

Sessions

Day 1 (Jan. 23)

1. Cognitive Robotics
2. Bio-Robotics
3. Technology and Society

Day 2 (Jan. 24)

4. Dynamical Systems
5. Emerging Robotics
6. Posters
7. Self-Recognition

Day 3 (Jan. 25)

8. Neurobehavioral Development
9. Neuro-Robotics
10. Human-Robot Interaction

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Invited Speakers (Alphabetical order)

Oliver Brock (TU Berlin)

Paolo Dario
(Sant'Anna Sch. of Adv. Stud.)

Peter Ford Dominey
(CNRS-INSERM)

Monica Gori
(Italian Inst. of Tech.)

Tatsuhiko Inatani
(Kyoto Univ.)

Julian Paul Keenan
(Montclair State Univ.)

Cecilia Laschi
(Sant'Anna Sch. of Adv. Stud.)

Matthew Mail (CELLINK)

Phillip Morgan
(Cardiff Univ.)

Karina Quevedo
(Univ. of Minnesota)

Francesco Rea
(Italian Inst. of Tech.)

Helge Ritter (Bielefeld Univ.)

Giulio Sandini
(Italian Institute of Tech.)

Bulcsú Sándor
(Babes-Bolyai Univ.)

Alessandra Sciutti
(Italian Inst. of Tech.)

Žiga Škorjanc (Univ. of Vienna)

Emmanuelle Tognoli
(Florida Atlantic Univ.)

Ichiro Tsuda (Chubu Univ.)

The 1st International Symposium on Symbiotic Intelligent Systems

January 23 – 25, 2019

10:00 – 17:30

23 & 24: Knowledge Theater in Grand Front Osaka

25: AP Convention Room Chayamachi, Umeda, Osaka

Sponsored by Symbiotic Intelligence Systems Research Center
at Institute for Open and Transdisciplinary Research Initiatives, Osaka University

Website:

<http://osku.jp/k0204>



Program for Day 1 10:00 – 17:30, January 23

9:30 – Site Open

Opening Remarks

- 10:00 – 10:05 **Yasushi Yagi**
(Vice President of Osaka University)
- 10:05 – 10:15 **Minoru Asada** (Osaka University)



Session 1: Cognitive Robotics

- 10:15 – 11:00 **Hiroshi Ishiguro** (Osaka University)
“Research Activities in Symbiotic Intelligent Systems Research Center”
- 11:00 – 11:45 **Giulio Sandini** (Italian Institute of Technology)
“Human-Robot Symbiotic Relationship: How much Anthropomorphism?”
- 11:45 – 13:00 Lunch break



Session 2: Bio-Robotics

- 13:00 – 13:45 **Paolo Dario** (Sant'Anna School of Advanced Studies)
“Frontiers of BioRobotics Science and Engineering”
- 13:45 – 14:30 **Cecilia Laschi**
(Sant'Anna School of Advanced Studies)
“The Strength of Being Soft: Lessons from Nature for Soft Robots”
- 14:30 – 15:00 **Matthew Mail** (CELLINK)
“Bioinks for 3D Bioprinting of Biomimetic Tissue Models”
- 15:00 – 15:15 Coffee break



Session 3: Technology and Society

- 15:15 – 16:00 **Tatsuhiko Inatani** (Kyoto University)
“Regulating the AI Industry through Prosecution”
- 16:00 – 16:45 **Žiga Škorjanc** (University of Vienna)
“EU Data Protection Law in the Age of Digitalisation ”
- 16:45 – 17:30 **Phillip Morgan** (Cardiff University)
“The Driverless Human Factor: User Needs and Experience in the Design and Testing of High to Fully Autonomous Vehicle Technology”



Program for Day 2 10:00 – 17:30, January 24

9:30 – Site Open

Session 4: Dynamical Systems

10:00 – 10:45 **Ichiro Tsuda** (Chubu University)
“Emerging Interactions Yielding Functional Differentiation”



10:45 – 11:30 **Emmanuelle Tognoli** (Florida Atlantic University)
“Building Neurotechnological Complexity from the Ground up”



11:30 – 13:00 Lunch break

Session 5: Emerging Robotics

13:15 – 14:00 **Oliver Brock** (Technische Universität Berlin)
“Science of Intelligence: Uniting the Study of Natural and Artificial Intelligence”



