International Multisensory Research Forum 17th annual meeting

第十七届国际多感觉通道研究会议

June 15-18, 2016
Suzhou, China

中国 · 苏州

Welcome to IMRF2016!

We are honored to host the 17th International Multisensory Research Forum. This IMRF is held in Garden Hotel, Suzhou city, a hub that is nearly equidistant between the major cities of Beijing in the north and Guangzhou in the south. Suzhou is a city with long history on the lower reaches of the Yangze River and on the shores of Lake Taihu in the province of Jiangsu, China. The city is renowned for its beautiful stone bridges, pagodas, and meticulously designed gardens, which has become a great tourist attraction.

IMRF 2016 is featured by an integration of the state-of-art research and interesting application of senses. We are happy to have three keynote lectures which address multisensory mechanisms of body self-perception by using fMRI and virtual reality techniques (Henrik Ehrsson, Karolinska Institutet, Sweden), behavioral and neuronal discoveries of cross-modal memory (Yongdi Zhou, NYU Shanghai, China) and human attention in multisensory domain (Steve A. Hillyard, UC San Diego, USA). We also have a stimulating lecture on the multisensory control and learning in cognitive robot systems (Jianwei Zhang, University of Hamburg, Germany). Six symposia would show many facets of the current understanding about multisensory research and applications in different cultural contexts.

We would like to take this opportunity to thank all those who help us in organizing this conference. We are grateful to the scientific board members who offered kind suggestions and guidance to support this conference in all kinds of ways, the student volunteers and sponsors who streamlined the details of IMRF2016, as well as the kind supports from four local Chinese Universities. Is it not a pleasure to meet friends coming from afar? We hope you will have a multisensory stay in Suzhou!

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Jianwei Zhang	University of Hamburg (Germany)
Xiaolin Zhou	Peking University (China)

General Information

Locations

The conference will be held at Garden Hotel, Suzhou, China. Talk sessions and symposia will be held at **Feiquan Hall** on the ground floor of the hotel**.** The poster session will be held at **Baiyun Hall**. At the **Qinglian Hall**, the sponsors will showcase the exhibitions. Both Baiyun Hall and Qinglian Hall are on the second floor. Coffee break would be provided at the entrance of Feiquan Hall.

We will have destination boards to indicate the directions when you arrive at the Garden Hotel.

Feiquan Hall

Internet

Network: IMRF2016

Password: IMRF2016

Registration & Reception

Registration and reception will begin at 13:00 on June 15th. Late registration is available from 08:00 ~ 10:00 on June 16th and June 17th. Onsite registration fee can be paid online or in cash.

Abstracts

Please download abstract book from http://www.multisensorylab.com/imrf2016/abstract

Presentations related information

Symposia and Talks

Each presentation of the symposia lasts from 15~20 minutes. Please refer to the detailed schedule in the following sessions. Each regular talk lasts 15 minutes, including Q&A. We recommend each presenter to bring a USB stick to copy your PPT for presentation to the computer at the meeting room at least 10 minutes before your talk.

Posters

The maximum size of poster should be 80 cm (width) x 120 cm (height), portrait. The poster session is from 13:30 ~14:50 on June 16th (Thursday). However, posters are allowed to be put on from 09:00 to 17:00 on June 16th.

Business meeting

Business meeting will be held from 11:25 to 12:55 on June 17th at the Feiquan Hall. Topics to be discussed: 1) Overview IMRF2016; 2) New host for website IMRF; 3) Preview on IMRF2017; Proposals for IMRF2018 and others. We welcome all the participants to attend this meeting.

Special issue

Multisensory Research. The time line for submission/peer-review is to be announced.

Student awards

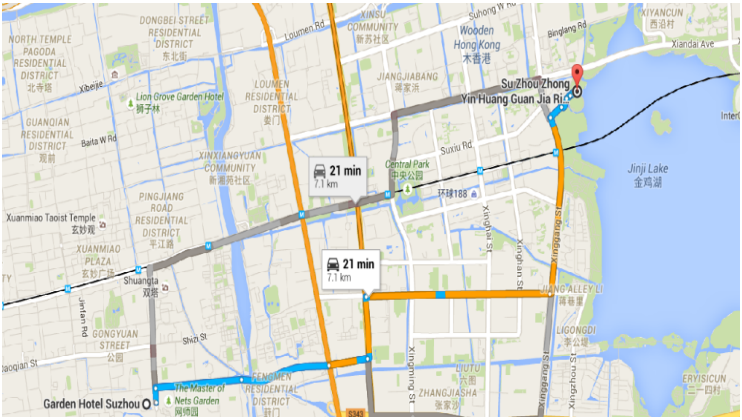
During the poster session, all the participants can label the poster you like. The presenters who receive most labels will be awarded at the Student award session. The Student award session will be held from 14:20 to 14:30 on June 18th, chaired by deputy from Brill.

Social dinner

Social dinner will be held at the **Crowne Plaza Resort** Hotel from 19:30 to 22:00 on June 17th. Please do not leave the meeting room after the keynote talk. We will arrange buses to take all the conference participants to the destination.

Scenery of Crowne Plaza Resort Hotel

Location of Crowne Plaza Resort Hotel



WorldViz Lecture & Keynote Speaker 1:

Prof. Dr. H. Henrik Ehrsson
Department of Neuroscience, Karolinska Institutet, Sweden

16:15, June 15th (Wednesday)

Multisensory mechanisms of body self-perception

Ask any child if his hands belong to him and the answer will be “Of course!” But how does the brain actually identify its own body? Our hypothesis is that parts of the body are distinguished from the external world by the patterns they produce of correlated information from different sensory modalities (vision, touch and muscle sense). These correlations are hypothesized to be detected by neuronal populations in frontal and parietal areas that integrate multisensory information from the space near the body. We have used a combination of functional magnetic resonance imaging and human behavioral experiments to present experimental evidence in support of these predictions. To change the feeling of body ownership, perceptual illusions were used where healthy individuals experienced that a rubber hand was their own, that a mannequin was their body (“body-swap illusion”), or, that they are outside their physical body and looking at it from the perspective of another individual (“out-of-body illusion”). By clarifying how the normal brain produces a sense of ownership of one’s body, we can learn to project ownership onto prosthetic devices in amputees. This will facilitate the development of advanced prosthetic limbs that feels just like real limbs.

