Praktikum: 2

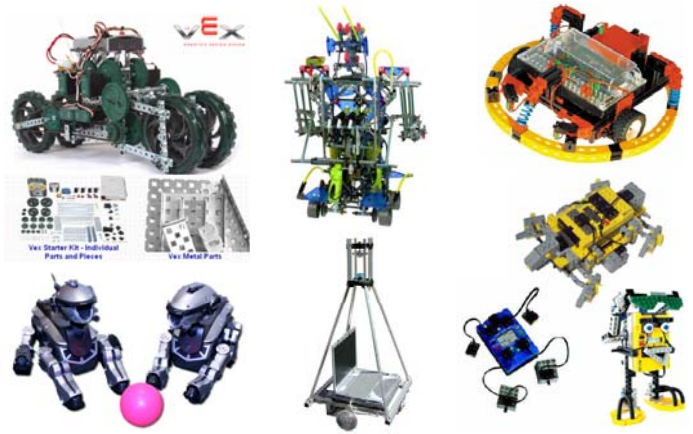
Lego Mindstorms experience

Lecturers

Houxiang Zhang
Manfred Grove

TAMS, Department of Informatics
University of Hamburg, Germany

@Lego



Content of today's lecture

- Introduction to Lego mindstorms
- Telebot system: first experiments
  - Introduction
  - Components
  - Hardware realization
  - Integration
  - Possible tasks
  - Implementation: mechanical system, programming, testing
- Final evaluation

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Lego mindstorms

- **Lego Mindstorms**

The latest product in the Mindstorms series is Mindstorms NXT, released in August 2006. The kit includes three servo motors, a touch sensor, a light sensor (now with the ability to differentiate between colors based on grayscale readings), a new sound sensor, an ultrasonic sensor and a new NXT 'Intelligent Brick'.
The kit is sold for $249 USD.

Available in GUC Library: Mario Ferrari, Giulio Ferrari, Ralph Hempel, *Building Robots With Lego Mindstorms : The Ultimate Tool for Mindstorms Maniacs*. Syngress Publishing; 1 edition, 2001.

Reading material

- ***Building Robots with LEGO Mindstorms NXT;*** by, Mario Ferrari, Guilio Ferrari, and David Astolfo
- ***The LEGO MINDSTORMS NXT Zoo! - A Kid-Friendly Guide to Building Animals with the NXT Robotics System;*** by Fay Rhodes
- ***LEGO Mindstorms NXT Power Programming: Robotics in C*****;** by, John C. Hansen

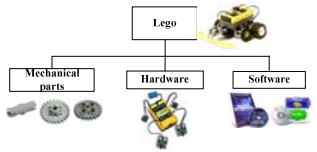
http://mindstorms.lego.com/Books/

Web links for today

- **Lego mindstorms**
  - http://mindstorms.lego.com/default.aspx?domainredir=www.legomindstorms.com
- **Telebot project**
  - http://tams-www.informatik.uni-hamburg.de/people/hzhang/projects/index.php?content=Telerobot

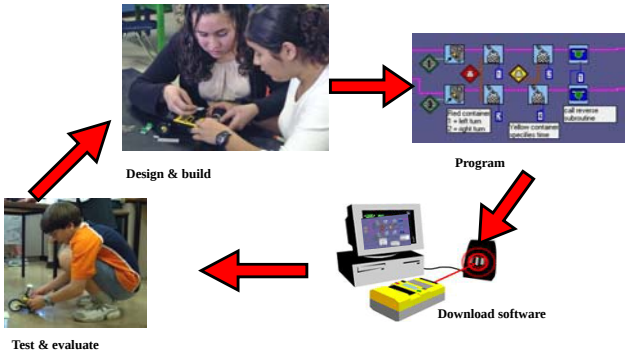
Edutainment robots –Lego

- Lego mindstorms
  - Developed in cooperation with MIT Media Lab researchers in 1998.
  - RCX
    - 3 sensory inputs and 3 motor outputs.
    - includes a display and buttons for selecting programs and viewing status of in/outputs
    - includes an IR serial port, through which it is programmed
  - Robotics Invention System (RIS) and easy-to-use GUI



