The 2nd International Symposium on

Symbiotic Intelligent Systems

Challenge to the Edge:
How can we design symbiotic society?

Admission free

31st Jan. – 1st Feb.
2020, 10:00 – 17:45

Space 36 (West 36F)
Umeda Sky Building
Osaka

Invited Speakers (Alphabetical order)

Salvatore Anzalone (Univ. Paris 8)
Peter Ford Dominey (CNRS/INSERM)
Guillaume Dumas (Institut Pasteur/CNRS)
Fiorenzo Marco Galli (National Science and Technology Museum Leonardo da Vinci)
Giulio Mecacci (TU Delft)
Alex Pitti (CNRS/Cergy-Pontoise Univ.)
Erhan Oztop (Osaka Univ.)
Helge Ritter (Bielefeld Univ.)
Giulio Sandini (Italian Inst. of Tech.)
Thomas Schack (Bielefeld Univ.)
Hideaki Sena (Novelist/Science Writer)
Filippo Santoni de Sio (TU Delft)

Sessions

Day 1 (31st Jan.)
1. Cognitive Robotics
2. Poster Presentation
3. Technology, Ethics, and Culture

Day 2 (1st Feb.)
4. Action and Embodiment
5. Human-Robot Collaboration
6. Interaction Systems
7. Panel Discussion
   "Android meets ethics"

Registration

http://osku.jp/c0232

Contact

sisrec_symp@ams.eng.osaka-u.ac.jp

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

Program for Day 1 10:00 a.m. – 5:45 p.m., 31st Jan.

9:30 — Site Open


Takao Onoye


Hiroshi Ishiguro

Opening Remarks

10:00 — 10:10 **Takao Onoye** (Osaka University)

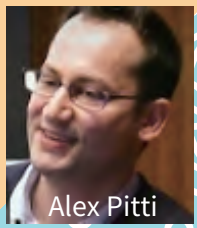
10:10 — 10:25 **Hiroshi Ishiguro** (Osaka University)

Session 1 “Cognitive Robotics”

10:25 — 11:10 **Giulio Sandini** (Italian Institute of Technology)
“Developing Familiarity with Assistive Robots”


Giulio Sandini

11:10 — 11:55 **Alex Pitti** (CNRS/University of Cergy-Pontoise)
“Understanding the Development of Embodied Cognition with Brain-inspired Models and Robots”


Alex Pitti

11:55 — 13:00 **Lunch Break**

Session 2 “Poster Presentation”

13:00 — 14:30 **Poster Session & Coffee Break**

Session 3 “Technology, Ethics, and Culture”

14:30 — 15:15 **Minoru Asada** (Osaka University)
“Artificial Moral Agents with Artificial Pain”


Minoru Asada

15:15 — 16:00 **Filippo Santoni de Sio** (Delft University of Technology)
“Meaningful Human Control and Moral Responsibility for Robots”


Filippo Santoni de Sio

16:00 — 16:15 **Coffee Break**

16:15 — 17:00 **Giulio Mecacci** (Delft University of Technology)
“Operationalising Meaningful Human Control into Technical and Institutional Design Requirements”


Giulio Mecacci

17:00 — 17:45 **Fiorenzo Marco Galli**
(National Museum of Science and Technology Leonardo da Vinci)
“Technologies for Glocal Solutions”


Fiorenzo Marco Galli

18:00 — 20:00 **Banquet**
Venue: Stella Maris, The Westin Osaka

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Program for Day 2 10:00 a.m. – 5:30 p.m., 1st Feb.

9:30 — Site Open

Session 4 “Action and Embodiment”

10:00 — 10:45 **Helge Ritter** (Bielefeld University)
“How Embodiment Affects Learning”

10:45 — 11:30 **Thomas Schack** (Bielefeld University)
“Building Blocks for Intelligent Systems in Memory and Brain”

11:30 — 13:00 **Lunch Break**

Session 5 “Human-Robot Collaboration”

13:00 — 13:45 **Erhan Oztop** (Osaka University)
“Towards a Robot-enabled Society:
The Role of Human Adaptation to Robot Control”

13:45 — 14:30 **Salvatore Anzalone** (Université Paris 8)
“Characterizing Neuro-developmental Deficits through Socially Assistive Agents”

