Invited talker:

Prof. Henrik Hautop Lund

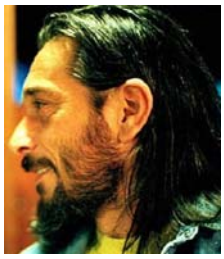
IT1 Modular Robotic Tiles – Experiments for Children with Autisum

Henrik Hautop Lund, Martin Dam Pedersen, Richard Beck
Maersk Mc-Kinney Moller Institute, University of Southern Denmark, Denmark

We developed a modular robotic tile and a system composed of a number of these modular robotic tiles. A system composed of the modular robotic tiles engage the user in physical activities, e.g. in physiotherapy, sports, fitness, entertainment. The modular robotic tiles motivate to perform physical activities by providing immediate feedback based upon physical interaction with the system. With the modular robotic tiles, the user is able to make new physical set-ups within less than a minute. The tiles are applicable for different forms of physical activities (e.g. therapeutic rehabilitation) and at the same time give unique possibilities for documentation of the physical activity (e.g. therapeutic treatment). This kind of playware is highly motivating due to immediate feedback and fun, interesting games. The pilot study included here indicates that the modular robotic tiles may also be used by children with autism, and that the tiles can automatically recognise the children behaviours with very high accuracy by using an artificial neural network.

Education:
M.Sc. Computer Science, Aarhus University
Ph.D. Computer Systems Engineering, University of Southern Denmark

Professional Training and Employment:
1992-93 & 1994-95: Research Assistant, the National Research Council, Rome
1996-1997: Research Associate (Post Doc), Dept. of Artificial Intelligence, University of Edinburgh, UK
1998-2000: Research Associate & Head of LEGO Lab., Dept. of Computer Science, University of Aarhus, Denmark.
2000-present: Full Professor, the Maersk Mc-Kinney Moeller Institute, University of Southern Denmark, Odense
Head of the AdapTronics Group, Head of Center for Playware



Prof. Luigi Pagliarini

IT2 The Development of Robot Art

Luigi Pagliarini, Henrik Hautop Lund
Maersk Mc-Kinney Moller Institute, University of Southern Denmark, Denmark

Going through a few examples of worldwide recognized robot artists, we try to analyze the deepest meaning of what is called Robot Art and the related art field definition. We also try to highlight its well marked borders – like kinetic sculptures, kinetic art, cyber art, and cyberpunk. A brief excursion on the importance of the context, the message and its semiotic is also provided, case by case, together with few hints on the history of such a discipline, under the light of an artistic perspective. Therefore, the aim of the paper is to try to summarize the main characteristics that might classify Robot Art as a unique and innovative discipline, and to track down some of the principles by which a robotic artifact can be considered - or not - an art piece, in terms of social, cultural and strictly artistic interest.

Education:
Master Degree in Experimental Neuropsychology

Professional Training and Employment:
An Artist, Art Curator, Psychologist, Multimedia and Software Designer, and a worldwide known as a theoretician and expert in Robotics, A.I. and Artificial Life.
Currently: Professor of Theories of Perception and Psychology of Shape at the Academy of Fine Arts of Bari, Italy
Associate Professor at Maersk Institute, University of Southern Denmark, Denmark
Associate Professor of Developmental Psychology at the Interuniversity School for Teaching Specialization, University of Naples, Federico Secondo
Founder and Director of the Pescara Electronic Artists Meeting
Founder of RoboCup Junior and Member of its International Committee

IT3 Artificial life and embodied robotics: current issues and future challenges

Malachy Eaton and J.J. Collins
Dept. of Computer Science & Info. Systems, University of Limerick, Ireland

Dr. Malachy Eaton

In this paper we explore some of the issues currently facing researchers in the interface between the twin fields of Artificial Life and Robotics, and the challenges and potential synergy of these two areas in the creation of future robotic life forms. There are three strands of research we feel will be of key importance in the possible development of future embodied artificial life forms. These are the areas of evolutionary robotics, and evolutionary humanoid robotics in particular, probabilistic robotics for deliberation, and robot benchmarking with associated metrics and standards. We explore each of these areas in turn focusing on our current research in each field and what we see as the potential issues and challenges for the future.

Education:
In 1981, B.E. degree in Civil Engineering from University College Galway, Nat. University of Ireland
In 1982, Graduate Diploma in Applied Computing with National Council for Educational Awards from University of Limerick
In 1983, N.C.C. Certificate in Systems Analysis from University of Limerick
In 1988, M.Eng. in Computer Systems with National Council for Educational Awards from University of Limerick
In 1993, Ph.D degree from University of Limerick

Professional Training and Employment:
1981-1982 Teaching Assistant (Part-time) University of Limerick
1982-1983 Programmer/Lecturer, European Computer Aided Learning Ltd., Dublin
1983-1984 Associate(Software Development), CACI, Dublin
1984-1986 Design Engineer (Software), Research and Development Dept., Mitel-Delta Communications, Shannon
1986-1993 Assistant Lecturer, Computer Systems, University of Limerick
1993-2007 Lecturer, Computer Systems, Dept. Computer Science & Info. Systems, University of Limerick
(2000-2001 Guest Researcher, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland)

IT4 Inspection Robot Using the Infrared Thermal Imaging and CCD Camera

SunSin Han, JaeYoung Choi, DeukKwon Kim, **JangMyung Lee**
Dep. of EE. Pusan National University, Busan, Korea

Prof. Jang Myung Lee

A new power line diagnostic robot is introduced in this paper. The diagnostic mobile robot is moving on the neural line which goes over the power lines and it passes the electric poles and selects a desired branch of neural line to follow. For the diagnosis of power lines and insulators, the infrared thermal image and CCD camera are used to improve the security, to reduce the checking time, and to improve the reliability of the data. For the autonomous navigation of the mobile robot on the neutral line, there are several problems, such as, passing the electric poles, avoiding bypassing neural lines, and selecting a desired branch of neutral line. Sensor fusion techniques are adopted to resolve these problems and to improve the reliability. The insulators and connectors in the power lines need to be checked regularly since the power lines can be disconnected by corrosion or flames. Before the disconnection, the possible faults should be detected and repaired by using the stored images of CCD camera and infrared thermal images. A diagnostic mobile robot is implemented and the real experimental results are demonstrated.

Education:
In 1980, B.S. degree in Electronics Engineering from Seoul National University, Korea
In 1982, M.S. degree in Electronics Engineering from Seoul National University, Korea
In 1990, Ph.D. degree in Computer Engineering from the University of Southern California, Los Angeles

Professional Training and Employment:

1981.12~1983.03	Researcher, Micom Design Team, Samsung Semi-conductor Communication Co.
1983.03~1992.02	Instructor & Assistant Professor, Pusan Industrial University
1985.08~1990.10	Researcher, Univ. of Southern California
2001.05~2003.09	Manager, Institute of Information & Communication Division, Pusan National University
2002.02~current	Manager, Pusan/Gyeong Nam Branch, Korea Robot Soccer Association
2003.10~current	Director, Korean Robotics Society
2004.01~current	Director, The Institute of Electronics Engineering of Korea
2006.01~current	Pusan/Ulsan/GyeongNam Branch Manager, ICASE