14:00 – 14:45 **Helge Ritter** (Bielefeld University)
“New Vistas for Cognitive Interaction Science: Robotics, AI and Big Data”

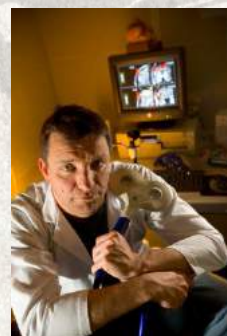


Session 6: Posters

14:30 – 16:00 Poster Presentation

Session 7: Self-Recognition

16:00 – 16:45 **Julian Paul Keenan** (Montclair State University)
“Self-Recognition and the Brain”



16:45 – 17:30 **Peter Ford Dominey** (CNRS-INSERM)
“Narrative Structuring of Symbiotic Experience ”



18:00 – Banquet

Program for Day 3 10:00 – 17:30, January 25

9:30 – Site Open

Session 8: Neurobehavioral Development

10:00 – 10:40 **Karina Quevedo** (University of Minnesota)
“The Neural Basis of Self-Other Processing in Depressed Adolescents”

10:40 – 11:20 **Monica Gori** (Italian Institute of Technology)
“Spatial and Temporal Cross-Sensory Calibration Typical and Impaired Children and Adults”

11:20 – 12:00 **Tomoyo Morita** (Osaka University)
“Development of Functional Lateralization in the Human Brain”

12:00 – 13:30 Lunch break



Session 9: Neuro-Robotics

13:30 – 14:10 **Bulcsú Sándor** (Babes-Bolyai University)
“Interactive Robots as Multistable Dynamical Systems”

14:10 – 14:50 **Yuji Kawai** (Osaka University)
“Body-Brain Interactions for Emergent Behavior”

14:50 – 15:20 Coffee break



Session 10: Human-Robot Interaction

15:20 – 16:00 **Francesco Rea** (Italian Institute of Technology)
“VisualAudio Attention for Human-Robot Interaction”

16:00 – 16:40 **Alessandra Sciutti** (Italian Institute of Technology)
“Intuitive Understanding between Humans and Robots”



Closing Remarks

16:40 – 16:50 **Minoru Asada** (Osaka University)

