

Welcome to our presentation

Aibo field localization

(<http://www.science.uva.nl/~baslamet>)

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RoboCup

RoboCup

4-Legged League
Code Overview

New Rules 2005
Playing Field 2004
Playing Field 2005

Movie

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Questions?

- International robot soccer
World Championship



- July 2005 - Osaka
- 'By the year 2050, develop a team of fully autonomous humanoid robots that can win against the human world soccer champion team'
- Teams have to publish their code after each RoboCup

4-Legged League

RoboCup

4-Legged League

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- Played with Aibo's
- 4 vs 4:
 - Goalie
 - Defensive supporter
 - Offensive supporter
 - Striker



- The Dutch Aibo Team
 - Joint effort of various Dutch universities
 - First participated in 2004
 - Aims for victory in 2005

Code Overview

RoboCup
4-Legged League
Code Overview

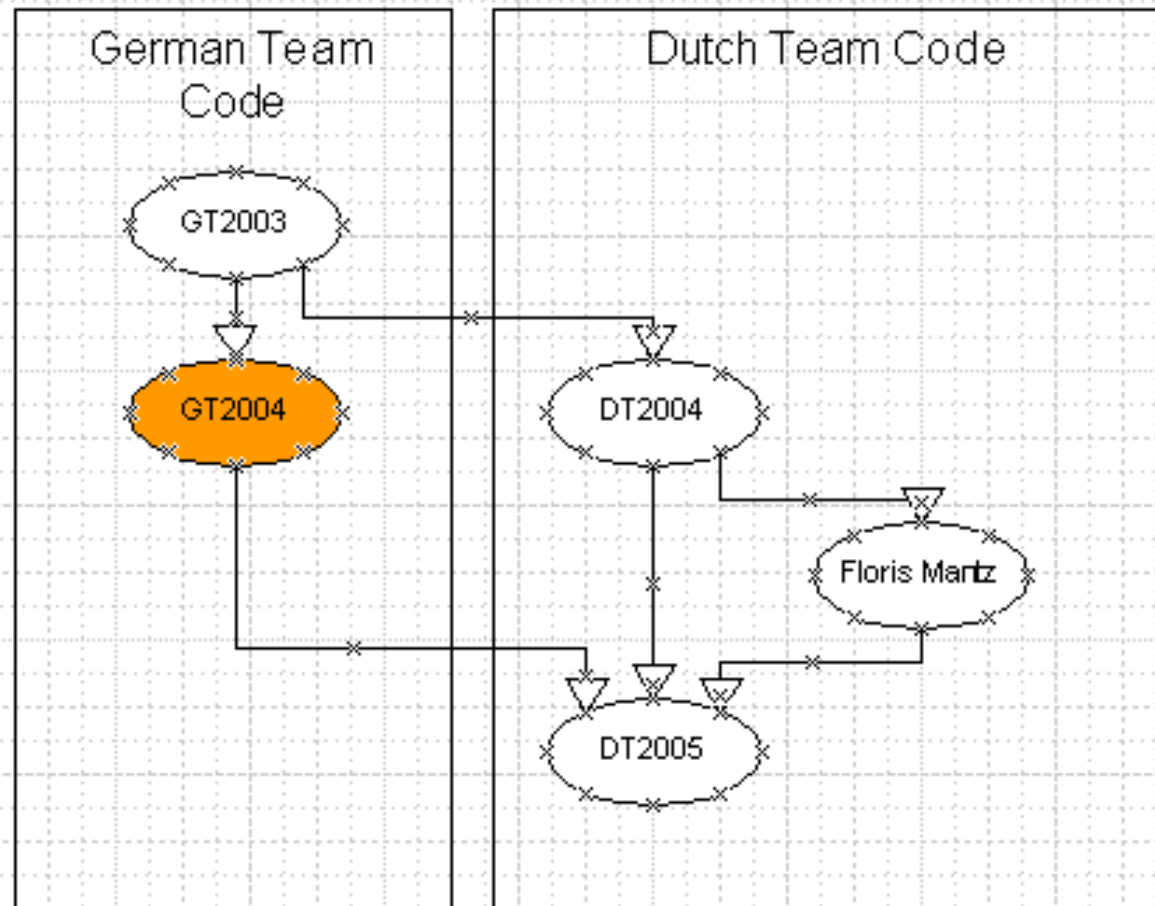
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- Increasingly natural soccer playing
- Changes for 2005:
 - Bigger playing field
 - White borders are removed
 - Colored marker poles change location
 - Introduction of out-ball concept
 - Robot's should stay inside the field
- Our project:
 - Determine problems that arise
 - Analyze and document possible solutions
 - Implement solutions for DT2005 code