Biosketch

Henrik Ehrsson is a cognitive neuroscientist interested in the problem of how we come to sense that we own our body. He considers the identification of multisensory mechanisms by which the central nervous system distinguishes between sensory signals from one's body and those from the environment as the key to solving this problem. By clarifying how the normal brain produces a sense of ownership of one’s

body, he believes that we can learn to project ownership onto artificial bodies and simulated virtual ones. This research could even enable two people to have the experience of swapping bodies with one another. The multisensory model of body ownership that continues to be developed by Henrik Ehrsson is being used in the field of neuro-prosthetics and by the virtual reality research community, thereby establishing opportunities for important clinical and industrial applications.

Born in Sweden 1972, he studied medicine and obtained his PhD from Karolinska Institutet. After a four year postdoc at University College London, he became an assistant professor at Karolinska Institutet in 2008 and was appointed full professor in 2013. Prof. Ehrsson currently leads a team currently consisting of four PhD students, three postdocs and one research engineer (www.ehrssonlab.se). The main methods used in his laboratory include functional magnetic resonance imaging (fMRI), behavioral paradigms, psychophysiology, virtual/video reality and transcranial magnetic stimulation. Prof. Ehrsson has published over 65 original peer-reviewed scientific works, including several articles in top scientific journals such as Science, Neuron, PNAS, Current Biology, PNAS, The Journal of Neuroscience and Brain. According to Web of Science, these works have been cited 4497 times and his H-index is 38.

Selected recent publications

1. Guterstam, A., Björnsdotter, M., Gentile, G., & Ehrsson, H.H. Posterior cingulate cortex integrates the senses of self-location and body ownership. *Current Biology* 25, 1-10, 2015

2. Bergouignan, L., Nyberg, L., Ehrsson, H.H. Out-of-body-induced hippocampal amnesia. *Proceedings of the National Academy of Sciences USA, 111*(12):4421-6, 2014.

3. Brozzoli, C., Gentile, G., Bergouignan, L., Ehrsson, H.H. A shared representation of the space near oneself and others in the human premotor cortex. *Current Biology,* 23(18):1764-8, 2013.

4. Petkova V.I., Björnsdotter M, Gentile G, Jonsson T, Li T.Q., & Ehrsson H.H. From part to whole-body ownership in the multisensory brain. *Current Biology*. 21 1-5, 2011

5. Ehrsson, H.H, Rosén, B., Stockselius, A., Ragnö, C., Köhler, P. and Lundborg, G.

Upper limb amputees can be induced to experience a rubber hand as their own. *Brain* 131, 3443-3452, 2008.

6. Ehrsson, H.H. The experimental induction of out-of-body experiences. *Science*, 317: 1048, 2007.

7. Ehrsson, H.H., Spence, C. and Passingham, R.E. 'That's my hand!' Activity in the premotor cortex reflects feeling of ownership of a limb. *Science,* 305:875-877, 2004.

Prizes and other achievements

1. The James S. McDonnell Foundation Scholar Award in Understanding Human Cognition (2010).

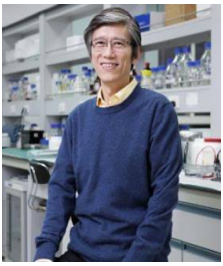
2. Future Research Leaders Award, Swedish Foundation for Strategic Research (2008).

3. ERC Starting Investigator Grant (2007).

4. Human Frontier Career Development Award (2007).

5. Dr. Ehrsson is the subject of a profile in Nature called "Out-of-body experience: Master of illusion" (2011), http://www.nature.com/news/out-of-body-experience-master-of-illusion-1.9569

Keynote Speaker 2:



Prof. Dr. Yongdi Zhou
Director, NYU-ECNU Institute of Brain and Cognitive Science at NYU Shanghai
Dean, School of Psychology and Cognitive Science

18:05, June 16th (Thursday)

Neuronal activity in the monkey prefrontal cortex in a visual-haptic cross-modal delay task

Studies have indicated that neurons in the monkey dorsal prefrontal cortex (DLPFC) integrate information across modalities and maintain it throughout the delay period of working-memory (WM) tasks. However, the neural mechanisms of this crossmodal temporal integration in the DLPFC are still not well understood. In the present study, to further elucidate the role of the DLPFC in crossmodal WM, we trained monkeys to perform visuo–haptic (VH) crossmodal and haptic–haptic (HH) unimodal WM tasks that required the animals to memorize a visual cue (in the VH task), or a haptic cue (in the HH task) for a haptic choice. The neuronal activity recorded in the DLPFC in the delay period of both tasks indicates that the early-delay differential activity probably is related to the encoding of the sensory component (modality-dependent, sample information), that the late-delay differential activity reflects the associated action component (modality-independent, active recall and maintenance of sample information for subsequent action) of haptic choice in both tasks, and that the sustained whole-delay differential activity likely bridges and integrates the sensory and action components. Our findings may clarify the neural mechanisms by which the cerebral cortex stores information in working memory, a cognitive function of prime importance in the coordination of behavior, speech, and reasoning.

Biographical Sketch

03/2009 – present	Dean, School of Psychology and Cognitive Science, East China Normal University
02/2014 – present	Director, Institute of Brain and Cognitive Science at New York University Shanghai

Education And Training

1982 B.S. in Biology, Dept. of Biology, East China Normal University , China

1986 M.S. in Physiology, Dept. of Biology, East China Normal University, China

1996 Ph.D. in Neuroscience, Interdepartmental Neuroscience, School of Medicine, University of California, Los Angeles (Supported by O'Malley Foundation)

1996-98 Postdoctoral Researcher in Cognitive Neuroscience (Supported by White Hall Foundation), Neuropsychiatric Institute, UCLA School of Medicine

Selected relevant publications

1. Ku, Y., Zhao, D., Hao, N., Hu, Y., Bodner, M. and Zhou, Y-D. (2015). Sequential Roles of Primary Somatosensory Cortex and Superior Parietal Lobule in Tactile-Visual Cross-modal Working Memory: A Single-pulse Transcranial Magnetic Stimulation (spTMS) Study. Brain Stimulation, 8:88-91.

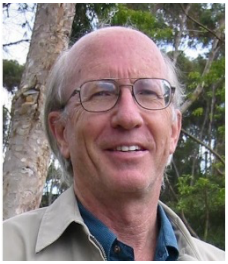
2. Wang, L., Li, X., Lenz, F., Hsiao, S., Bodner, M, Zhou, Y-D.# and Fuster, J. (2015). Differential Roles of Delay-period Neural Activity in Monkey Dorsolateral Prefrontal Cortex in Visual-haptic Crossmodal Working Memory. Proc. Natl. Acad. Sci. U.S.A., 112: E214-E219.