14:30 — 14:45 **Coffee Break**

Session 6 “Interaction Systems”

14:45 — 15:30 **Peter Ford Dominey** (CNRS/INSERM)
“Language as the Vector for Symbiotic Intelligence”

15:30 — 16:15 **Guillaume Dumas** (Institut Pasteur/CNRS)
“Exploring Neurobehavioral Dynamics from Human-human to Human-machine Social Interaction”

16:15 — 16:30 **Coffee Break**

Session 7 “Panel Discussion: Android Meets Ethics”

16:30 — 17:15 **Moderator: Minoru Asada** (Osaka University)

Hideaki Sena (Novelist/Science Writer)

Fiorenzo Marco Galli
(National Museum of Science and Technology Leonardo da Vinci)

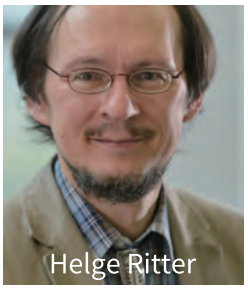
Filippo Santoni de Sio (Delft University of Technology)

Giulio Sandini (Italian Institute of Technology)

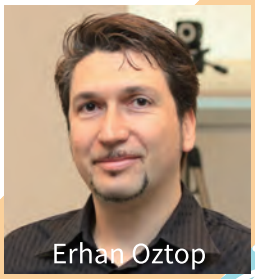
Hiroshi Ishiguro (Osaka University)

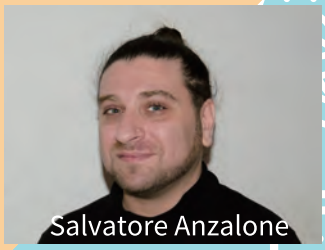
Closing Remarks

17:15 — 17:30 **Minoru Asada** (Osaka University)


Helge Ritter


Thomas Schack


Erhan Oztop


Salvatore Anzalone


Peter Ford Dominey


Giullaume Dumas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Poster List 1 1:00 p.m. – 2:30 p.m., 31st Jan.

1. Anja Philippsen, Yukie Nagai (The University of Tokyo)
   "Prediction ability as a prerequisite of representational drawing behavior"

2. Shi Jiaqi (Osaka University)
   "Preliminary investigation on skeletal movement based on emotion recognition"

3. Kentaro Suzuki, Jihoon Park, Yuji Kawai, Minoru Asada (Osaka Univ.)
   "The analysis of synchronisation between two small-world oscillator networks: Towards understanding inter-brain synchronisation"

4. Changzeng Fu, Thilina Dissanayake, Kazufumi Hosoda, Takuya Maekawa, Hiroshi Ishiguro (Osaka University)
   "Similarity of speech emotion in different languages revealed by a neural network with attention"

5. Kazuki Sakai, Yutaka Nakamura, Yuichiro Yoshikawa, Hiroshi Ishiguro (Osaka University)
   "Development of discussion system where multiple robots exchange user's preferences"

6. Ajibo C. Augustine, Carlos T. Ishi, Hiroshi Ishiguro
   (Osaka University & Advanced Telecommunications Research Institute International)
   "Generation and analysis of audio visual anger emotional expression for android robot"

7. Chie Hieida, Jyh-Jong Hsieh, Yuji Kawai, Minoru Asada (Osaka University)
   "Analyses of a counselor's empathic behavior toward a client –Speech contents and facial expressions–"

8. Yuya Onishi, Hiroshi Okada, Gin Ichiguchi, Hideyuki Nakanishi (Osaka University)
   "Creating a virtual agent's reality with robotic hand holding"

9. Jyh-Jong Hsieh, Chie Hieida, Yuji Kawai, Minoru Asada (Osaka University)
   "Comparison between human and avatar counselor with or without empathetic responses"

10. Jihoon Park, Yuji Kawai, Minoru Asada (Osaka University)
    "Self-organization of connectivity in spiking neural networks with (im)balanced excitation and inhibition"

11. Oka Natsuki, Hatanaka Yusuke, Tanaka Kazuaki (Kyoto Institute of Technology)
    "Public acceptance of AI with responsibility and accountability"

12. Ayaka Ueda, Hamed Mahzoon, Yuichiro Yoshikawa Hiroshi Ishiguro (Osaka University)
    "Effect of cylinder motion on the perception of robot's emotion"

13. Tomoyo Morita[1], Minoru Asada[1], Eiichi Naito[2]
    ([1]Osaka University, [2]Center for Information and Neural Networks, NICT)
    "Developmental changes in task-induced brain deactivation revealed by a motor task"

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Poster List 2 1:00 p.m. – 2:30 p.m., 31st Jan.

