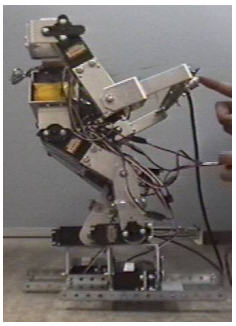
Humanoids
Chairs: Ruediger Dillmann, Shigeki Sugano

Mobile Manipulation of Humanoids: Real-Time Control Based on Manipulability and Stability

K. Inoue, H. Yoshida, T. Arai and Y. Mae
Osaka University

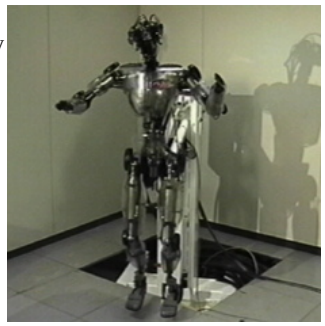
- Integrated manipulation and locomotion of humanoids
- Arm control for carrying out objective tasks
- Autonomous locomotion coordinating with arm motion
- Experimental robot with external force applied to



Planning of Joint Trajectories for Humanoid Robots Using B-Spline Wavelets

Ales Ude[1], Christopher Atkeson[2] and Marcia Riley[2]
[1]Japan Science and Technology Corporation and [2]Georgia Tech

- Generation of humanlike full-body motions
- Multiresolution B-spline wavelet representation
- Large-scale optimization with a trust region method
- Application to the generation of Okinawan dance movements



Human Symbiotic Robot Design based on Division and Unification of Functional Requirements

T. Morita, H. Iwata and S. Sugano
Waseda University

- A Target of this study is development of human symbiotic robots, which can support daily work in humanfs living space.
- For ensuring impact safety, a simulation model and several mechanisms are proposed. As regards to dexterity, hand mechanisms are developed with focusing on pressure control ability.
- Effectiveness of the design method is confirmed from several evaluation experiments, such as cooking tasks.
- A design method of human symbiotic robots, which have the possibilities for ensuring safety and dexterity, is proposed.

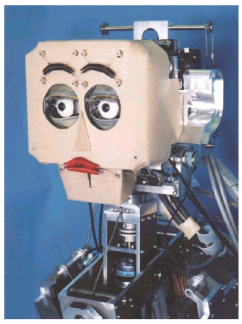
Complex Continuous Meaningful Humanoid Interaction: A Multi Sensory-Cue Based Approach

G. Cheng and Y. Kuniyoshi
ElectroTechnical Laboratory, ETL

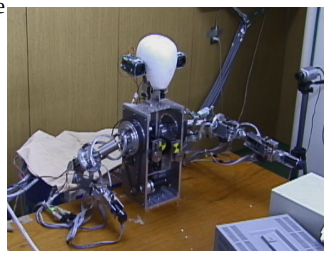
An Anthropomorphic Head-Eye Robot expressingEmotions based on Equations of Emotion

Atsuo Takanishi, Kensuke Sato, Kunio Segawa, Hideaki Takanobu and Hiroyasu Miwa
Waseda Univeristy

- Our motivation is developing function for a humanoid robot having the ability to communicate naturally with a human.
- The sub-system as the tactile sensation recognizing 'push', 'stroke' and 'hit'.
- Equations of Emotion for the 3D artificial psychological model.
- The robot can express Emotions based on Equations of Emotion changing by external stimulation.



Design of Active/Passive Hybrid Compliance in the Frequency Domain - Shaping Dynamic Compliance of Humanoid Shoulder Mechanism

M. Okada[1], Y. Nakamura[2] and S. I. Hoshino[1]
[1]University of Tokyo and [2]Japan Science and Technology Corporation

- Technical design of active/passive hybrid compliance
- Dynamic compliance in the frequency domain
- H_∞ control theory and systems identification method
- Humanoid torso robot with the cybernetic shoulder