3. Wang, L., Li, X., Hsiao, S., Bodner, M., Lenz, F. and Zhou, Y-D. (2012). Behavioral choice-related neuronal activity in monkey primary somatosensory cortex in a haptic delay task. J. Cog. Neurosci. 24: 1634-1644.

4. Zhou, Y-D., Ardestani, A and Fuster, J.M. (2007). Distributed and associative working memory. Cerebral Cortex 17: i77-i87.

5. Zhou, Y-D. and Fuster, J.M. (2000) Visuo-tactile cross-modal associations in cortical somatosensory cells. Proc. Natl. Acad. Sci. U.S.A. 97: 9777-9782.

6. Zhou, Y-D. and Fuster, J.M. (1996). Mnemonic neuronal activity in somatosensory cortex. Proc. Natl. Acad. Sci. U.S.A. 93: 10533-10537.



HengYuanXiang Lecture & Keynote Speaker 3:

Prof. Dr. Steven A. Hillyard

Professor Emeritus, Department of Neurosciences, School of Medicine, UC San Diego

18:05, June 17th (Friday)

Auditory Influences on Visual Attention and Perception

It is well established that directing attention voluntarily to an object's location results in the multi-modal facilitation of the object's properties. Evidence is also mounting that salient sounds may attract attention involuntarily and facilitate the processing of visual stimuli at the sound's location. This cross-modal capture of visual attention may occur even when the attracting sound is irrelevant to the ongoing task and is non-predictive of subsequent events. A slow positive component in the event-related potential (ERP) elicited by a salient sound was found to be localized to the visual cortex. This neural sign of visual cortex activation was predictive of enhanced perceptual processing and was paralleled by a desynchronization (blocking) of the ongoing occipital alpha rhythm. Further research is needed to determine the nature of the relationship between the slow positive ERP evoked by the sound and the alpha desynchronization and to understand how these auditory-evoked neural events contribute to improved visual-perceptual processing.

Biographical Sketch

Steven A Hillyard, Ph.D.
Department of Neurosciences
University of California, San Diego (UCSD)

Education

B.S. California Institute of Technology (Biology) 1964

Ph.D. Yale University (Psychology) 1968

Postdoctoral Fellow, Department of Neurosciences, UCSD 1968-1972

Professional Appointments

Assistant to Full Professor of Neurosciences (UCSD) 1972-2013

Distinguished Professor of Neurosciences (UCSD) 2007-present

Distinguished Professor of Neurosciences Emeritus (UCSD) 2013-present

Relevant Cross-Modal Publications

1. Hillyard, S.A., G.V. Simpson, D.L. Woods, S. Van Voorhis and T. Münte. Event-related brain potentials and selective attention to different modalities. In: F. Reinoso-Suarez & C. Ajmone-Marsan (Eds.). Cortical Integration. New York: Raven Press. 1984, pp. 395-414.

2. Hackley, S.A., M. Woldorff and S.A. Hillyard. Cross-modal selective attention effects on retinal, myogenic, brainstem and cerebral evoked potentials. Psychophysiology 27: 195-208, 1990.

3. Röder, B., W. Teder-Sälejärvi, A. Sterr, F. Rösler, S.A. Hillyard and H.J. Neville. Improved auditory spatial tuning in blind humans. Nature 400: 162-166, 1999.

4. Teder-Sälejärvi, W.A., T.F. Münte, F.-J. Sperlich and S.A. Hillyard. Intra-modal and cross-modal spatial attention to auditory and visual stimuli: An event-related brain potential study. Cognitive Brain Research 8: 327-343, 1999.

5. McDonald, J.J., W.A. Teder-Sälejärvi and S.A. Hillyard. Involuntary orienting to sound improves visual perception. Nature 407: 906-908, 2000.

6. McDonald, J.J., W.A. Teder-Sälejärvi, D. Heraldez and S.A. Hillyard . Electrophysiological evidence for the "Missing Link" in crossmodal attention. Canadian Journal of Experimental Psychology 55: 143-151, 2001.

7. McDonald, J.J., W.A. Teder-Sälejärvi, F. Di Russo and S.A. Hillyard. Neural substrates of perceptual enhancement by cross-modal spatial attention. Journal of Cognitive Neuroscience 15: 10-19, 2003.

8. Teder-Sälejärvi, W.A., F. Di Russo, J.J. McDonald and S.A. Hillyard. Effects of spatial congruity on audio-visual multimodal integration. Journal of Cognitive Neuroscience 17: 1396-1409, 2005.

9. McDonald, J.J., W.A. Teder-Sälejärvi, F. Di Russo and S.A. Hillyard. Neural basis of auditory-induced shifts in visual time-order perception. Nature Neuroscience 8: 1197-1202, 2005.

10. Mishra, J., A. Martinez, T. Sejnowski and S.A. Hillyard. Early cross-modal interactions in auditory and visual cortex underlie a sound-induced visual illusion. Journal of Neuroscience 27: 4120-4131, 2007.

11. Bonath, B., T. Noesselt, A. Martinez, J. Mishra, K. Schwiecker, H.-J. Heinze and S.A. Hillyard. Neural basis of the ventriloquist illusion. Current Biology 17: 1697-1703, 2007.

12. Mishra, J., A. Martinez and S.A. Hillyard. Cortical processes underlying sound-induced flash fusion. Brain Research 1242: 102-115, 2008.

13. Störmer, V.S., J.J. McDonald and S.A. Hillyard. Cross-modal cueing of attention alters appearance and early cortical processing of visual stimuli. Proceedings of the National Academy of Science 106: 22456-61, 2009.

14. Mishra, J., A. Martinez and S.A. Hillyard. Effect of attention on early cortical processes associated with the sound-induced extra flash illusion. Journal of Cognitive Neuroscience 22:1714-1729, 2010.

15. McDonald, J.J., J.J. Green, V.S. Störmer and S.A. Hillyard. Cross-modal spatial cueing of attention influences visual perception. Ch. 26. In: The Neural Bases of Multisensory Processes. M.M. Murray and M.T. Wallace (Eds.) CRC Press, 2012, pp. 509-527.

16. McDonald, J.J., V.S. Störmer, A. Martinez, W.F. Feng, and S.A. Hillyard. Salient sounds activate human visual cortex automatically. Journal of Neuroscience 33: 9194-9201, 2013.

