

Staying on the ball

To advance their team (preferably to the Champions League) football coaches analyze the fitness and moves of their teams and utilize the acquired knowledge as a basis for training schedules and comparison of players. The new LPM (Local Position Measurement) system automates these tasks. The system enables the analysis of game strategies, player positions, paths, velocities and achievement curves in combination with player data such as pulse.



OVERVIEW

LPM is a highly precise, dynamic real-time positioning system that provides the coach with position data for each individual player. These data help the coach to much better analyze the tactical behavior and the physical condition of the athletes. The extension of the LPM system that was developed at SCCH now enables tracking the position of the ball. This opens new application possibilities both in training and in competition.

CHALLENGE

This system extension computes the ball position at any time from multiple video images of the same scene. This requires positioning at least 12 cameras around the field. Resulting video images are continuously analyzed, the ball is identified, and its most likely 3D position is determined. Significant challenges are posed by the low resolution of the cameras compared to the playing field, the speed of the ball, and the fact that the ball is often partially or completely hidden by players. The new method developed by SCCH staff meets these challenges and delivers excellent processing speed. The rapid analysis in real time distinguishes the extended LPM system from other video-based analysis systems on the market.

SOLUTION

The LPM system for football is the result of a joint venture called Inmotio Object Tracking and involving Abatec and the Dutch research facility TNO. The system is already in use with the internationally renowned football teams AC Milan and PSV Eindhoven. Additional teams will be profiting from the system in the future. The LPM system has been presented to other top teams such as Real Madrid, Celtic Glasgow and FC Barcelona. Likewise the system was introduced to Austrian teams and the Austrian national team, and especially Rapid Wien and Sturm Graz showed a high level of interest.

“The tracking system has potential application domains beyond football. It is also used in behavioral research, industry and science. Additional application domains include bicycling, horse racing, airport monitoring and container port logistics”, according to Friedrich Niederndorfer, chairman of the board of Abatec AG.

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