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EP 0693206 A1 WO 95/10337 A1 WO 93/01867 A1
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INT CL^6 G01S
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(54) Abstract Title
Player tracking system

(57) A Player Tracking System which will monitor each player on a playing area using Transmitters attached to each player and at certain fixed points around the playing area. Data is fed from receivers into a computer which will analyse the position of each player and decide as to whether a player is causing an infringement of the laws of the game. All position data is fed via a transmitter to Officials who have an Audio/visual device, this then will enable a more accurate decision to be made. This is an ideal solution for football where assistant referees have difficulty deciding if a player is in an off-side position.

FIG 1.

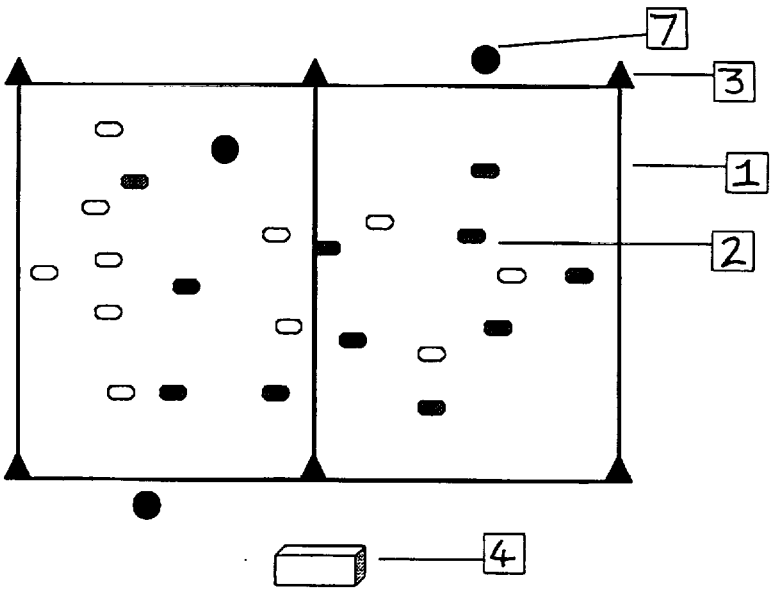

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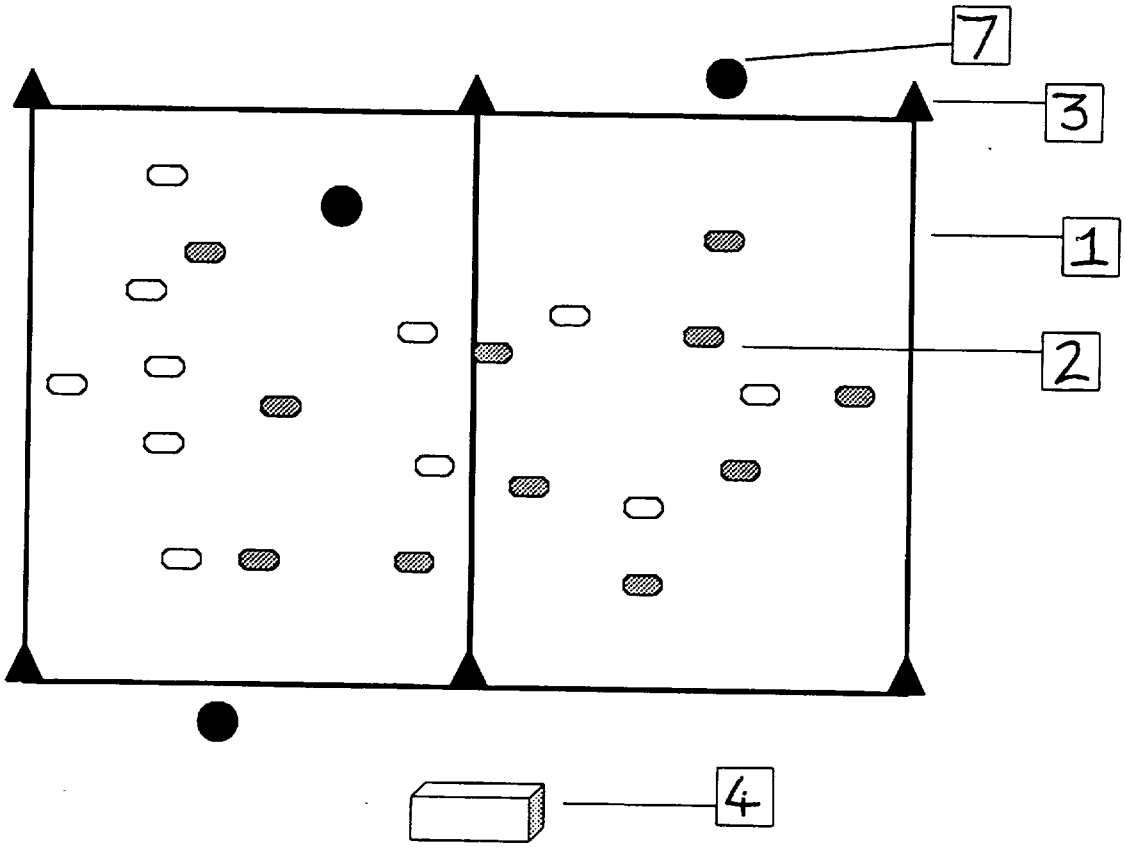
FIG 1.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3
1
2
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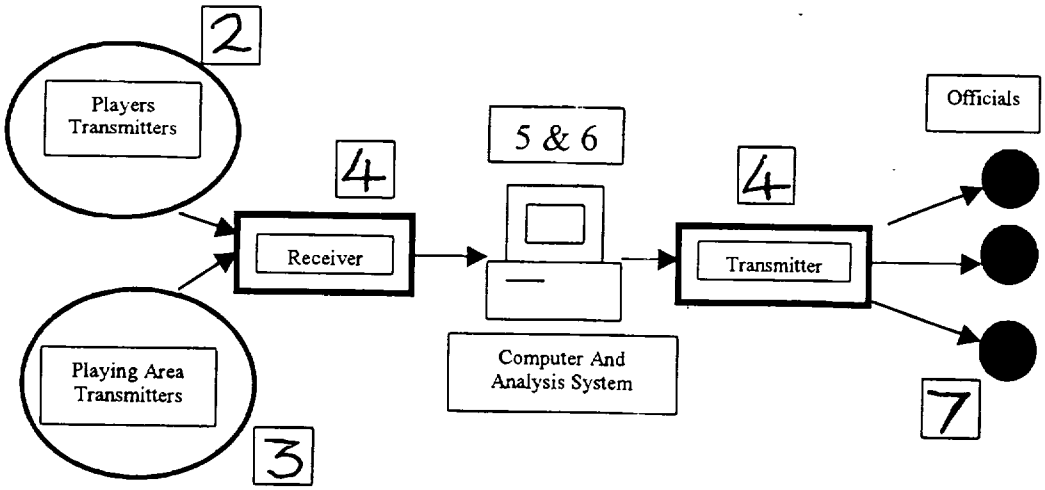
FIG 2.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Players Transmitters
4
5 & 6
4
Officials
Receiver
Transmitter
Playing Area Transmitters
Computer And Analysis System
3
7

PLAYER TRACKING SYSTEM

This invention relates to a player tracking and position analysis system which informs Officials in charge of a game if some rules of the said game are being infringed by the players.

All sports have rules and laws which need to be applied to, to ensure fair play and to allow advantages for clever play of the sport being played in an attempt to win a game or tournament. This invention allows accurate tracking of each player relative to all other players and fixed points within the playing area, giving instant information to Officials at key points of the game. One application of the system would allow officials to give an instant and accurate decision of whether a player was off-side when the ball was