18:00 – Farewell party





Poster List 14:30 – 16:00, January 24

1. Yuta Okumura, Naoki Wakamiya (Osaka Univ.)
“Consideration on Structural Property for Robust Liquid State Machine against Structure Defects”
2. Oskar Palinko, Kohei Ogawa, Yuichiro Yoshikawa, Hiroshi Ishiguro (Osaka Univ.)
“How Should a Social Robot Facilitate the Communication between Multiple People”
3. Hamed Mahzoon¹, Kohei Ogawa¹, Yuichiro Yoshikawa¹, Michiko Tanaka², Kento Ogawa², Ryouta Miyazaki², Yusaku Ota², Hiroshi Ishiguro¹ (Osaka Univ., ²Panasonic Corp.)
“Sociability for Better Evaluation: Robot with Self-representation of Sociability Improves Perceived Mind Perception and Positive Relation by Interacting Human”
4. Futa Tomita¹, Jun-nosuke Teramae², Naoki Wakamiya¹ (Osaka Univ., ²Kyoto Univ.)
“Biologically Plausible Learning Method with Minimizing Gap of Local Energy in Asymmetric Neural Network”
5. Kyoichiro Kobayashi¹, Takato Horii^{2,3}, Ryo Iwaki¹, Yukie Nagai², Minoru Asada¹ (Osaka Univ., ²NICT, ³The Univ. of Electro-Communications)
“Situated GAIL: Multi-Task Imitation Using Latent Conditioned Adversarial Inverse Reinforcement Learning”
6. Takato Horii^{1,2}, Yukie Nagai² (The Univ. of Electro-Communications, ²NICT)
“Attention Control Based on Free-Energy Minimization in Multimodal Interaction with Familiar Friends”
7. Masaya Iwasaki¹, Zhou Jian¹, Yuki Koike¹, Yuya Onishi¹, Tatsuyuki Kawamura², Hideyuki Nakanishi¹ (Osaka Univ., ²Kyoto Innovation Inc.)
“Appropriate Timing of a Robot's Talk Enhances its Social Presence”
8. Tomonori Kubota, Kohei Ogawa, Yuichiro Yoshikawa, Hiroshi Ishiguro (Osaka Univ.)
“An Attitude of a Teleoperator Manipulating a Part of an Android's Body Gets Close to an Attitude the Android Autonomously Expresses”
9. Jihoon Park, Yuji Kawai, Minoru Asada (Osaka Univ.)
“Self-organization of a Network Structure and Emergence of Behaviors under Body Constraints in the Embodied System”
10. Atsuya Sakata, Yasushi Makihara, Noriko Takemura, Daigo Muramatsu, Yasushi Yagi (Osaka Univ.)
“Gait-based Age Estimation using a DenseNet”
11. Tsuyoshi Tatsukawa¹, Jun-nosuke Teramae², Naoki Wakamiya¹ (Osaka Univ., ²Kyoto Univ.)
“Validity of the Flat Minima Approach to Understand Generalization of Deep Learning”
12. Beltran Cristian, Petit Damien, Ramirez Ixchel, Harada Kensuke (Osaka Univ.)
“Learning to Grasp with Primitive Shaped Objects”
13. Daniel Oliva¹, Anja Philippsen², Yukie Nagai² (TU Munich, ²NICT)
“Trajectory Recognition Using a Bayesian Inference Recurrent Neural Network Model”
14. Jiao Yongcheng, Yutaka Nakamura, Hiroshi Ishiguro (Osaka Univ.)
“A Semi-Supervised Algorithm for Interaction Motion Recognition And Its Application on First-Person View Video”
15. Zhengtao Hu, Weiwei Wan, Kensuke Harada (Osaka Univ.)
“Designing a Mechanical Tool for 2-Finger Robotic Grippers”
16. Kazuki Sakai, Yutaka Nakamura, Yuichiro Yoshikawa, Shingo Kano, Hiroshi Ishiguro (Osaka Univ.)
“Development of Question and Answer Type Dialogue System Where Robot Estimates User's Preferences”
17. Jiro Shimaya¹, Yuichiro Yoshikawa¹, Hirokazu Kumazaki², Yoshio Matsumoto³, Masutomo Miyao⁴, Hiroshi Ishiguro¹ (Osaka Univ., ²Kanazawa Univ., ³AIST, ⁴Donguri Psycho Developmental Clinic)
“Can a Robot Be an Easier Conversation Partner of Adolescents with Autism Spectrum Disorder? - Case Study of a Daily-life-guidance via a Tele-operated Small Desktop Humanoid Robot”
18. Takao Mizuno, Yusuke Sugano, and Yasuyuki Matsushita (Osaka Univ.)
“Multi-task Learning for Semantic Segmentation”
19. Graham Peebles (Osaka Univ.)
“The Meta Problem of Consciousness: Is There a Hard Problem?”
20. Alexis Meneses, Yuichiro Yoshikawa, Hiroshi Ishiguro (Osaka Univ.)
“Multiple Robots System for More Synchronizing Human-Robot Interaction”