17. Brang, D., Z. Taich, S.A. Hillyard, M. Grabowecky, and V.S. Ramachandran. Parietal connectivity mediates multisensory facilitation. NeuroImage 78:396-401, 2013

18. Mishra, J., A. Martinez and S.A. Hillyard. Audition influences visual color processing in the sound-induced flash illusion. Vision Research 93:74-79, 2013.

19. Bonath, B., T. Noesselt, K. Krauel, S. Tyll, C. Tempelmann and S.A. Hillyard. Audio-visual synchrony modulates the ventriloquist illusion and its neural/spatial representation in the auditory cortex. Neuroimage 98:425-434, 2014.

20. Feng, W., V.S. Störmer, A. Martinez, J.J. McDonald and S.A. Hillyard. Sounds activate visual cortex and improve visual discrimination. Journal of Neuroscience 34:9817-24, 2014.

21. Hillyard, S.A., V.S. Störmer, W. Feng, A. Martinez, and J.J. McDonald. Cross-modal orienting of visual attention. Neuropsychologia 2015 [Epub ahead of print].

Honors and Awards

- Elected Fellow of the American Academy of Arts and Sciences 2013
- Leibniz Chair Professor: Leibniz Institute of Neurobiology. Magdeburg, Germany 2012
- Distinguished Professor of Neurosciences, UCSD, 2007
- George A. Miller Award for Distinguished Career Contributions. Cognitive Neuroscience Society, 2006
- Distinguished Contributions to Psychophysiology Award: Society for Psychophysiological Research 1999
- MERIT (10-year) Award from the National Institute of Mental Health (1990-2000)
- Fellow of the American Association for the Advancement of Science 1985

Special Lecture:

Prof. Dr. Jianwei Zhang
Institute TAMS (Technical Aspects of Multimodal Systems), Department of Informatics, University of Hamburg

17:25, June 16th (Thursday)

Multisensory control and learning of cognitive robot systems

In a dynamic and changing world, a robust and effective robot system must have adaptive behaviors, incrementally learnable skills and a high-level conceptual understanding of the world it inhabits, as well as planning capabilities for autonomous operations. Future intelligent control systems will benefit from the recent research on neurocognitive models in processing multisensory data, exploiting synergy, integrating high-level knowledge and learning, etc. I will first introduce multisensory integration methods for intelligent control of robots. Then I will present our investigation and experiments on synergy technique which uses fewer parameters to govern the high DOF of multifinger robot movement. The third part of my talk will demonstrate how an intelligent system like a robot can evolve its model as a result of learning from experiences; and how such a model allows a robot to better understand new situations by integration of knowledge, planning and learning. I will show some integrated results of operational mobile robot platforms with grasping facilities in a restaurant service scenario.

Biography:

Jianwei Zhang is professor and head of TAMS, Department of Informatics, University of Hamburg, Germany. He received both his Bachelor of Engineering (1986, with distinction) and Master of Engineering (1989) at the Department of Computer Science of Tsinghua University, Beijing, China, his PhD (1994) at the Institute of Real-Time

Computer Systems and Robotics, Department of Computer Science, University of Karlsruhe, Germany, and Habilitation (2000) at the Faculty of Technology, University of Bielefeld, Germany. His research interests are service robotics, sensor fusion, service robotics and multimodal machine learning, cognitive computing of Industry4.0, etc. In these areas he has published about 300 journal and conference papers, technical reports, four book chapters and three research monographs. He holds 37 patents on service robot components and systems. He is the coordinator of the DFG/NSFC Transregional Collaborative Research Centre SFB/TRR169 “Crossmodal Learning” and several EU robotics projects. He has received several awards, including the IEEE ROMAN Best Paper Award in 2002, the IEEE AIM Best Paper Award 2008, the IEEE ROBIO Best Conference Paper Award 2013 and ROBIO Best Paper on Biomimetics 2014. He is the General Chairs of IEEE MFI 2012 and IEEE/RSJ IROS 2015, IEEE Robotics and Automation Society AdCom (2013-2015). Jianwei Zhang is life-long Academician of Academy of Sciences in Hamburg.

Introduction of CACHT

Dear Madam/Sir,

We cordially invite you to attend the 7th CACHT Sensory Branding Forum. The 7th CACHT Sensory Branding Forum (2016) will be supported by Beijing Institute of Life Science-CAS, Department of Psychology, Peking University, and International Multisensory Research Forum(IMRF).

The vision and tenets of Cacht International Research Center for Senses are to promote the scientific investigations of integrating multisensory perception and branding, elevate human well-being and brand-new life experience, and cultivate the talents with global perspective and leadership in sensory research/marketing. During the previous six years of successful annual forums and active practices, the forum has now evolved and covered a spectrum of basic scientific research and exploration in applications. As an open and public-oriented platform, the forum and associated researchers have endeavored to discover the promising and optimal scientific resources and innovations underlying the fields of human elementary senses (including auditory, visual, tactile/haptic, gustatory and olfactory senses), cognitive neuroscience, industrial design and branding. Therefore, the CACHT Sensory Branding Forum consistently and actively builds up a channel facilitating the interdisciplinary dialogs, disseminates the up-to-date information and contributes as an excellent model for a marriage between integrative research and pragmatic innovations.

The subject of 2016 Forum is practice of senses and technology. The Forum will be focused on discussion of the topics including(but not limited to) multisensory design to maximize harmonization experience between human and brands (products) interaction, solutions to build potent self-efficacy, user experience driven innovation and sense of achievement between the consumers and the brands.

CACHT organizers

Lan Shen

Zhengjun Fang

Wednesday June 15th

13:00 Registration and Reception

15:50 Host speech by Prof. Jie Wang, Vice President of Peking University

16:00 Welcome Speech by Prof. Xiaoming Tian, Vice President of Soochow University

16:10 Opening Speech by Prof. Fang Fang, Peking University

16:15 **WorldViz Lecture**: Multisensory mechanisms of body self-perception, *Henrik Ehrsson*

17:35 Welcome and Introduction from Organizers

17:40 Coffee break

17:50 - 18:35 Talk Session 1: Body representation and self
Chair: Laurence Harris

17:50 Tactile and visual processing during the rubber hand illusion - An evoked potentials study, *Isa Shashikala Rao*

18:05 The landmark localization task and domain-general biases: evidence against a distorted body model hypothesis, *Jared Medina*

18:20 Postural modulation by (un)embodied prosthetic arm, *Shu Imaizumi*

18:35 – 19:20 Talk Session 2: Learning and plasticity of multisensory processing
Chair: Jean Vroomen

