

# Playing Outdoor

RoboCup SPL Open Challenge 2014, Nao Devils Dortmund

## 1 Demonstration

The SPL made significant progress during the course of the last decades. This was additionally forced by rule changes affecting the playground and environment of the SPL. One of the next logical steps is that robots play outdoor like humans.

The idea and setup of the demonstration is rather simple: Team Nao Devils will show a short demonstration game between a striker and a goalie in an outdoor environment. The field size is approximately 4\*3 meters. The ground is made of artificial grass and differs significantly from the ordinary carpets used in the competition.

Walking on artificial grass is a challenging task. Thus, Nao Devils will demonstrate the use of step modifications (lunges) to balance disturbances. Moreover, this demonstration shows that the image processor is able to deal with natural lighting conditions in order to find and kick the ball into the goal.

## 2 Remarks

It was requested by the TC to clarify how the time needed for the demo can be minimized and the reasons why the challenge must be demonstrated outside.

- The demonstration must be conducted outdoor in order to proof that our calibration-free image processor is capable to deal with natural lighting conditions.
- Team Nao Devils will ensure that the demonstration itself will not exceed 3 minutes.
- We suggest to setup the field outdoor just before the open challenge session.
- We will start the demonstration 5 minutes after the last indoor demonstration so that people are able to commute to the outdoor field.
- Team Nao Devils will bring artificial grass to the venue, but will use one of the SPL goals from the venue.

### 3 Backup Demonstration

The backup demonstration will be shown in the following cases:

- The challenge is being rejected by the TC.
- The weather prevents an outdoor (rain, strong wind, ...) demonstration at the scheduled time.
- Any other unexpected or projectable reason (security concerns, no appropriate place at the venue, place is not reachable within five minutes).

The backup demonstration shows that the Nao is able to walk on artificial grass with lunges. Additionally, a video of an outdoor game with the Nao robots conducted in front of our building will be shown.