

#### Team NimbRo – Prof. Sven Behnke

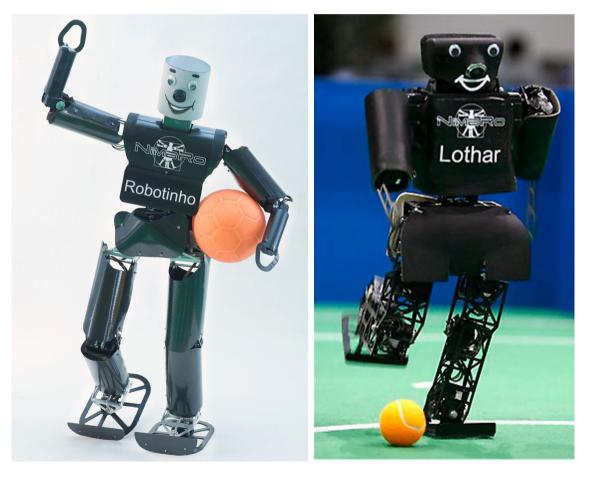
#### Autonomous Intelligent Systems Computer Science Institute VI University of Bonn, Germany





# **Humanoid Soccer**

- Play in RoboCup Humanoid league since 2004
- Won several competitions (e.g. KidSize 2007, 2008, TeenSize 2009)



- Self-constructed robots
- Fully autonomous
- PC, three cameras
- Hierarchical reactive control
- Team play
- Learning



### Intuitive Multimodal Communication

Develop museum tour guide since 2004

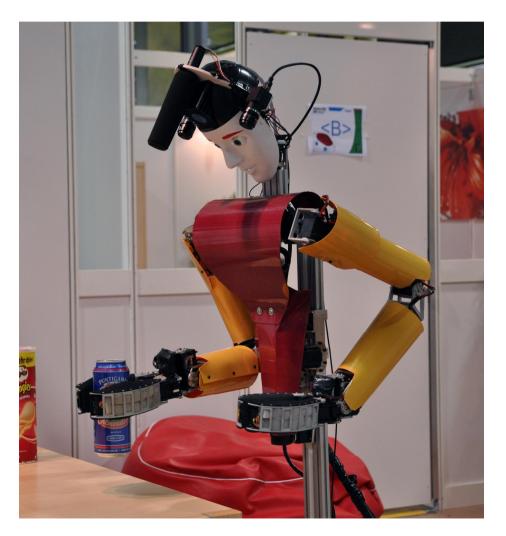


- Speech: ASR+TTS
- Expressive gestures
- Animated face
- Multimodal dialogue system
- Person detection
- Face detection
- Face recognition
- Head pose estimation
- Gesture recognition



# **Domestic Service Tasks**

Compete in RoboCup@Home since 2009



- Developed domestic service robot Dynamaid
- Won innovation award
- Omnidirectional drive
- Anthropomorphic arms
- Movable trunk
- Sensor head
- Robust indoor navigation
- Object manipulation
- Intuitive multimodal communication