



Tuesday March 10, 2009
14:00 to 15:30

Lyon Convention Center
France

BIOROBOTICS ON THE MOVE: IS ROBOSAPIENS AROUND THE CORNER?

Moderator

- **Ismail Serageldin**, Director, New Library of Alexandria, Egypt

Speakers

- **Paolo Dario**, Professor, Scuola Superior Sant'Anna, Italy
- **Hiroshi Ishiguro**, Professor, Dept. of Adaptive Machine Systems, Graduate School of Engineering, Osaka University, Japan
- **Bruno Maisonnier**, Chairman and CEO, Aldebaran Robotics, France

Summary

- The creation of an artificial intelligence has been engaging mankind since a long time. Scientists together with engineers are working on a new generation of robotics which are neither for pure scientific nor for pure entertainment purposes.
- Biorobotics lie somewhere in between. They are getting closer to human. They interact like human, they imitate human and they are getting socialised in our daily lives.
- For one half this sounds like science-fiction, for the other half it is fulfilment of a mankind dream that robots will serve humans in many aspects of life.
- This session showed the directions and status of current development and shed light on the potential benefits for our future.
- **Paolo Dario** gave an overview of recent developments in robotic 'evolution' and showed that nature is a role model of robotic movements.
- In several case examples he showed how role models are transferred to specific applications in life sciences, such as the worm model for painless colonoscopy or the legged capsule for painless gastroscopy.
- Furthermore, we are already able to connect prostheses to the nervous system and the brain or control biological systems by artificial simulations.
- Concerning ethical issues, Paolo Dario pointed out that roboethics should find answers to the question what we want to do with robots and not vice versa.
- **Bruno Maisonnier** stated that the key driver for future robotic development will be derivated from the benefits of robotics' use. He created a new world where robots will help humans wherever meaningful.



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BioVision 2009 session reporting

- Recent significant advances have been possible due to a bio-inspiring and bionic research strategy. Through the use of genetic algorithms robots could evolve and learn reactions inspired by nature.
- In a lively demonstration of his robotic Nao he showed how close the robotics' behaviour is to human. For acceptance reasons Nao has a friendly and cued looking face.
- From the point of view of **Hiroshi Ishiguro** robots are getting closer to humans due to combining biology and engineering for robotic development, but also including cognitive science, psychology and social science.
- This leads to the creation of bio-mimetic humanoid which are able to interact and mimic with humans and human's behaviour up to a strong entertaining conversation.
- Upon the question of ethical issues the panellists agreed that differences between biological and artificial systems are getting smaller. However, robots act on humans with the knowledge of humans.
- Robots are developed to serve humans not to substitute them. They called on society to see robots as useful tools.
- In conclusion, the panellists bring out three key messages:
 1. The age of biorobotics has already started.
 2. Further collaboration between humans and robots is needed to drive acceptance and further development. Development of biorobotics comes with purpose of their use.
 3. Humans should see robots as tools, which won't be perfect as human beings, but are helpful in various situation of life.

Quotes

"Robots are tools, they won't be perfect human."

Bruno Maisonnier

"Nobody dreams of substituting surgeons, but robots can be used for telesurgery. They support the surgeon to execute the surgery."

Paolo Dario

"Robots are getting closer to humans. They are interactive, they are social and they even show emotions."

Hiroshi Ishiguro

"It takes you only 5 minutes to adapt to a conversation with robots."

Hiroshi Ishiguro

"Robots have to be adapted to our environment which has been designed for humans."

Bruno Maisonnier

"Further collaboration of humans and robots is needed."

Ismail Serageldin

"The development of robots will be successful if they are perfectly well accepted by users – by each and every, not only geeks."

Bruno Maisonnier

"We Japanese regard robots as friends."

Hiroshi Ishiguro

"The question was, if robosapiens is already around the corner? Maybe not yet, but maybe in some years."

Paolo Dario

"Biorobotics will in any case influence our lives."

Ismail Serageldin