Medial Preparation
of RoboNewbie for e-Learning

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The best way to understand (Artificial) Intelligence and Robotics is programming robots

RoboNewbie Framework

For experiments with simulated humanoid robots.

Required general resources:

- Normal computer
- Windows, Java, NetBeans, Java 3D

Required special resources

1. RoboNewbie
2. MotionEditor
3. Simulator SimSpark (Soccer playing: RoboCup)

Download: http://www.naoteamhumboldt.de/projects/robonewbie/

Robot Soccer as Challenge

Chess:
- Static
- 3 Minutes per move
- Single action
- Single player
- Information:
  - reliable
  - complete

Soccer:
- Dynamic
- Milliseconds
- Sequences of actions
- Team
- Information:
  - unreliable
  - incomplete

	Year	City
🇯🇵	1997	Nagoya
🇫🇷	1998	Paris
🇸🇪	1999	Stockholm
🇦🇺	2000	Melbourne
🇺🇸	2001	Seattle
🇯🇵	2002	Fukuoka
🇮🇹	2003	Padua
🇵🇹	2004	Lissabon
🇯🇵	2005	Osaka
🇩🇪	2006	Bremen
🇺🇸	2007	Atlanta
🇨🇳	2008	Suzhou
🇦🇹	2009	Graz
🇸🇬	2010	Singapur
🇹🇷	2011	Istanbul
🇲🇽	2012	Mexico City
🇳🇱	2013	Eindhoven
🇧🇷	2014	Jeao Pessoa

