Data Driven Research and Development in RoboCup

Humboldt-Universität zu Berlin, Adaptive Systems Group
Heinrich Mellmann, Benjamin Schlotter, Philipp Strobel, Dominik Krienelke
{mellmann,schlottb,strobel,krienelk}@informatik.hu-berlin.de

Why?

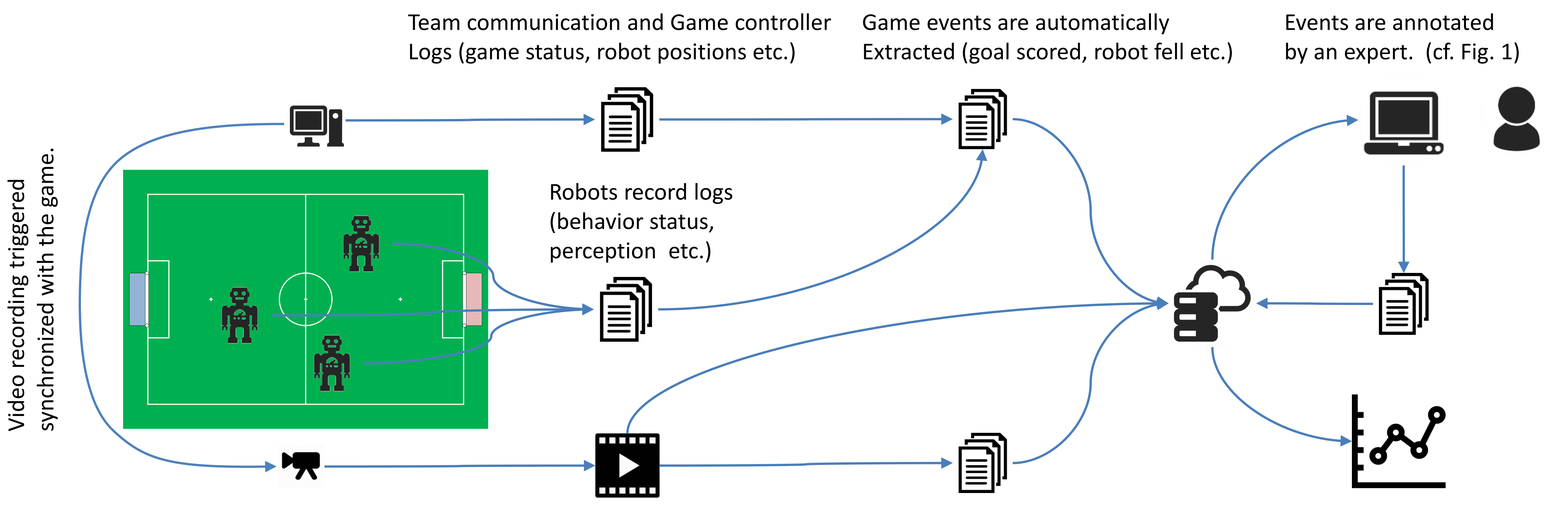
A **crucial part** of an empirical scientific discipline is a set of **methods** and **practices** for **evaluation** and **comparison** of proposed models and solutions. RoboCup provides a unique common test scenario for robotics, but its potential is not used to the fullest by far. Conducting games costs a tremendous amount of effort. The scientific outcome, however, is quite limited and often not very conclusive. In most cases only the final score of the games provides slim feedback about the performance of a team.

In this project we develop a workflow and tools to support **collection, organization and analysis** of large amounts of RoboCup specific data enabling detailed analysis to promote data driven research and development in RoboCup.

Aim of the Project

Components of the proposed toolbox are:

1. Automatic recording of game videos synchronized with team communication and game control data;
2. Infrastructure for recording of log files on each robot during the game;
3. Synchronization of local (logs recorded by the robots) and global (game videos) information sources;
4. (Semi) automatic mining in log files;
5. Tool for manual annotation of events in videos;
6. Augmentation of videos with meta information (detected robots).



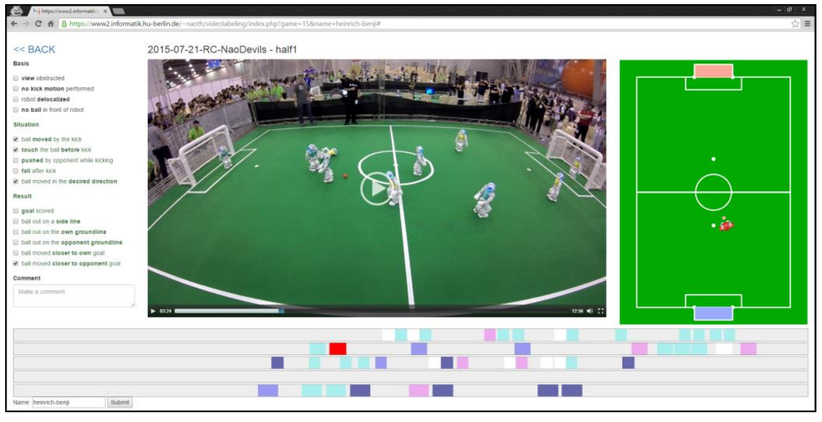


Fig. 1. Tool for manual annotation of events in videos.

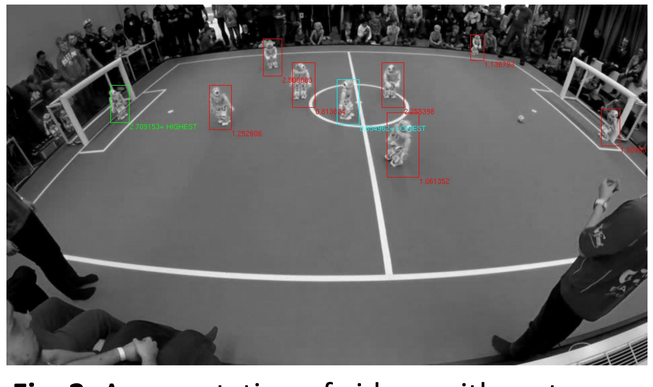


Fig. 2. Augmentation of videos with meta information (here, detected robots).

`http://robocup.tools`

All tools developed within this project and the collected data are made publically available.

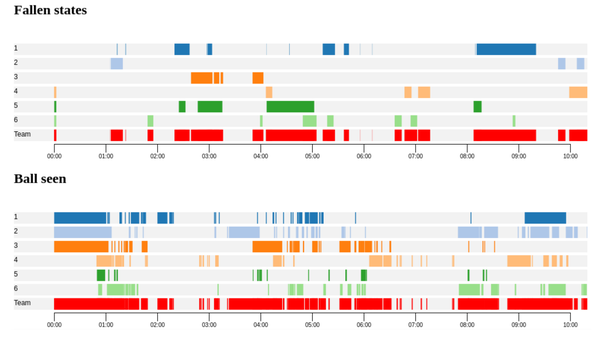


Fig. 3. Visualization statistical data.