

HUMAN NATURE

ARS ELECTRONICA 2009

Festival for Art, Technology and Society
Linz Thu 3 - Tue 8 September

Hiroshi Ishiguro – Featured Artist 2009

Hiroshi Ishiguro (JP) of Osaka University is Ars Electronica's 2009 Featured Artist and the man in the spotlight of a world premiere at this year's 30th anniversary festival: the public debut of the Geminoid android. In addition to moderated talks with Hiroshi Ishiguro and his Geminoid, visitors will be offered the unique opportunity to go one-on-one with an android. A tracking system registers the visitor's facial movements and forwards this information to the robot, which then uses the input to precisely mimic those expressions. The visitor laughs, Geminoid laughs; the visitor furrows his/her brow, the robot does the same. And thanks to a built-in radio microphone, Geminoid always has an appropriate remark ready for any occasion ...

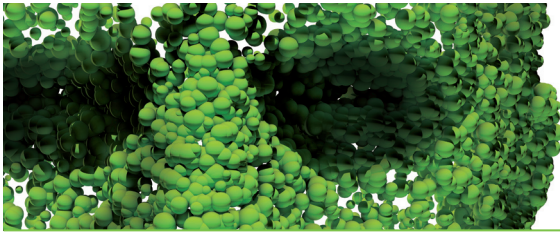
ROBOT CLONES

Hiroshi Ishiguro (JP) and his staff are at work on the question of how the presence and essence of a human being can be captured, simulated and transferred to robots. A very promising approach to answering this question is now emerging in the form of complex artificial creatures named Geminoids. The name is derived from *geminus* (Latin: twin, couple) and the suffix "oid." A geminoid is a robot created as a clone of an actual human being. The human-mechanical duo is linked together by innovative network & sensor technology, so the geminoid not only resembles its human model, it behaves like him too.

Hiroshi Ishiguro, professor at the University of Osaka and guest group leader at ATR Intelligent Robotics and Communication Laboratories, served as the model for HI-1, the very first geminoid. Since 2006, HI-1 and other geminoids have been used for purposes of research, which has essentially been following two approaches. Some projects concentrate on the development of a functional remote-control mechanism and the programming of movements that most closely resemble that way a human being naturally moves; others focus on cognitive modeling to investigate typical characteristics of humans—for instance, "human presence." The combination of the two approaches leads ultimately to the development of robots that strongly resemble a human being and open up novel insights into human nature.

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ROBOTICS AND COGNITION RESEARCH

While robotics builds upon findings in the cognitive sciences in going about this and attempts to take mechanisms of successful human-human interaction and apply them to robots, cognition research is beginning to focus on the robots themselves. Scientists in this field are pursuing two main objectives: first of all, developing androids that look as human as possible, move like a human being and have human functions of perception; secondly, gaining new insights into those processes that control our "conscious and unconscious cognition." After all, we perceive stimuli both consciously and unconsciously. When we observe other people, different regions of the human brain are activated. Sensory inputs are automatically compared with familiar human models, which form the basis of our reactions. Furthermore, these unconscious processes are precisely what induce us to unthinkingly treat an android as if we were dealing with a human being. The reason for this is a central research question both in robotics as well as in other scholarly disciplines. The answers to it could serve as criteria for the development of androids and also deliver essential clues about those processes at work in the human brain that make us socially and emotionally controlled beings.

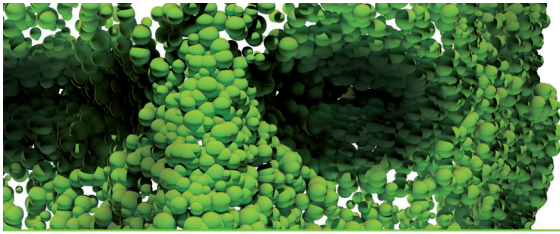
HIROSHI ISHIGURO

Hiroshi Ishiguro (M') received a D.Eng. in systems engineering from the Osaka University, Japan in 1991. He is currently Professor in the Graduate School of Engineering at Osaka University (since 2002). Hiroshi Ishiguro is also Visiting Group Leader (2002-) of the Intelligent Robotics and Communication Laboratories at the Advanced Telecommunications Research Institute, where he previously worked as Visiting Researcher (1999-2002). Ishiguro was previously Research Associate (1992-1994) in the Graduate School of Engineering Science at Osaka University and Associate Professor (1998-2000) in the Department of Social Informatics at Kyoto University. He was also Visiting Scholar (1998-1999) at the University of California, San Diego, USA. Hiroshi Ishiguro was Associate Professor (2000-2001) and Professor (2001-2002) in the Department of Computer and Communication Sciences at Wakayama University. He then moved to Department of Adaptive Machine Systems in Osaka University as a Professor (2002-2009). And he became Professor of Department of Systems Innovation in the Graduate School of Engineering Science at Osaka University. His research interests include distributed sensor systems, interactive robotics, and android science.

Further information on Hiroshi Ishiguro can be found here:
www.irc.atr.jp/Geminoid/

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FUTURE DIALOGUES with Hiroshi Ishiguro & Geminoid

Sept. 5. / 12:30 PM - 1:30 PM	Ars Electronica Center, Main Gallery/RoboLab	moderated by Gerfried Stocker (Artistic Director Ars Electronica)
Sept. 6. / 1:30 PM - 2:30 PM	Ars Electronica Center, Main Gallery/RoboLab	moderated by Horst Hörtner (Executive Director Ars Electronica Futurelab)
Sept. 7. / 2:00 PM - 3:00 PM	Ars Electronica Center, Main Gallery/RoboLab	moderated by Hide Ogawa (Artist Ars Electronica Futurelab)

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Japanese Media Art Festival

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