Access

23rd & 24th: Knowledge Theater

North Building 4F
Grand Front Osaka
3-1 Ofuka-cho, Kita Ward, Osaka

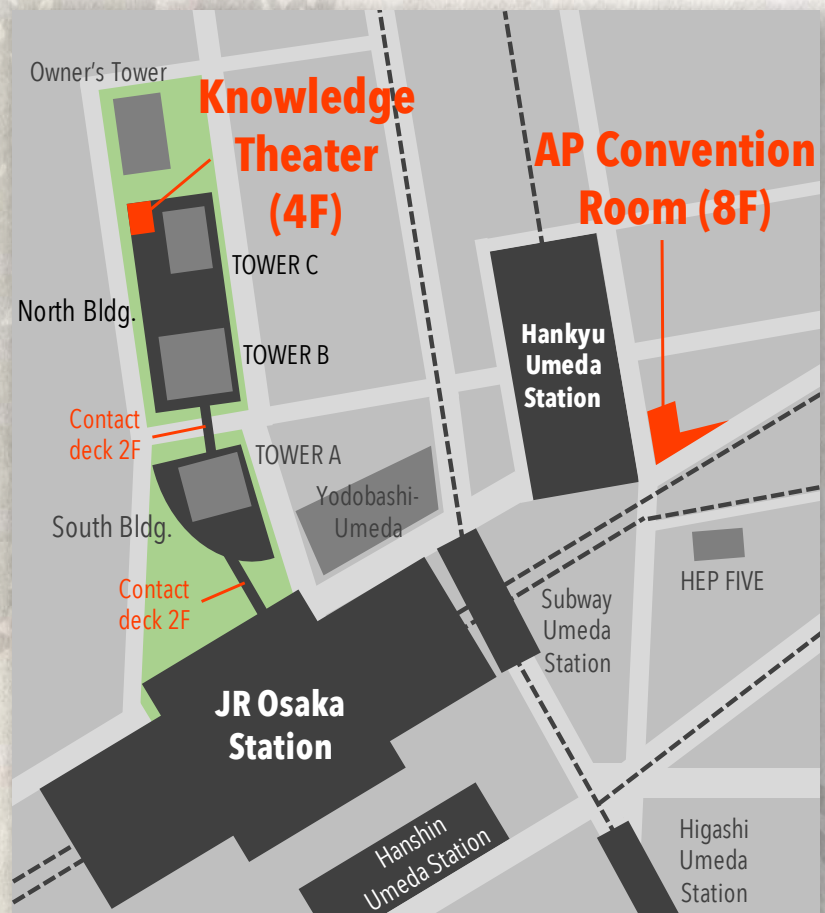
Direct access from JR Osaka Station through the 2nd floor contact deck.

Detailed access maps:

- <https://kc-i.jp/en/access/guide-05/>
- <https://www.kc-space.jp/accessmap/theater/>

25th : AP Convention Room

ABC-MART Umeda Building 8F
1-27 Chayamachi, Kita Ward, Osaka



Symbiotic Intelligence Systems Research Center

Open and Transdisciplinary Research Initiatives, Osaka University

The Symbiotic Intelligent Systems Research Center (SISReC) aims to build a future robot society, in which robots assist people in activities of daily living, as a successor to the contemporary information society. Interactive robots in particular are also regarded to be important as a next-generation information media device. Robot and media technologies are necessary for compensating for the quality of life (QOL) of people living in the low-birthrate and hyper-aging society of Japan.

In addressing problems of the hyper-aging society of Japan, Osaka University has started studying and developing interactive robots ahead of other research universities and institutes in the world, and it has founded and played a leading role in a new field in robotics, Interaction. Intelligent systems, primarily including interactive robots, are not

only practically useful in providing social services for human beings but also theoretically important for offering a new research methodology for investigating engagement between human beings and robots.

The mission of the Center is to develop a society in which human beings and robots cohabit. The Center will realize this mission in the following way: by developing new intelligent systems (including intelligent robots) as a means to study the macro-level functions and properties of human beings and their societies, and more concretely, to conduct social-experimental studies for pursuing the fundamental problems of human beings, such as intelligence, embodiment, multi-modal integration, intention/desire, consciousness, and social relationship



Research Overview in SISReC

The Center comprises five, closely interacting research groups, as is illustrated in the figure below:

- I. the intelligent robotics group aims to build a model of and constructively understand human beings and to develop humanlike androids and partner robots capable of amicably engaging with human beings;
- II. the cognitive and neuro-science group aims to pursue fundamental problems concerning intelligence, embodiment, etc. by using developed intelligent robots and information systems;
- III. the sensing research group aims to measure and analyze complex social relationships among intelligent systems including human beings and robots;
- IV. the information network group aims to develop tools for social-experimental studies of such complex social relationships among intelligent systems; and
- V. the sociology, ethics, and philosophy group aims to study the mutual relationships among human beings, societies, and technologies.

The intelligent robotics group, in cooperation with the cognitive and neuro-science group, will adopt a constructive approach—i.e., use robot models of human beings—to fundamental problems concerning intelligence, body, embodiment, multi-modal integration, intention/desire, consciousness, sociality, etc. by using intelligent robots and information systems. The intelligent robotics group is supported by the sensing research and information network research groups.

In pursuing fundamental problems concerning human beings and societies, they will expand experimental environments to the real world and test the functions of intelligent systems in real-world experiments on the campuses of Osaka University and in the city of Osaka. The sociology, ethics, and philosophy group will place the observations and experiments they conduct in cooperation with the other research groups in social contexts, and address potential problems in the society in which human beings and robots cohabit.