18:35 Connect the dots: Braille learning in sighted improves haptic object recognition, *Furat AlAhmed*

18:50 Long-term musical training alters the interaction between frames of reference, *Simon P. Landry*

19:05 Compensatory recovery after multisensory stimulation in patients with visual field defects: behavioral and neurophysiological components, *Paolo Antonino Grasso*

Thursday June 16th

08:30-10:10 Symposium 1: 40 Years of the McGurk-MacDonald Effect

Organizers: Michael Beauchamp , Jean Vroomen & Salvador Soto-Faraco

08:30 Hearing lips and seeing voices: A look back 40 years, *John MacDonald*

08:50 Seeing to hear: Audiovisual speech perception as a tool for understanding special populations, *Julia Irwin*

09:10 Models and mechanisms of multisensory speech perception, *Michael Beauchamp*

09:30 The role of attention and conflict in the McGurk-MacDonald effect, *Salvador Soto-Faraco*

09:50 Linking the McGurk-MacDonald effect to Lipreading and the Ventriloquist Effect, *Jean Vroomen*

10:10 Coffee break

10:20- 12:20 Symposium 2: Adaptation in space and time

Organizers: Jeffrey Yau & Fang Jiang

10:20 Motion system in touch, *Scinob Kuroki*

10:40 Cross-modal motion processing after sight recovery, *Fang Jiang*

11:00 Geometric mean of auditory intervals assimilates visual apparent motion, *Lihan Chen*

11:20 Adaptation reveals convergence of auditory and tactile frequency signals, *Jeffrey Yau*

11:40 Serial dependencies in rapid stimulus sequences show evidence for attractive and repulsive adaptation over brief time-scales, *David Alais*

12:00 Modulation of Adaptive locomotor learning through manipulation of optic flow, *James Finley*

13:30-14:50 Poster Session

14:50-15:50 Talk Session 3: Dynamic spatial representation and human performance

Chair: Maria Concetta Morrone

14:50 Integration of visual and tactile information in processing of self-motion, *Jan Churan*

15:05 The effects of temporal and spatial reliability on multisensory audiovisual integration, *Qi Li*

15:20 Spatial change in multisensory distractors impact on spatial and verbal short-term memory performance, *Erik Marsja*

15:35 Audiovisual distance perception: Cue interactions and causal inference, *Catarina Mendonça*

15:50 Coffee break

16:00-17:15 Talk Session 4: Illusory timing and prediction in multisensory research

Chair: David Alais

16:00 Crossmodal mixed duration reproduction favors amodal prior, *Xuelian Zang*

16:15 Hearing flashes and seeing beeps: Timing audiovisual events, *Manuel Vidal*

16:30 From intensity to audiovisual signal-intensity variability in temporal-order judgments, and what its effects reveal about perceptual decisions, *Lars T Boenke*

16:45 Cross-modal distortion of time during preparatory movements, *Maria Concetta Morrone*

17:00 Audiovisual illusory and invisible “rabbits”: The role of postdiction in crossmodal spatiotemporal dynamics, *Shinsuke Shimojo*

17:15 Coffee break

17:25 **Special Lecture**: Multisensory control and learning of cognitive robot systems, *Jianwei Zhang*

18:05 **Keynote Lecture**: Neuronal activity in the monkey brain in visual-haptic cross-modal memory, *Yongdi Zhou*

Friday June 17th

8:30-10:00 Symposium 3: A multisensory investigation of the functional significance of pain-related brain responses: psychophysiological implications and methodological advances
Organizer: Li Hu

08:30 Painful issues in pain prediction, *Li Hu*
08:45 Cross-individual pain prediction: Is it only a matter of methods? *Zhiguo Zhang*
09:00 Primary sensory cortices contain distinguishable spatial patterns of activity for each sense, *Meng Liang*
09:15 Disrupted brain connectome and its changing trend in migraine sufferers, *Jixin Liu*
09:30 Multi-modality sensory stimuli induced time-frequency electrophysiological responses, *Weiwei Peng*
09:45 Amplitudes and latencies of single-trial LEPs estimated by a an adaptive time alignment method, *Gan Huang*
10:00 Coffee break

10:10-11:25 Talk Session 5: Mechanisms for multisensory integration: from single neuron to behavior
Chair: Mark Wallace

10:10 Neural correlates of auditory-tactile integration, *Juan Huang*
10:25 Preference for visual mouth movements predicts auditory response in human superior temporal sulcus, *Lin L. Zhu*
10:40 Neural correlates of perceptual weights during audio-visual integration, *Stephanie C. Boyle*

10:55 Predicting the multisensory response of individual neurons, *Benjamin A. Rowland*

11:10 A new measure of multisensory integration, *Hans Colonius*

11:25 Business Meeting

12:55-14:35 Symposium 4: Cross-modal plasticity and integration in sensory restoration by invasive/non-invasive approaches (and their potential combination): from basic science to rehab
Organizers: Amir Amedi & Benedetta Heimlera

12:55 Cochlear implants (CIs) as the best model for improving sensory restoration outcomes , *Benedetta Heimlera*

13:15 MOPPET: a novel auditory training platform to teach music to children with cochlear implants, *Ye Wang*

13:35 Multisensory audio-visual-tactile training in cochlear implant patients, *Amir Amedi,*

13:55 The effects of visual restoration on the blind brain, *Olivier Collingnon*

14:15 Recruiting the visual neural navigation network for auditory navigation following lifelong and temporary visual-deprivation, *Shachar Maidenbaum*

14:35-15:50 Talk Session 6: Multisensory speech perception and enhancement
Chair: Salvador Soto-Faraco

14:35 Interactions between Physical and Semantic Temperature, *Yizhen Zhou*

14:50 Inter-trial variability of McGurk-effect reveals multi-level neuro-markers of multisensory speech perception, *Vinodh Kumar*

15:05 Genetically mediated differences in the McGurk effect — a multisensory speech illusion, *Guo Feng*

15:20 A causal inference model explains perception of the McGurk Effect and other incongruent audiovisual speech, *John F. Magnotti*

15:35 Tracking acoustic features of speech in early blind individuals using MEG, *Markus J. van Ackeren*

15:50 Coffee break

16:00-18:15 Symposium 5: Practice of senses and technology (Sponsored by HengYuanXiang Group)

Chair: Lihan Chen

16:00 Speech: *Le Kang, Academician from Chinese Academy of Sciences (CAS)*

16:05 Significances of crossed-sensory research for people, enterprises and society, *Representative of CACHT International Research Center For Senses*

