Soccer is one of the most popular sports in the world, attracting billions of fans. The Fraunhofer Heinrich Hertz Institute offers a wide spectrum of automatic analysis technologies for soccer broadcast. These technologies enable faster and more precise retrieval of soccer content as well as a more interactive experience when watching soccer matches.

Challenges

Current approaches for (semi-)automatic soccer analysis rely on special cameras or sensors to perform analysis such as player detection and player tracking. Other types of metadata – e.g. highlight annotation, player identification – must be collected manually. Automatic analysis of broadcast content is performed without relying on dedicated cameras or other specific sensors.

When analyzing broadcast content additional challenges have to be dealt with. Content from moving cameras usually exhibits motion blur that makes automatic analysis more challenging, as well as possible compression artifacts and interlaced content.

Technical Background

The following modules have been developed by Fraunhofer HHI

- Identification of the active camera view (overview, medium, close-up or out-of-field)
- Replay detection
- Visualization of the camera visible part of the play field
- Player detection and tracking
- Assignment of player to their teams
- Localization of player position on actual play field
- Detection of sport specific highlights

Each tool is working fully automatically, relying on broadcast content. The combination of these tools ensure an effective semantic description of soccer content.

Benefit

- Independence of additional technical equipment (e.g. cameras or sensors)
- Easy navigation in soccer videos
- New search modalities – e.g. search for scenes where many players are close to the goal
- Quickly identify highlights in a soccer match