14. Hirono Ohashi, Naoki Yamada, Ryota Yanagisawa, Shunsuke Shigaki, Masahiro Shimizu, Koh Hosoda (Osaka University)
"Towards 4D printing technology for muscle cells"

15. Allam Shehata, Yuta Hayashi, Yasushi Makihara, Daigo Muramatsu, Yasushi Yagi (Osaka University)
"Does my gait look nice? Human perception-based gait relative attributes estimation by dense trajectory analysis"

16. Taku Matsuura, Kazuhiro Sakashita, Andrey Grushnikov, Fumio Okura, Ikuhisa Mitsugami, Yasushi Yagi (Osaka University)
"Statistical analysis of dual-task gait characteristics for cognitive score estimation"

17. Shunsuke Shigaki[1], Daisuke Kurabayashi[2], Masahiro Shimizu[1], Koh Hosoda[1] ([1]Osaka Univ., [2]Tokyo Institute of Technology)
"Construction of sensory intervention system for insect"

18. Shiqi Yu, Yoshihiro Nakata, Hiroshi Ishiguro (Osaka University)
"Adopting life behaviors of humans on an android with a ROS-based software package "silva""

19. Hideyuki Takahashi[1], Midori Ban[1], Naoko Omi[1,2], Hisashi Ishihara[1], Yutaka Nakamura[1], Yuichiro Yoshikawa[1], Hiroshi Ishiguro[1] ([1]Osaka University, [2]DAIKIN INDUSTRIES)
"Interactive room environment with anthropomorphic adaptability"

20. Xiqian Zheng[1,2], Masahiro Shiomi[2], Takashi Minato[2], Hiroshi Ishiguro[1,2] ([1]Osaka University, [2]Advanced Telecommunications Research Institute International)
"What kinds of robot's touch will match expressed emotions"

21. Linkun Gao, Shunsuke Shigaki, Koh Hosoda (Osaka University)
"A musculoskeletal bipedal robot based on SLIP model"

22. Momoko Okazaki, Hamed Mahzoon, Yuichiro Yoshikawa, Hiroshi Ishiguro (Osaka University)
"Influence of visualization of robot's verval information on human's subjective evaluation"

23. Soheil Keshmiri (Advanced Telecommunications Research Institute International)
"A novel conditional entropy approach to modeling the PFC activation in response to difficulty of stories"

24. Ryu Takahashi, Linkun Gao, Koh Hosoda (Osaka University)
"Development of a feedback system for musculoskeletal robots inspired by muscle reflexes"

25. Kazuki Miyazawa[1], Takato Horii[1], Tatsuya Aoki[1,2], and Takayuki Nagai[1,2] ([1]Osaka University, [2]The University of Electro-Communications)
"Integration of multiple probabilistic generative models for robot learning"

26. Tatsuya Aoki[1,2], Takato Horii[2], Takayuki Nagai[1,2] ([1]The University of Electro-Communications, [2]Osaka University)
"Towards continuous robot learning in a real environment: Probabilistic generative model based on nonparametric Bayes and auto-encoding variational inference"

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Memo

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Symbiotic Intelligence Systems Research Center

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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-birth-rate and hyper-aging society of Japan.