16:15 Impact of synesthesia and cross-sensory interactions on multisensory design of brands and products. *Michael Haverkamp*, *Ford Product Development Centre Cologne, Germany.*

16:35 User experience driven innovation: Practices in health IT, *Ying Liu, Intel health strategies and Solution*

16:55 Multisensory integration and virtual reality, *Xiaoou Li*, *WorldViz LLC*

17:15 Smell and emotion, *Linda Li, Givaudan Fragrances (Shanghai) Ltd*

17:35 How real is real: visualizing glare effects in a virtual environment, *Shuguang Kuai, East China Normal University*

17:55 Coffee Break

18:05 **HengYuanXiang Lecture:** Auditory Influences on visual attention and perception, *Steven A. Hillyard*

19:10 Transportation

19:30 Social dinner

Saturday June 18th

08:30-10:30 Symposium 6: Additional cross-modal Sensations from private perceptions to shared associations

Organizer: Romke Rouw

08:30 Intrinsic associations in non-synesthetic population between sound and color, *Chai-Youn Kim*

08:50 A case study of skill development and changes in phenomenology of blind users of a sensory substitution device, *Amir Amedi*

09:10 Blind in a virtual world: Perception, immersion and navigation using visual-to-auditory sensory-substitution devices, *Shachar Maidenbaum*

09:30 Misophonia, ASMR & Synesthesia: 'special cases' or normal cross-modal integration? *Romke Rouw*

09:50 Cross-cultural differences in colour-flavour associations, *Xiaoang Wan*

10:10 Panel Discussion

10:30 Coffee break

10:40-11:55 Talk Session 7: Coupling of perception and action control

Chair: David Burr

10:40 Is there multisensory integration for the online control of voluntary action?\ *Luc Tremblay*

10:55 Saccadic preparation triggers visual oscillations in contrast sensitivity, *Alessandro Benedetto*

11:10 Causal inference in multisensory heading estimation, *Ksander N. de Winkel*

11:25 Walking to a multisensory beat: Benefits of audio-tactile rhythmic stimulation, *Charlotte Roy*

11:40 A shared numerical representation for action and perception, *David Burr*

13:05-14:20 Talk Session 8: Attention, value and reward in multisensory world

Chair: Jared Medina

13:05 Reward interacts with modality shift in reducing cross-modal conflict, *Guanlan Kang*

13:20 EEG activity of perception and imagery of vibrotactile stimulation, *Shusheng Zhang*

13:35 Tangled codes of facial affects and odor hedonics below awareness, *Wei Chen*

13:50 Contextual cueing across vision and touch, *Leonardo Assumpção*

14:05 Individual differences in symptom severity in autism spectrum disorder associated with magnitude and variability in multisensory processing, *Sarah Baum*

14:20 Student Award (Brill)

Thursday June 16th 13:30-14:50

Poster Session

1. **Effect of endogenous temporal attention on audiovisual stimuli processing**
   Yulin Gao
2. **Effect of vertical vection on vertical sound localization**
   Zhenglie CUI, Shuichi SAKAMOTO, Yôiti SUZUKI
3. **Development of Embodied Sense of Self Scale (ESSS)**
   Tomohisa Asai, Noriaki Kanayama, Shu Imaizumi, Shinichi Koyama, Seiji Kaganoi
4. **Motor-auditory temporal recalibration is more robust than motor-visual one to modify perceptual latency**
   Yoshimori Sugano, Mirjam Keetels, Jean Vroomen
5. **Multisensory integration varies with target and environment complexity in a virtual environment: towards a naturalistic model of multisensory integration**
   Hudson Diggs Bailey, Aidan Browne Mullaney, Kyla David Gibney, Leslie Dowell Kwakye
6. **Neural practice effect during cross-modal selective attention: general and modality-specific effects**
   Jing Xia, You Li, Lu Shen, Ying Fang, Hui Li, Nan Liu, Yizhou Jiang, Qi Chen
7. **Effect of galvanic vestibular stimulation on visual target localization**
   David Hartnagel, Jean-Louis Vercher, Lionel Pellieux, Patrick MB Sandor
8. **Experimental context modulates MSI by altering unisensory baseline conditions**
   Felix Ball, Lara E. Michels, Johanna Starke, Toemme Nösselt
9. **Recognizing collective human emotional experience during video watching using EEG-based inter-subject neural correlations**
   Xin Hu, Dan Zhang
10. **Psychological refractory period effect difference between the two directions of sensory dominance**
    Chen Jiedan, Wang Huan, Su Wen, Wang Jing, Chen Qi

11. **Multisensory body perception in Anorexia Nervosa**
    Regine Zopf, Erika Contini, Chris Fowler, Naresh Mondraty, Mark A Williams
12. **Peripersonal space boundaries in a social context**
    Lise Hobeika, Marine Taffou, Isabelle Viaud-Delmon
13. **Effect of video playback rate on audiovisual speech perception as measured by the mcgurk effect**
    Debshila Basu Mallick, John F Magnotti, Michael Beauchamp
14. **Converging evidence from ECoG and fMRI for an anterior-to-posterior boundary in the superior temporal gyrus for audiovisual speech processing**
    Muge Ozker Sertel, Daniel Yoshor, Michael Beauchamp
15. **Attentional selection related to reading ability in attention-deficit/ hyperactivity disorder**
    Encong Wang, Meirong Sun, Ye Tao, Jialiang Guo, Li Sun, Yan Song
16. **Multisensory interaction between nociception and vision in limb-centered peripersonal frames of reference**
    Camille Vanderclausen, Lieve Filbrich, Andrea Alamia, Valéry Legrain
17. **The influence of cross-modal temporal correspondence of amplitude modulation rate on EEG steady-state activity and perceptual sensitivity of simultaneous auditory and tactile stimulation**
    Justin R Timora, Timothy W Budd
18. **Effect of selective and divided attentions on auditory dominance in multisensory integration**
    Aijun Wang, Ming Zhang
19. **Effect of amount of practice and practice intervals on visuomotor learning**
    Chiharu Yamada, Yoshihiro Itaguchi, Kazuyoshi Fukuzawa
20. **Gravity may influence perceived linearly accelerating vection**
    Meaghan McManus, Laurence R. Harris
21. **Minimum audible angle during passive horizontal rotation**
    Akio Honda, Yoji Masumi, Yôiti Suzuki, Shuichi Sakamoto

