Full-day Workshop proposal: Teleoperated Android as a Tool for Cognitive Studies, Communication and Art

Shuichi NISHIO (nishio@ieee.org)
Hiroshi Ishiguro Laboratory, Advanced Telecommunications Research Institute International (ATR)
2-2 Hikaridai, Keihanna Science City, Kyoto 619-0288, Japan

Hiroshi ISHIGURO (ishiguro@sys.es.osaka-u.ac.jp)
Department of Systems Innovation, Graduate School of Engineering Science, Osaka University
1-3 Machikaneyama, Toyonaka, Osaka 560-8531, Japan

Theme and Goals

Following the successful workshops in 2005 and 2006 on *Android Science*, the aim of this full-day workshop is to introduce and discuss on current insights and future usage of teleoperated androids.

Teleoperated androids, robots owning humanlike appearance equipped with semi-autonomous teleoperation facility, was first introduce to the world in 2007 with the public release of Geminoid HI-1. *Geminoid* is a teleoperated android robot that resembles existing human being. While androids were designed for studying human nature in general, geminoids was made to study individual aspects as presence or personality traits, tracing their origins and implementation into robots. Both its appearance that resembles the source person and its teleoperation functionality serves in making Geminoid as a research tool. After the release of Geminoid HI-1, several types of teleoperated androids has been produced: Geminoid F, Geminoid DK, Telenoid R1/R2 and Elfoid P1. While the Geminoids are after real existing persons, Telenoid and Elfoid are attempts to represent human beings in their minimalistic forms; a challenge to see to what extent elements that forms us can be omitted but still able to transfer presence of the teleoperating person.

Since their birth, Geminoids and Telenoids have been used in a variety of domains throughout the world, from studies in various fields such as in cognitive psychology / neuroscience, social psychiatry, developmental psychology, robotics, and human-machine interface to philosophy and art. One example is the *android drama* which showed new possibilities on not only on usage for teleoperated android robots but for artistic representations as well as seeking purity in the natures of human beings.

The past workshops that concentrated on autonomous humanlike robots and androids laid a foundation for android science research, a field that integrates the synthetic approach from robotics with the empirical methodologies of the social sciences. Participants, coming from engineering and the social, cognitive, and biological sciences sought fundamental principles underlying cognition and communication between individuals.

In this workshop, we will focus on the further enhanced and broadened usage of teleoperated androids that can provide new means for cognitive science studies, and can bridge the gap between cognitive neuroscience and the behavioral sciences, as well as philosophy, social science and arts, leading to a new way of understanding human beings.

Topics

- Using teleoperated androids as an controllable mankind for psychological experiments
- The role of affect and motivation in social development or communication
- Empathic relationships among people and/or robots
- How people becomes adapted to teleoperated androids
- The evolution, development, and nature of agency, intentionality, or social intelligence
- Models of personal, interindividual, group, or cultural norms
- Cross-modal synchronization or stabilized plasticity in speech and/or gesture
- Teleoperated androids in the society
- Androids working alongside people as peers
- Applications in human environments
- Ethical issues concerning teleoperated androids
- Perception of naturalness, attractiveness, or charisma of teleoperated androids
- Minimal elements required to show human likeliness
- The relationship between appearance and perceived behavior
- The Total Turing Test
- Teleoperated androids as communication device
- Elderly care with teleoperated androids
- Using teleoperated androids for artistic expression

Importance and Relevance for the conference

This workshop focuses on and discusses about cross-disciplinary studies under the current usage and future possibilities of teleoperated android robot which can provide new means for cognitive science studies, and can bridge the gap between cognitive neuroscience and the behavioral sciences, as well as philosophy, social science and arts, leading to a new way of understanding human beings. Thus, this will provide opportunities for conference participants to see latest

advances in this area as well as to discuss and find research seeds with researchers of different disciplines.

The organizers has been involved in making and conducting studies on teleoperated androids. Prof. Hiroshi Ishiguro is the inventor of both the notion of android science as well as various teleoperated androids, Geminoid, Telenoid and Elfoid. Dr. Shuichi Nishio has been with Prof. Ishiguro in constructing teleoperated android systems and have conducted various laboratory / field studies with them up to now.

Audience

- Robotics engineers and computer scientists with an interest in cognitive psychology, robotics, human-robot interaction, as well as artificial intelligence, machine learning, pattern recognition and control theory.
- Psychologists and sociologists who are concerned and/or interested with embodied communication or social development
- cognitive scientists who are concerned with the relationship between brain processes and social dynamics; social and comparative biologists;
- Philosophers who are interested in human nature issues such as mind/body separation and interaction;
- Artists and dramatists who are interested in new possibilities of art on human nature;

The workshop is of interest to the target participants because teleoperated androids can works as a test tool for social and cognitive theories. Research in this domain depends on interdisciplinary collaboration between engineers and natural and social scientists.

Possible presenters

- Christian Becker-Asano (University of Freiburg, Germany)
- Thierry Chaminade (University Collage of London, UK)
- Kazuo Hiraki (Tokyo University, Japan)
- Hiroshi Ishiguro (Osaka University, Japan)
- Shoji Itakura (Kyoto University, Japan)
- Karl MacDorman (Indiana University, US)
- Takashi Minato (ATR, Japan)
- Hideyuki Nakanishi (Osaka University, Japan)
- Shuichi Nishio (ATR, Japan)
- Hideaki Ogawa (Ars Electronica, Austria)
- Kohei Ogawa (ATR, Japan)
- Hirata Oriza (Theater company Seinendan)
- Ayse Saygin (University of California, US)
- Henrik Scharfe (Aalborg University, Denmark)
- Hidenobu Sumioka (ATR, Japan)

Estimate of the number of participants

Thirty participants including organizers and presenters.

Publication

The publication of the workshop will be done in four ways.

1. To our research collaborators:
   We have research collaboration with many laboratory in the world, especially in Japan, Europe and US. We will ask these collaborators to submit papers and to participate in the workshop.

2. Via grant agency:
   This workshop theme, teleoperated android, is now studied under several grants in Japan and Europe. We will ask the grant agency to promote the workshop.

3. To the cognitive science and robotics society:
   This will be done via mailing lists and web pages.

4. To the press people: Our laboratory is accepting more than 50 requests for interviews and shooting from various press in the world. We will advertise the workshop to the press who visited us in the past.

After the workshop has been accepted, we will ask several journals for a special issue so that the fine presentations will appear gathered in much details. Also, we are planning to publish a book that collects the findings and activities related with teleoperated android robots.

Special requirements

If the space allows, we would like to bring our robots and run them throughout the workshop so that people who cannot attend the conference may be able to teleoperate the androids from remote and pseudo-join the conference. In this way, people can see the actual teleoperated androids in use and participants can discuss the real effects of using the robots in the workshop.

This will require: power supplies (100V), a separate room not far away for placing air compressor (because this is noisy) and an Internet connection.

Contact

Dr. Shuichi NISHIO
Affiliation: Hiroshi Ishiguro Laboratory,
Advanced Telecommunications Research Institute International (ATR)
Address: 2-2 Hikaridai, Keihanna Science City, Kyoto 619-0288, Japan
Telephone: +81-774-95-1560
Fax: +81-774-95-1508
e-mail: nishio@ieee.org

Prof. Hiroshi ISHIGURO
Affiliation: Department of Systems Innovation, Graduate School of Engineering Science, Osaka University