RoboCup
Championships

RoboCup 2006
BREMEN · GERMANY

14 - 20 JUNE 2006

Bremen 2006:
444 Teams in different leagues
with ca. 2500 participants
from 36 countries
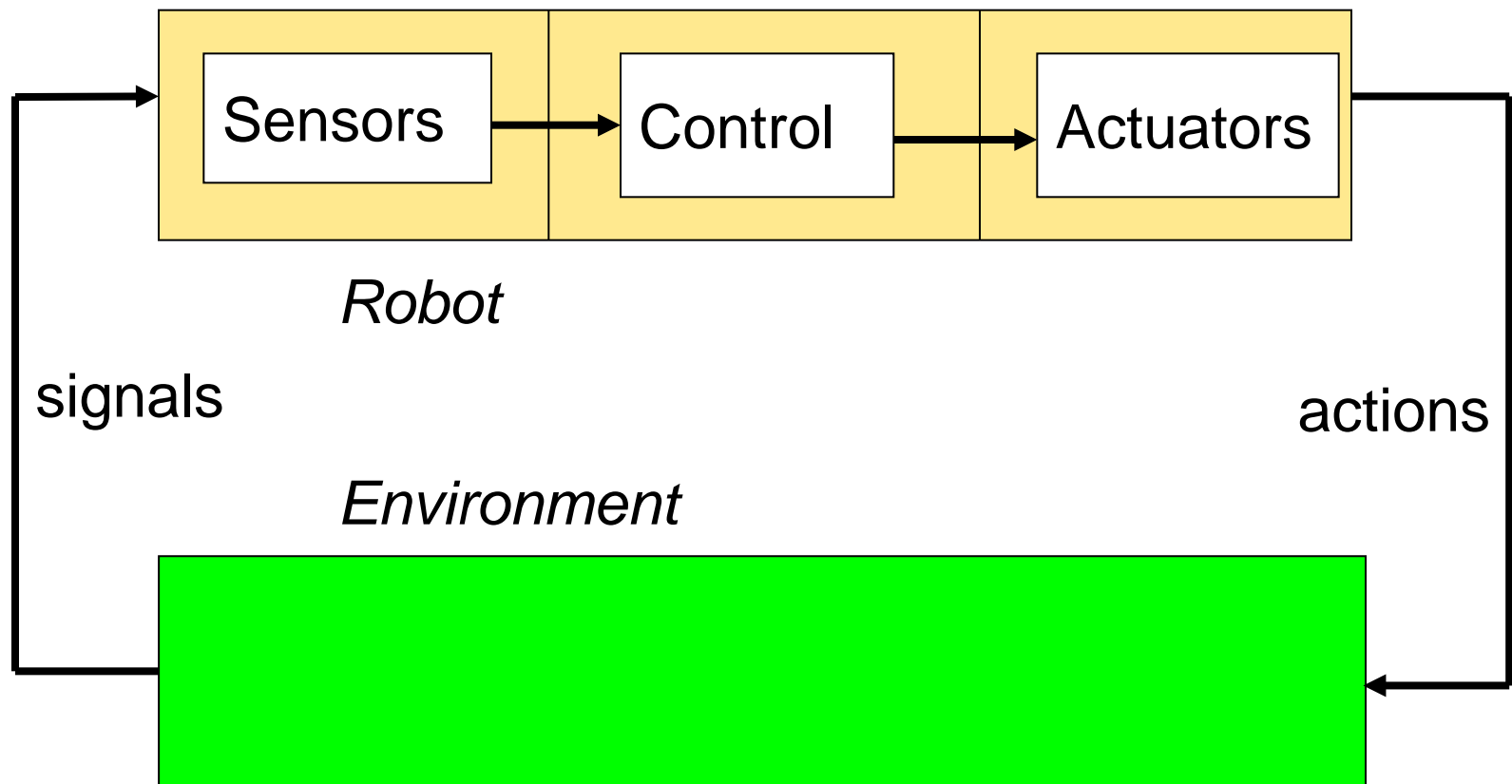
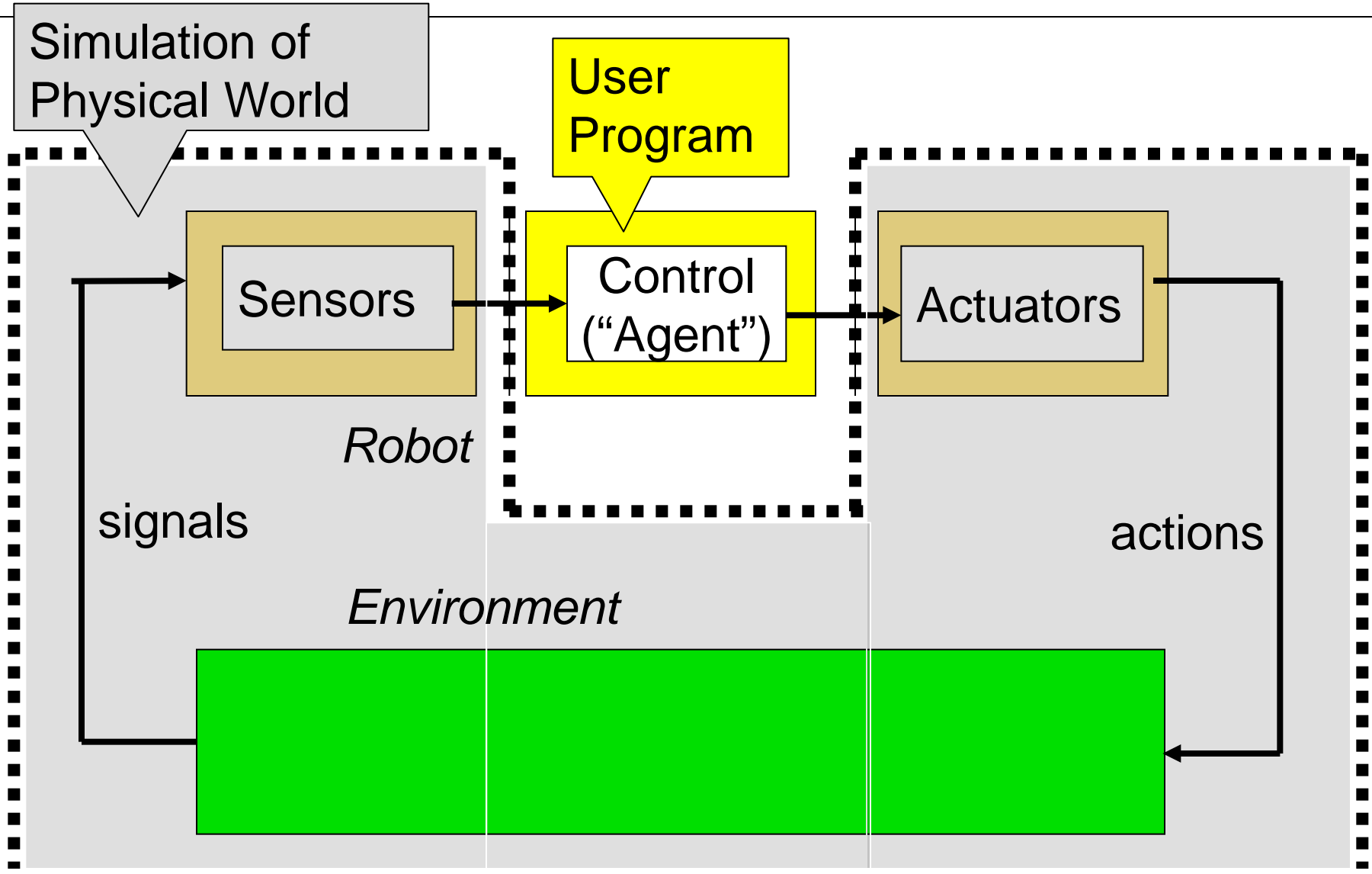# Research and Championships