22. **Reinterpreting visual motion as self-motion reduces motion-induced blindness**
    Yasmeenah Elzein, Laurence R. Harris
23. **Self-location during out-of-body illusion**
    Kentaro Hiromitsu, Akira Midorikawa
24. **Benefits of biased audiovisual duration estimates**
    Lina Jia, Zhuanghua Shi, Stephanie Ganzenmueller, Hermann J. Müller
25. **Auditory space representation on the horizontal plane**
    Aggius-Vella Elena, Campus Claudio, Finocchietti Sara, Gori Monica
26. **Speech specific audiovisual integration suppress induced theta-band oscillations**
    Alma Lindborg, Martijn Baart, Tobias Andersen
27. **Differential coactivation in a go/no-go task with weak and strong stimuli**
    Katsumi Minakata, Matthias Gondan
28. **Audiotactile interactions in the perception of duration**
    Lia Villanueva, Massimiliano Zampini
29. **Impact of culture on the development of emotion perception from face and voice** Akihiro Tanaka, Misako Kawahara, Disa Sauter
30. **Measuring the effect of short-term limb immobilization on motor imagery**
    Charlotte Verfaille, Xavier Libouton, Valéry Legrain
31. **Assessing accuracy of perceived arm, hand, and palm size in healthy participants**
    Sarah D'Amour, Laurence R. Harris
32. **Galvanic vestibular stimulation shifts perceived finger orientation**
    Lindsey E. Fraser, Laurence R. Harris
33. **Investigating the role of within-participant variance in visual-olfactory interaction**
    Richard Höchenberger, Lars T Boenke, Kathrin Ohla
34. **Dynamic adjustment of tool use in a response priming task in field hockey - the role of expertise in tool integration with body representations**
    Marten de Man, Lucy Parrington, Lisa Wise

35. **Exploring the EEG-based inter-subject neural couplings during naturalistic narrative speech**
    Jiawei Li, Dan Zhang
36. **Long-term musical training alters the interaction between frames of reference**
    Simon P. Landry
37. **Saccadic preparation triggers visual oscillations in contrast sensitivity**
    Alessandro Benedetto, Maria Concetta Morrone
38. **EEG activity of perception and imagery of vibrotactile stimulation**
    Shusheng Zhang, Yuru Zhang, Xiaojun Xu, Lulu Xu, Dangxiao Wang
39. **Early cross modal interaction in ventral visual cortex is modulated by attention**
    Wenfeng Feng, Antigona Martinez, Aijun Wang, Ming Zhang, Steven A Hillyard
40. **A system to provide a user an artificial oculomotor function to control directions of both eyes independently by one hand**
    Fumio Mizuno, Tomoaki Hayasaka, Takami Yamaguchi
41. **Rubber hand illusion and psychosomatic pathology**
    Olga Perepelkina
42. **Grasping and Pointing Visual Conflict**
    Xunbing Shen, Xia Shi, Xiuying Qian
43. **Visual-haptic distance perception in the central fovea and periphery of the peripersonal space**
    Oscar Javier Ariza Núñez, Frank Steinicke, Fang Fang, Lihan Chen
44. **Absence of auditory influence on facial expression adaptation**
    Sang-Wook Hong, K. Lira Yoon
45. **Audiovisual cross-modal correspondences based on Ternus display**
    Lu Guo, Ming Bao, Lihan Chen
46. **Corporeal constraints on multisensory integration: Evidence from the mirror box illusion**
    Yuqi Liu, Jared Medina

47. **Postural modulation by (un)embodied prosthetic arm**
    Shu Imaizumi, Tomohisa Asai, Shinichi Koyama
48. **Integration of visual and tactile information in processing of self-motion**
    Jan Churan, Johannes Paul, Frank Bremmer
49. **Interactions between Physical and Semantic Temperature**
    Yizhen Zhou, Hsin-Ni Ho, Junji Watanabe
50. **Neural Correlates of Auditory-Tactile Integration**
    Juan Huang, Tianxu Wu, Xiaoqin Wang
51. **Inter-trial variability of McGurk-effect reveals multi-level neuro-markers of multisensory speech perception**
    Vinodh Kumar
52. **Compensatory recovery after multisensory stimulation in patients with visual field defects: behavioral and neurophysiological components**
    Paolo Antonino Grasso, Caterina Bertini, Lisa Cipolotti, Elisabetta Làdavas
53. **Preference for visual mouth movements predicts auditory response in human superior temporal sulcus**
    Lin L. Zhu, Michael S. Beauchamp
54. **Genetically mediated differences in the McGurk effect — a multisensory speech illusion**
    Guo Feng, Wen Zhou, Michael S. Beauchamp
55. **Tactile and visual processing during the rubber hand illusion - an evoked potentials study**
    Isa Shashikala Rao, Christoph Kayser
56. **Neural correlates of perceptual weights during audio-visual integration**
    Stephanie C. Boyle, Stephanie Kayser, Christoph Kayser
57. **Is there multisensory integration for the online control of voluntary action?**
    Luc Tremblay, Darrin Wijeyaratnam, John de Grosbois, Stephen Bested, Rachel Goodman, Valentin Crainic
58. **Connect the dots: Braille learning in sighted improves haptic object recognition**
    Furat AlAhmed, Christian Wallraven

59. **Reward interacts with modality shift in reducing cross-modal conflict**
    Guanlan Kang, Lihui Wang, Xiaolin Zhou
60. **Tracking acoustic features of speech in early blind individuals using MEG**
    Markus J. van Ackeren, Francesca Barbero, Stefania Mattioni, Roberto Bottini, Olivier Collignon
61. **A causal inference model explains perception of the McGurk Effect and other incongruent audiovisual speech**
    John F. Magnotti, Michael Beauchamp
62. **A new measure of multisensory integration**
    Hans Colonius, Adele Diederich
63. **Auditory-visual integration in the posterior cingulate cortex of the macaque monkeys**
    Cécile Juan, Pascal Girard, Amirouche Sadoun, Lionel Nowak, Céline Cappe
64. **Behavior and ERP study of crossmodal source identification of voices and faces**
    Shanshan Guo, Zhongqing Jiang
65. **Attention bias of avoidant individuals to attachment emotion pictures**
    Ying Liu, Xu Chen, Yi Ding
66. **Health-related and skill-related components: predictors of 100m sprint performance**
    Eva Marie Mohametano Ebardo
67. **Fitness components: predictors long jump performance**
    Gil Martinez Ebardo
68. **Do synchronized auditory tones facilitate visual rhythm perception?**
    Yao Li, Hui Li, Yan Bao
69. **Pre-stimulus alpha power and phase coherence in the visuo-parietal-frontal network predicted the outcome of bistable apparent motion**
    Lu Shen, Lihan Chen, Biao Han, Qi Chen
70. **Bayesian perceptual model of the Kappa effect**
    Youguo Chen

