Player Analysis Technology Approval report

FlightScope Player Tracking

Test code: PAT-16-016

Serial no: n/a

Software version(s):
Windows 1.0

Firmware version: n/a

Issue date: 20 January 2017

Objective: To test and evaluate FlightScope Player Tracking Player Analysis Technology according to Rule 31 of the 2016 Rules of Tennis.

Result: Approved

SUMMARY

Multiple cameras fixed around the court are used to capture images of play. The cameras are connected to a laptop. Software on the laptop reconstructs the player positions in three dimensions from the camera images.

The player position data are used to generate coaching information including: distance covered, player velocities and court coverage.

The event owner/sanctioning body/customer determines the information that can be distributed by FlightScope. Information can be sent to the in-stadium display, TV broadcast and internet-enabled devices.

Restrictions on the access by a player to FlightScope Player Tracking components during periods when coaching is and is not allowed are as follows:

COMPONENT	NO COACHING	COACHING
Video cameras	Permitted	Permitted
Auxiliary device (e.g. smartphone)	Not permitted	Permitted

MAIN COMPONENTS

The main components of the system are described in table 1 and depicted in figure 1.

COMPONENT	FUNCTION(S)
Video cameras	Capture images of play
Raspberry Pi (single-board computer)	Synchronise cameras
Laptop	User-interface to start/stop data capture, transmit, communicate, store and process data
Auxiliary device, e.g. smartphone (optional)	Communicate data

Table 1. Description of the components of the FlightScope Player Tracking system.
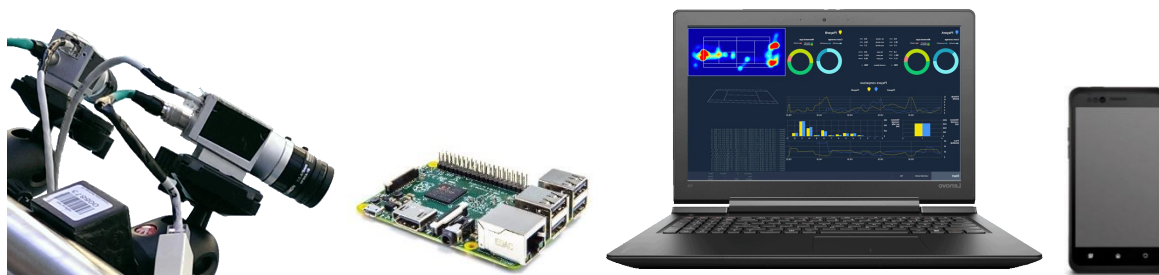

Figure 1. Components of the FlightScope Player Tracking system (from left to right): video cameras; Raspberry Pi; laptop; auxiliary device (smartphone). Not to scale.

DATA CAPTURE AND PROCESSING

Multiple (at least two) video cameras are mounted at fixed locations around the court to capture images of play. Each camera is connected via Ethernet cable to a laptop or personal computer (PC). A Raspberry Pi is used as a pulse generator to synchronise the cameras.

A designated operator starts/stops data capture on the laptop. Alternatively, the system can be integrated with live scoring software to automatically start/stop data capture and/or segment data according to the score (e.g. provide statistics for each set). Proprietary software on the laptop reconstructs the positions of the players on the court in three dimensions.

COMMENTS

The system functions independently of the players (does not require any player input). It is typically run by a single operator.

Transmission of data between data capture and processing components is on wired, isolated network, limiting its susceptibility to hacking.

DATA COMMUNICATION

The event owner/sanctioning body/customer determines the information that can be distributed by FlightScope.

Match statistics and graphics can be sent to multiple recipients. These include:
1. In-stadium display
2. TV broadcast
3. Internet

Information includes: position of the players in three dimensions; distance covered, player velocity (peak and average); movement type (standing/walking/running); proportion of court covered; and heat maps of court coverage.

COMMENTS

The event owner/sanctioning body/customer determines the information that can be distributed by FlightScope.

Depending on the event, coaching information from FlightScope Player Tracking may be available on the in-stadium display, TV and/or internet-enabled devices (e.g. smartphones). Therefore, players must not have access to TV and internet-enabled devices when coaching is prohibited.

ADDITIONAL INFORMATION

Client:
FlightScope Sp z o.o.
Wiśniowa 1
44-144 Żernica
Poland

Date tested: 13 December 2016

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Revision number: 0

Please note:
Approval does not attempt to, nor does it in fact, establish the accuracy or reliability of data or fidelity of its transmission.