1st RoboCup 1997

Nagoya (Japan)
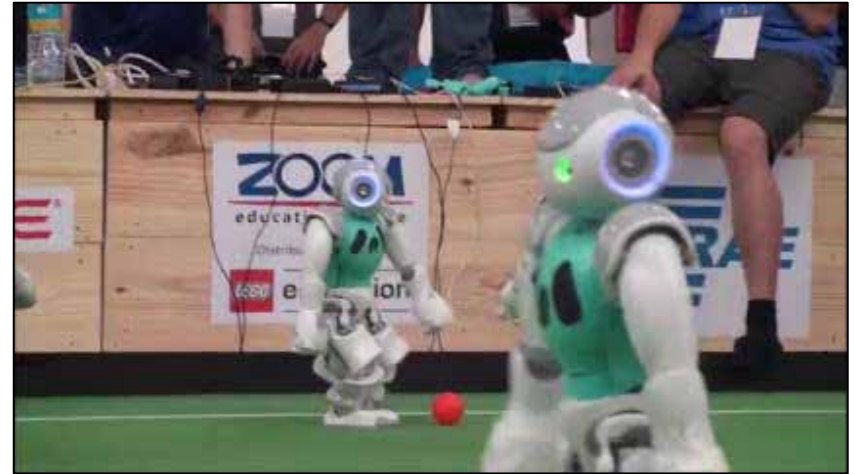
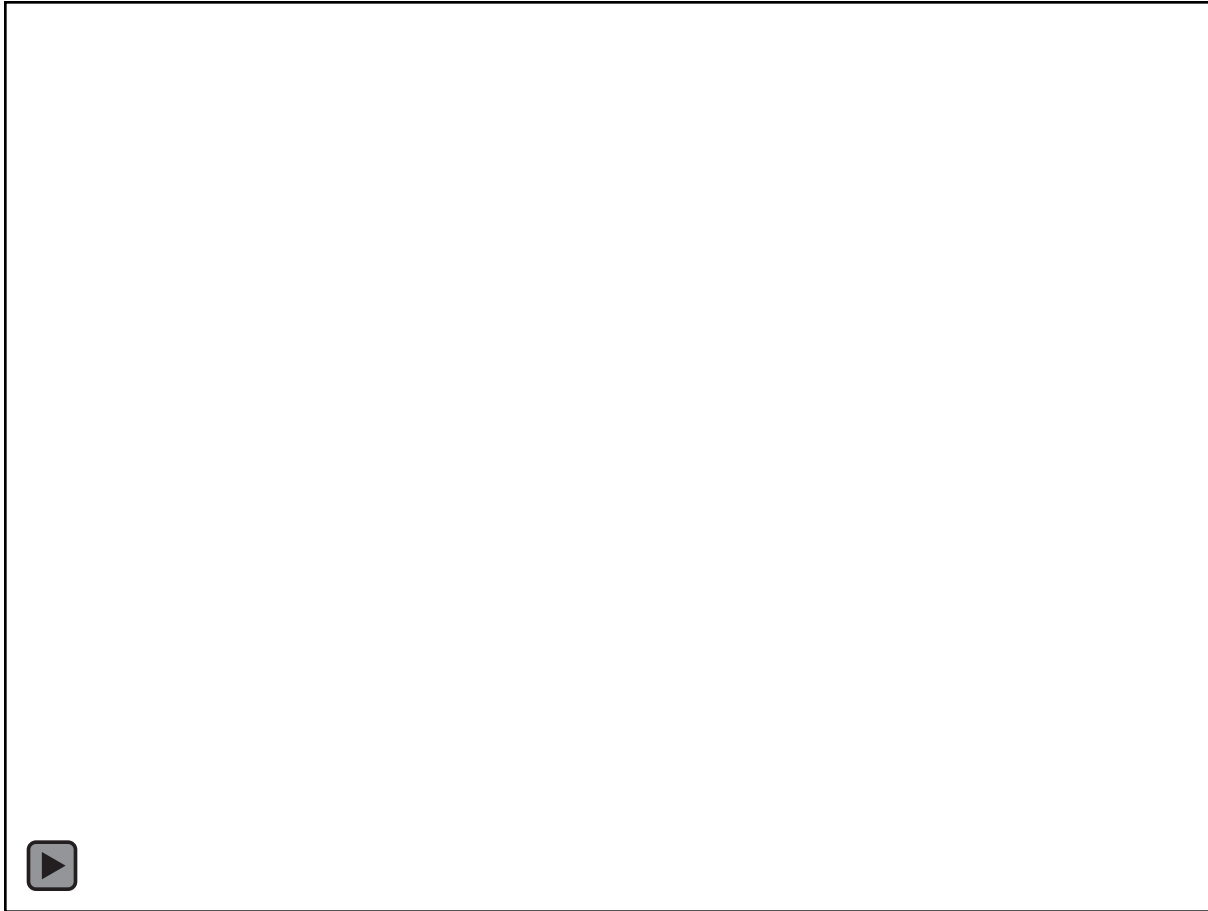18th RoboCup 2014