71. **Crowding suppresses the generation of P300**
    Chunhua Peng
72. **The influence of visual apparent motion on auditory time perception**
    Jiashuang Wu, Han Yan, Zhenzhu Yue
73. **Expectancy Effect on Audiovisual Benefit of Mandarin Lexical Tones**
    Rui Wang, Xun He, Biao Zeng
74. **Covert attention impairs the perceived contrast at high-contrast levels**
    Liufang Zhou, Shena Lu, Yongchun Cai
75. **Multisensory Enhancements in Stroke Patients**
    Ayla Barutchu, Charles Spence, Glyn W. Humphreys
76. **Auditory-visual integration and modality switch in human and monkey**
    Cécile Juan, Céline Cappe, Baptiste Alric, Benoit Roby, Pascal Barone, Pascal Girard
77. **Movements of avatar in virtual reality can elicit sense of agency**
    Gaiqing Kong, Kang He, Kunlin Wei
78. **Deactivation of association cortices disrupted the congruence of visual and auditory receptive fields in superior colliculus neurons**
    Liping Yu, Jihong Xu
79. **Reward expectation regulates brain responses to emotional faces in gender discrimination task: ERP evidence**
    Lulu Wu, Ping Wei
80. **Using Machine Learning as a Tool for Classification of Autism Spectrum Disorder**
    Qiao He, Li Yi and Kunlin Wei

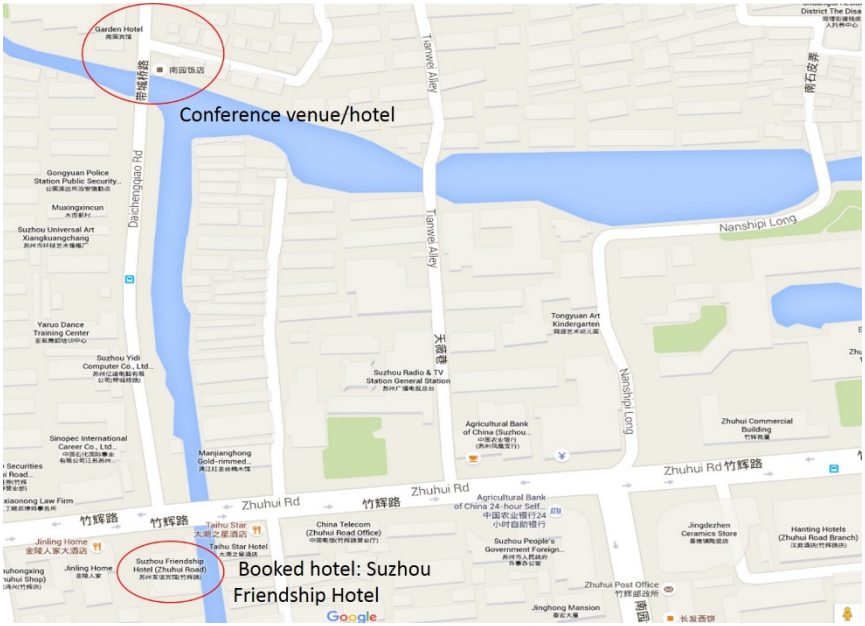
Conference Notes

Conference Notes

Conference Route

From Nanlin Hotel to Conference venue:

From Friendship Hotel to Conference venue:



Time	Wed 15th June	Thu 16th June	Fri 17th June	Saturday 18th June
08:00-08:30		Registration	Registration	
08:30-09:00		*Symposium 1:* 40 Years of the McGurk-MacDonald Effect	*Symposium 3:* A Multisensory Investigation of the Functional Significance of Pain-related Brain Responses: Psychophysiological Implications and Methodological Advances	*Symposium 6* : Additional Cross-Modal Sensations from Private Perceptions to Shared Associations
09:00-09:30				
09:30-10:00				
10:00-10:30		Coffee Break	Coffee Break	Coffee Break
10:30-11:00		*Symposium 2:* Adaptation in Space and Time	*Talk Session 5:* Mechanisms for Multisensory Integration: from Single Neuron to Behavior	*Talk Session 7:* Coupling of Perception and Action Control
11:00-11:30				
11:30-12:00			Business Meeting(Lunch)	
12:00-12:30				Lunch
12:30-13:00		Lunch		
13:00-13:30	Registration and Reception		*Symposium 4:* Cross-modal Plasticity and Integration in Sensory Restoration by Invasive/non-invasive Approaches (and Their Potential Combination): from Basic Science to Rehab	*Talk Session 8:* Attention, Value and Reward in Multisensory World
13:30-14:00		Poster Session		
14:00-14:30				Student Award(Brill)
14:30-15:00			*Talk Session 6:* Multisensory Speech Perception and Enhancement	
15:00-15:30		*Talk Session 3:* Dynamic Spatial Representation and Human Performance		
15:30-16:00	Host Speech by Prof. Jie Wang	Coffee Break	Coffee Break	
16:00-16:30	Welcome Speech by Prof. Xiaoming Tian Opening Speech by Prof. Fang Fang	*Talk Session 4:* Illusory Timing and Prediction in Multisensory Research	*Symposium 5:* Practice of Senses and Technology the 7th CACHT Global Sensory Branding Forum	
16:30-17:00	*Keynote:* Prof. Henrik Ehrsson, Multisensory Mechanisms of Body Self-perception			
17:00-17:30		Coffee Break		
17:30-18:00	Introduction from Organizers Coffee Break	*Special Lecture:* Prof. Jianwei Zhang, Multisensory Control and Learning of Cognitive Robot Systems	Coffee Break	
18:00-18:30	*Talk Session 1:* Body Representation and Self			
18:30-19:00	*Talk Session 2:* Learning and Plasticity of Multisensory Processing	*Keynote:* Prof. Yongdi Zhou, Neuronal Activity in the Monkey Brain in Visual-haptic Cross-modal Memory	*Keynote:* Prof. Steven A. Hillyard, Auditory Influences on Visual Attention and Perception	
19:00-19:30			Transportation	
19:30-20:00			Social Dinner	
20:-00-21:00				
21:-00-22:00