Kickoff Software/Team Project robOTTO

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Chair of Intelligent Systems

Organization

- Time and location:
  - Start: 20.04.2015
  - End: 05.08.2015
  - Lab: G29-035

- Meetings:
  - Individual meetings for each group: every week (time will be set by the lecturer)
  - Get together meetings for all: every two weeks (Wednesdays 15:00 – 16:30 G29-035)

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Teams

- 4 teams of maximum 4 students

- Team organization: one team leader and two or three members

- Team leader:
  - Distributes the subtasks and takes car of the entire process
  - Communicates with the lecturer
  - Responsible for the documentation

- Presentations must be done by all the members

- Prerequisites:
  - Courses: PKES + TE2
  - Programming: C++ | Python fluently | ROS
  - Enthusiasm and teamwork

Evaluation

You must deliver

- Working Prototype

- Code

- Documentation

- Project management

- A talk of maximum 20 minutes on August 5th , 2015

- Video or Demo depending on task

- Bachelor students may get a "ungraded certificate"

- Master students get an individual grade

Topics

- Simulation of Robotino Robots in Logistic League Environments

- Solving the Orientation Task of the @Work League

- Winning against a Reference Soccer Team in a 3D Simulation

Simulation of Robotino Robots in Logistic League Environments

- Logistics League: http://www.robocup-logistics.org/

- Major changes in rule set form 2014 to 2015

- Reference platform changed: Robotino 2 → Robotino 3

- Existing simulation environment for old rule set:

  http://www.fawkesrobotics.org/projects/lls

- Adapt simulator to new rule set

- Adapt existing robOTTO software:

  https://github.com/robottoOvGU/robotto-ros

- Goal: Evaluate the new Simulation Environment using Robotino 3 and robOTTO software. The task is solved if the robotino 3 is able to move and operate every machine on the field

Solving the Orientation Task of the @Work League

- @Work League: http://www.robocupatwork.org/

- Basic Navigation Test

- Platform: Kuka Youbot

- Camera System detecting AR-Tags

- Create Path based on AR-Tags

- Follow Path

- Simulation Environments:

  - http://www.youbot-store.com/developers/software/simulation/ros-gazebo-simulation

  - http://www.youbot-store.com/developers/software/simulation/v-rep

- Or Real Robot

- Goal Follow a path of AR-Tags with the robot

Winning against a Reference Soccer Team in a 3D Simulation

- RoboCup Soccer Simulation League:

  http://wiki.robocup.org/wiki/Soccer_Simulation_League

- Simulator:

  http://simspark.sourceforge.net/wiki/index.php/Soccer_Simulation

- Goal: Implement Soccer Team and win against Reference Team Skynet: https://github.com/TeamSkynet/RoboCup-Soccer-Team-2011

- Alternative Goal: Benchmark of Team