the bus can be bought from the bus driver. You can also buy a public transport chip card (OV-chipkaart). This card works in the entire country. You can buy an anonymous OV-chipkaart at railway station ticket offices and at the Primera shop at Hoogstraat 107.

- For more information about the OV-chipkaart see <http://www.ov-chipkaart.nl/> (select the language at the top of the page)
- For a database of all public transport connections see <http://9292.nl/en/>
- General tourist information: <http://www.holland.com/global/>
- Information about Wageningen: <http://www.wageningen.nl/>