Joao Pessao (Brasil)

Real Robot in Real World

Simulation

Simulation of Physical World

User Program

Sensors

Control ("Agent")

Actuators

Robot

signals
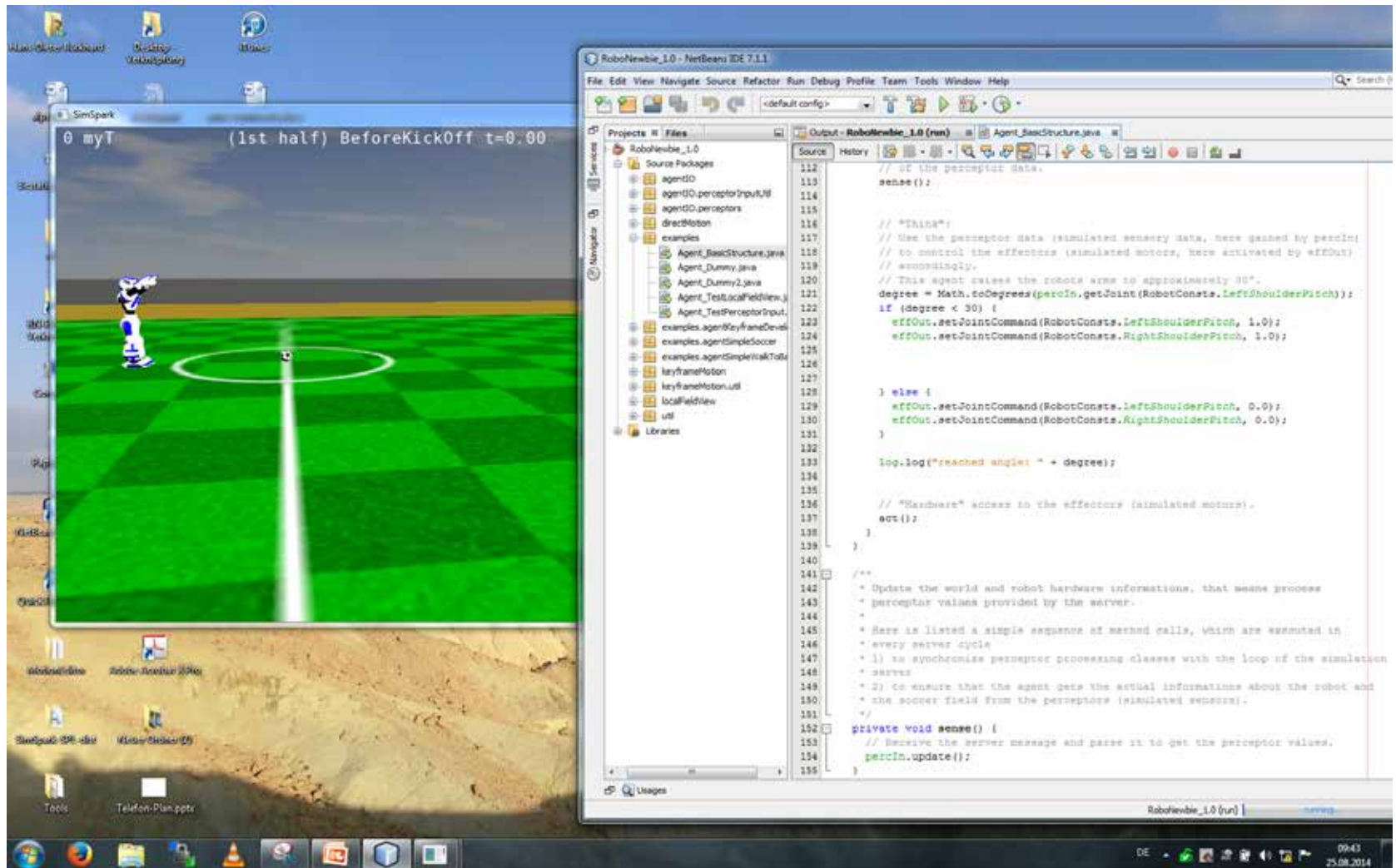
actions

Environment

Simulated Soccer

RoboCup2012 Mexico City Final Match (1.half)
UT Austin Villa (University of Texas at Austin, USA)
vs. RoboCanes (University of Miami, USA)

RoboNewbie

Uses the soccer similation of the RoboCup community.