Playing Field 2004

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RoboCup Final 2004

- Germany vs Australia (5-3)



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1. Initiation and start-up

- Project start-up
- Set-up soccerfield according to new rules
- Read-in
- Install GT2004/DT2004

2. Observation and analysis

3. Development and test

4. Round-up and paper

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- Could not get DT2004 to work (yet)
- We have GT2004 working

- Initial acquaintance with research field
- Hypothesized problems based on intuition and acquired insight
- Confirmed most of these with experienced Aibo programmers

Overall: we are half-way observation stage

Aibo Problems

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- Localization becomes highly inaccurate
 - Old field size is hard-programmed in
 - Marker poles are moved
 - Extensive usage of white border
 - More visual distraction from audience
- Behavior is based on closed-border field
 - Bounce effect of borders is used
 - No awareness of out-ball situations
 - Robots don't know they should stay in the field

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- Next Monday we will confirm our problem statements with an expert
- In-depth analysis of how the problems relate to various software modules
- Design solutions and verify these with experts
- Implement as much as possible

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Questions?

- Next week
 - Confirm current findings with experts
 - Relate problems to code/software modules
 - Design and implement solutions
- Last week
 - Round-up software development
 - Paper and presentation
 - Communicate all findings and solutions back to Dutch Aibo Team

Demo RobotControl

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The screenshot displays the RobotControl software interface. At the top is a menu bar with 'File', 'View', 'Robot', and 'Help'. Below it is a toolbar with various icons for simulation control. The main window is divided into several panels:

- Left Panel:** A configuration window for 'Xabsl2 monitor and tester'. It includes a 'Send' button, a 'headcontrol' checkbox, and a 'phys. robot' checkbox. Below these are dropdown menus for 'ball handling' (set to 'unchanged') and 'Agent' (set to 'GT2004 - soccer'). A section titled 'Option Activation Path:' lists several options with their respective times. Below that, 'Active Basic Behavior:' is set to 'stand', and 'Generated Action:' is also 'stand'.
- Center Panel:** A 2D schematic of a soccer field. A red robot is positioned near the center, with green lines radiating from it, representing its field of view or sensor range.
- Right Panel:** A 'Module settings' window showing a table of modules and their configurations. The table has three columns: 'modules', 'solutions robot', and 'solutions local'.

modules	solutions robot	solutions local
ColorTableModule	ColorTable4Module	ColorTable4Module
SensorDataProcessor	GT2004	GT2004
ImageProcessor	GT2004	GT2004
BallLocator	GT2004	GT2004
TeamBallLocator	GT2004	GT2004
ObstaclesLocator	GT2004	GT2004
PlayersLocator	GT2004	GT2004
SelfLocator	GT2004	GT2004
RobotStateDetector	GT2004	GT2004
CollisionDetector	GT2004	GT2004
BehaviorControl	GT2004-soccer	GT2004-soccer
MissionControl	GT2004	GT2004
WalkingEngine.normal	GT2004	GT2004
HeadControl	GT2004	GT2004
LEDControl	GT2004	GT2004
GetupEngine	GT2004	GT2004
SoundControl	GT2004	GT2004
SensorBehaviorCont...	disabled	disabled
- Bottom Panel:** A 'Message console' window showing system messages. The messages include: '[HC_GT2004 Xabsl2Engine]: created a new Engine (30 ms, 53248 bytes)', '(GT2004 Xabsl2Engine): created a new Engine (1132 ms, 1963680 bytes)', 'player: red 4, MAC Address: 000000000000', '(GT2004 Xabsl2Engine): created a new Engine (1212 ms, 1904640 bytes)', and 'player: red 2, MAC Address: 000000000000'.
- Bottom Left:** A 3D simulation window showing a top-down view of the soccer field with several robots (red and blue) and a ball. The field is marked with green lines.
- Bottom Right:** A 'Image Viewer' window showing a real-time camera feed of the physical robot on a green field.

At the bottom of the interface, there is a status bar with the text 'Ready' and a file path: '000000 [99/1136 JPEGImage test.log]'.

Demo by Roberto Valenti

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Do you have any questions?