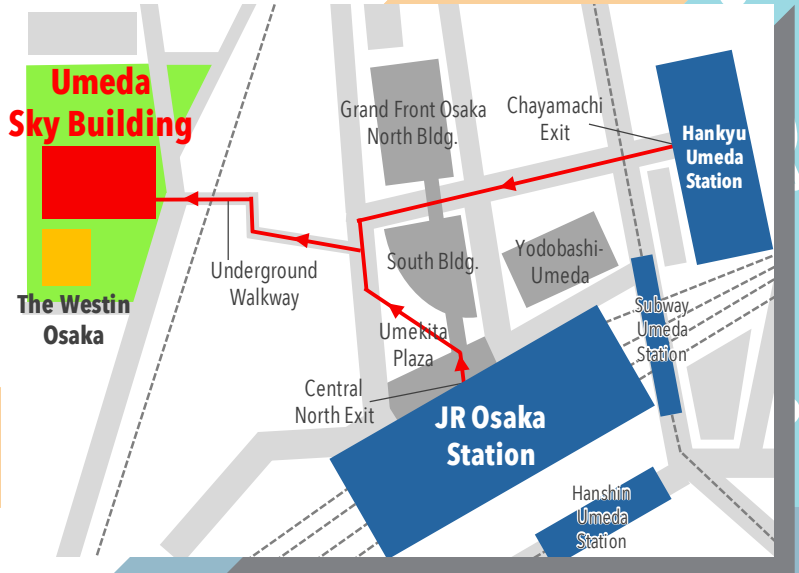
In addressing problems of the hyper-aging society of Japan, Osaka University has started studying and developing interactive robots ahead of other research universities and institutes in the world, and it has founded and played a leading role in a new field in robotics, Interaction. Intelligent systems, 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 relationships.

Access

Space 36 (Tower West 36F), Umeda Sky Building, Osaka

Detailed access map: https://www.skybldg.co.jp/en/access/



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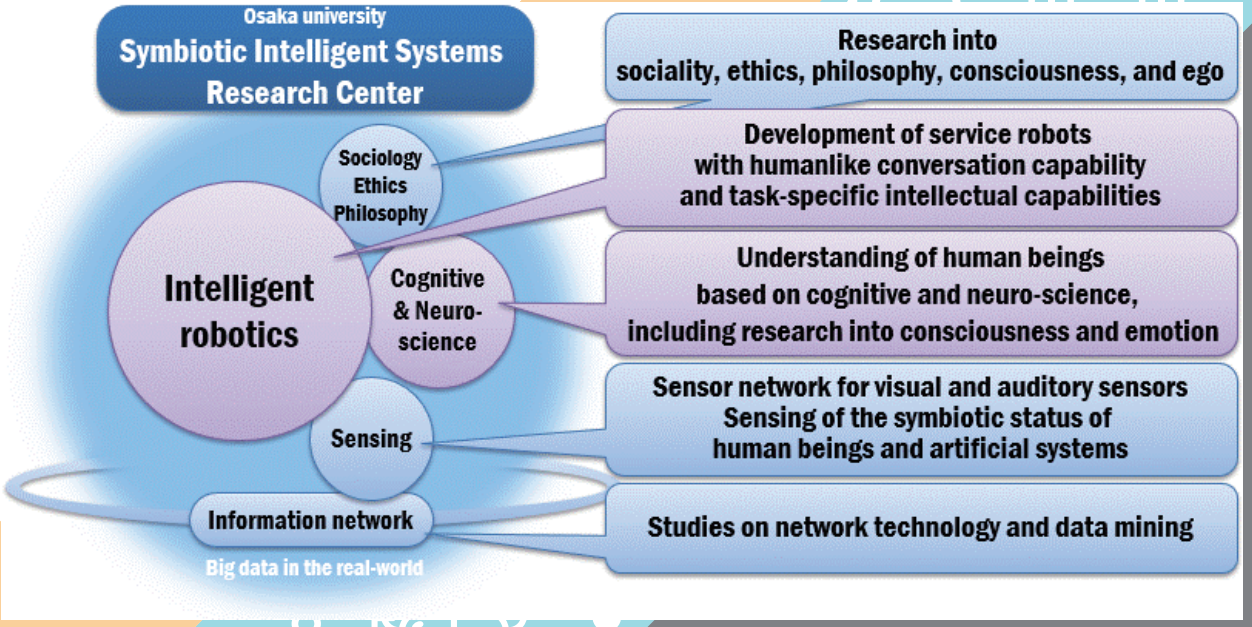
Research Overview in SISReC

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

1) 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;
2) the **cognitive and neuro-science group** aims to pursue fundamental problems concerning intelligence, embodiment, etc. by using developed intelligent robots and information systems;
3) the **sensing research group** aims to measure and analyze complex social relationships among intelligent systems including human beings and robots;
4) the **information network group** aims to develop tools for social-experimental studies of such complex social relationships among intelligent systems; and
5) 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.



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