http://mindstorms.lego.com/

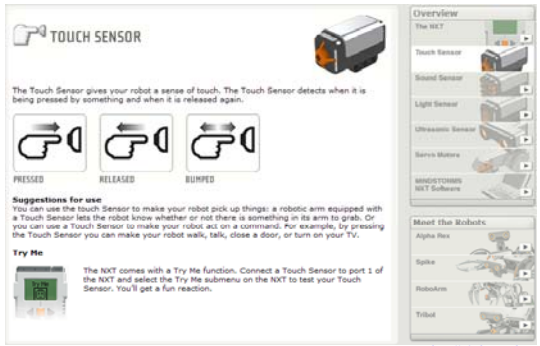
Edutainment robots –Lego



Lego mindstorms

http://mindstorms.lego.com/Overview/

Components of Lego mindstorms



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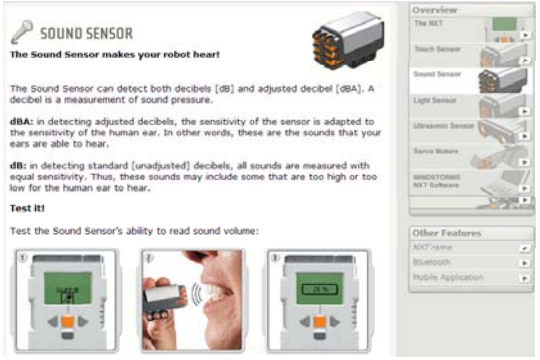

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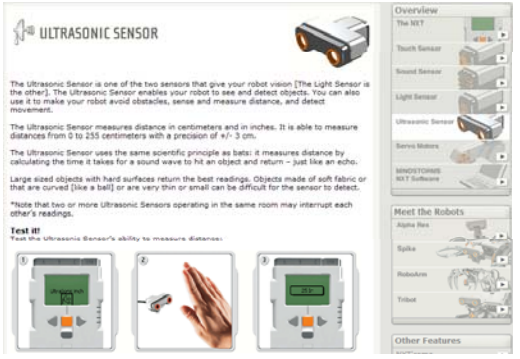

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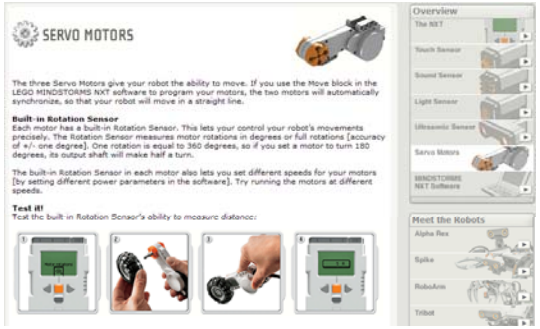

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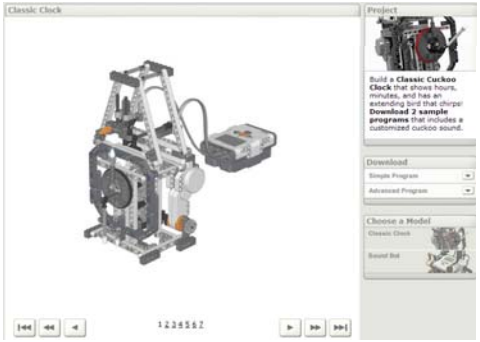
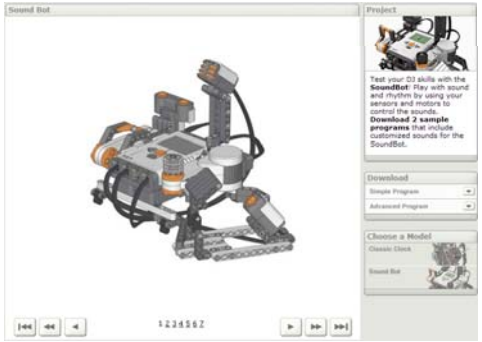
Lego mindstorms NXT

Other prototypes



http://mindstorms.lego.com/buildinginstructions/

Other prototypes



http://mindstorms.lego.com/buildinginstructions/

Lego mindstorms test

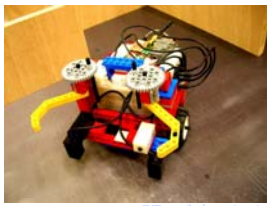
- Building a robot
- Programming it
- Testing and improving

Content of the next lecture

- Introduction to Lego mindstorms
- Telebot system first try
  - Build the mechanical structure, program and test the robot, improvement
- Final evaluation

Telebot system introduction

- Telebot (TAMS group based on cooperation with BUAA, 2006)
  - 9 channels for sensor inputs; 4 outputs for actuators
  - Communication interface
  - Java and C++ programming easy
  - More flexible and extended functions



@Tams/hzhang/project

Praktikum: 3

Telebot: first try

Lecturers

Houxiang Zhang
Manfred Grove

TAMS, Department of Informatics
University of Hamburg, Germany

@Tams group

Let's get started!

Discussion……

Praktikum: 4

Telebot system environment

Lecturers

Houxiang Zhang
Manfred Grove

TAMS, Department of Informatics
University of Hamburg, Germany

@Tams group

Praktikum: 5 & 6

Telebot sensors and actuators

Lecturers

Houxiang Zhang
Manfred Grove

TAMS, Department of Informatics
University of Hamburg, Germany

@Tams group

Praktikum: 7 & 8 & 9

Telebot system integration

Lecturers

Houxiang Zhang
Manfred Grove

TAMS, Department of Informatics
University of Hamburg, Germany

@Tams group