Provides a framework for connecting players to simulator.

Provides first examples.

RoboNewbie: Installation < 30 minutes

RoboNewbie was used

In Robotics courses with about 30-40 hours lectures/exercises

… according to our DAAD project in
Novi Sad, Rijeka, Sarajevo, Plovdiv.

… according to other DAAD funding in
Ohrid.

In other courses in Warsaw and Berlin.

Students can exercise

Problems concerning

- Perception

- Motion

- Decision making

All must be integrated according to soccer play.

Final competition:

    Groups of students compete

    with programs for fast scoring players.

Students exercise

Best result up to now:

Plovdiv June 2014

Damyan Damyanov
Ivelin Rusev
Petar Bilev

RoboNewbie at a Secondary School

Part of an extended Informatics course.

- Based on Java programming skills.
- Needs some more explanations
   concerning underlying Mathematics and Physics.

Workshops about usage of RoboNewbie

held by the students for

- interested teachers
- new students

Preparation for e-Learning

Plans for a complete course.

Start with our tutorial for RoboNewbie:

Transfer existing slides to videos.
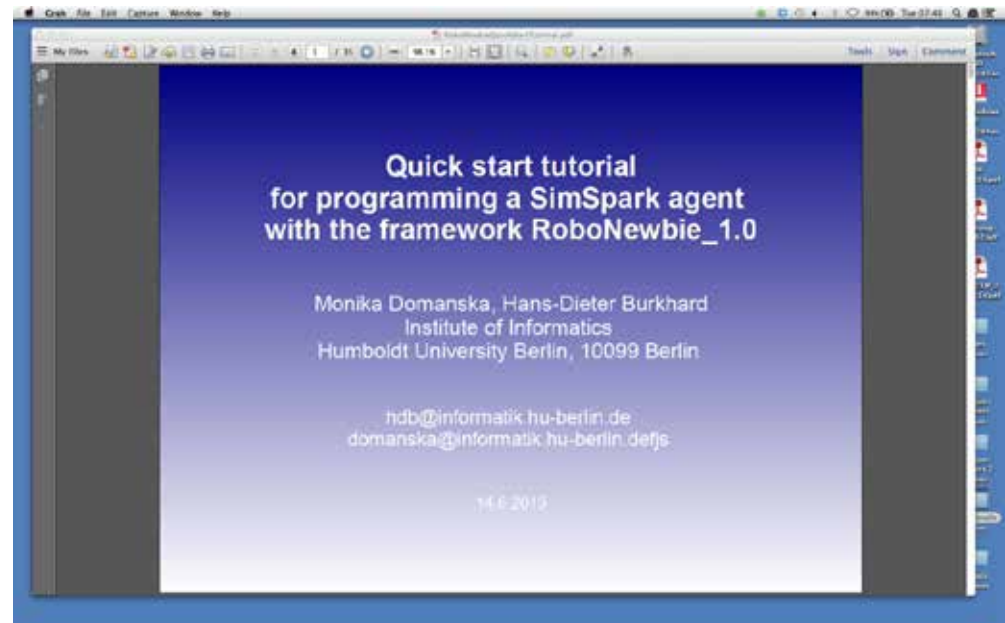
Structure of Videos

No replay of a lecture

Short episodes

| *How to move a limb* |

Big screen for presentations, examples, …

| *Scheme of all joints,*
 Interesting parts of programs, … |

Questions, exercises:

Integrated in episodes with discussion of possible results

| *Task: Program a head movement* |

Preparation

Minimize cutting

Produce complete (parts of) episodes as a whole

Scripts with pre-planned text and links to presentations
   Appearance related to perspective of student

Prepared presentations: examples, exercises, results, …

Programs: code, parts to show/change
Running programs
Moving robot

First trial

First learned lesson

- Use robot for demonstration of gestures

- Highlight important parts of code

- Don't be stuck at prepared texts

- But perform demonstrations strictly as prepared

- Keep the predefined ordering of demonstrations

Thank you!

By the way: Next RoboCup Competitions will be

- Hefei (China) 2015 July 5-11
- Leipzig (Germany) 2016 June 30- July 4

Promotion Video for RoboCup 2016