

## Aldebaran Robotics in the ECHORD Project

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ERF 2013  
Lyon, 19<sup>th</sup> of March 2013

# Aldebaran Was Involved In Two ECHORD Experiments

## ● BABIR

- A Better Audition for a Better Interaction with Robots
- One industrial partner : Vocally (France)
- Objective : Implement the low level sound processing of Vocally into Nao

## ● GRASPY

- Exchange of objects between human and robot
- One academic partner : DFKI (Germany)
- Objective : Use of multimodal perception to take and give objects



# Overview of the Graspy Experiment

## ● Main developments

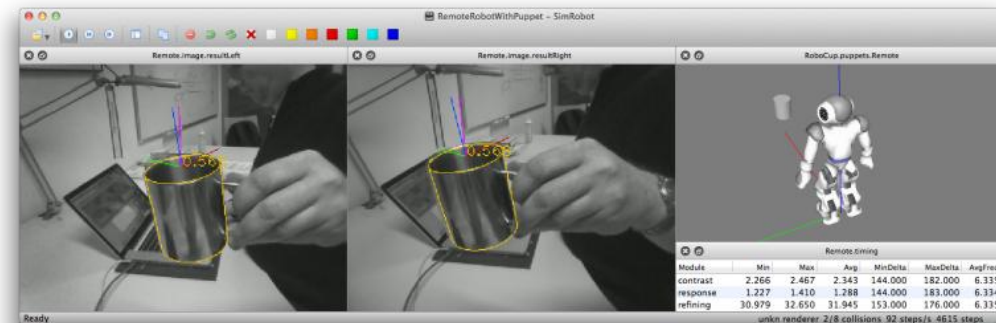
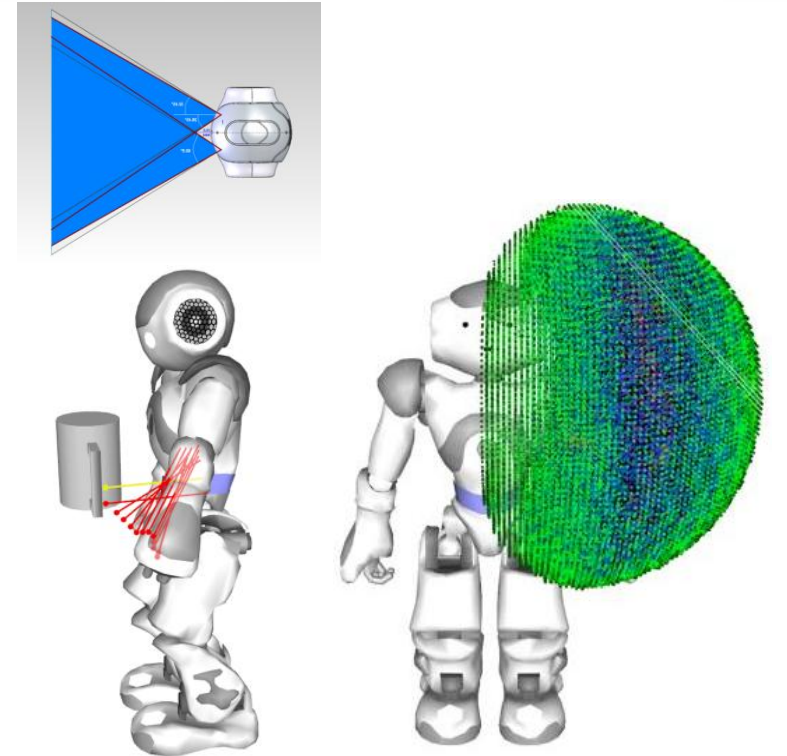
- Stereo vision
  - Low level software (Aldebaran)
  - High level software (DFKI)
- Grasping function
  - Localization of the object (DFKI)
  - Motion planning to grasp the object (DFKI)
- Releasing function
  - Multimodal sensing (Aldebaran)

## ● Our conclusions

- Stereo-vision is doable on Nao
- Accurate grasping is doable with Nao

## ● Next steps

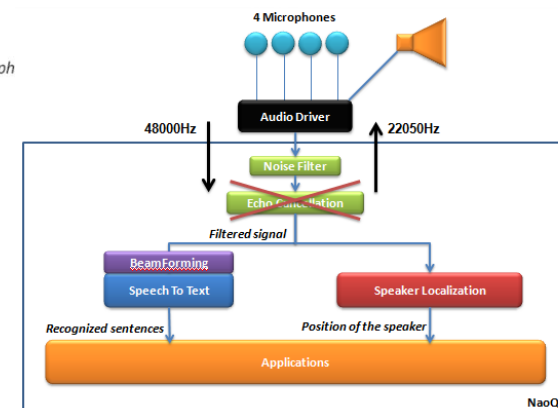
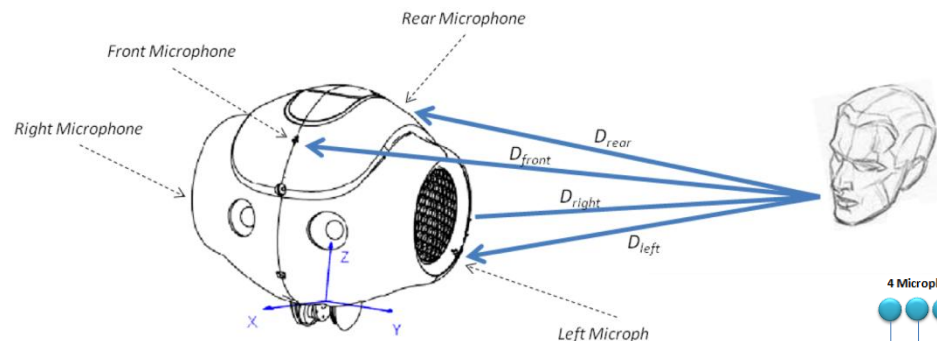
- Localization of other kind of objects
- Better integration of stereo-vision



# Overview of the BABIR Experiment

## Main developments

- Signal Processing
  - Noise Filter
  - Echo cancellation
- Localization of the speaker
  - Fusion of vision and audition
- Integration and evaluation

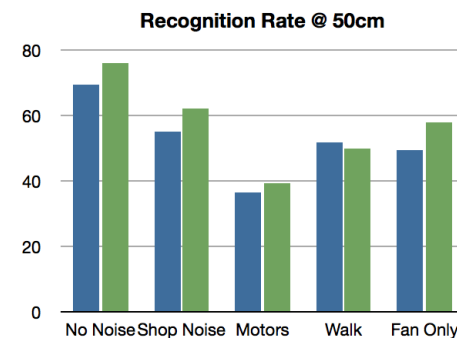


## Our conclusions

- The audio streaming has to be improved on Nao
- The embedded noise filter of the Nuance ASR is good
- The voice of Nao saturates its own microphones

## Next steps

- Refactoring of the audio streaming
- Study on new positioning of microphones and loud speakers



■ No Vocally Noise Filter ■ With Vocally Noise Filter

# Our feedback

- **We really enjoyed the principle**
  - Small projects
  - Easy to describe
  - Good funding
  - The multimedia report is a good idea for robotics projects
- **We had interesting results**
  - Very promising with GRASPY
  - A little but disappointing with BABIR but we learned a lot
- **We less enjoyed**
  - The strict and very frequent reporting (but we understand)
  - The complexity of the payment procedure (we understand less)
- **We are happy and proud to be part of the ECHORD project**