played forward in a game of football, without having to have necessarily kept up with play or be perfectly inline with the last defender. Up to now video evidence, used in other sports has often slowed play down while a decision is being made by playing back a tape frame by frame. This is an acceptable method for some lower tempo sports but, sports that rely on a high tempo and an emotional atmosphere, this method is completely unacceptable. This invention would give split second analysis and information for accurate interpretation of events to allow the game to continue without the fast tempo and atmosphere being destroyed.

According to the present invention there is provided a Player Tracking System comprising of a Transmitter worn by all players and at fixed points within the Playing Area, which transmits their position to a computer. This computer analyses the data and transmits output data to Officials, who have an Audio/Visual device, informing them if a player's position is an infringement of the laws of the game, i.e. Such as off-side in football.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying diagrams in which :-

Fig 1. Shows the Playing Area, Players and Officials.

Fig 2. Shows the flow of data.

Referring to the drawings, the Player Tracking System comprises miniature Transmitters worn by Players 2 and at Fixed Points 3 around the Playing Area 1. The transmitters continuously send their signals to a master Transmitter/Receiver 4. This Transmitter/Receiver 4 is connected to a Computer System 5 that runs a Computer Program 6 to analyse the Players and Playing Area positions.

The Computer Program 6 will divide the incoming data into two separate halves and deduce if Players 2 are causing an infringement of the rules of the game. It will forward the resulting data to Transmitter/Receiver 4 that in turn will send the data to each separate Official 7, who is responsible for their half of the Playing Area.

In Fig 1, in the right hand side of the Playing Area, an example is shown of a 'white player' in an offside position in a game of football. The Player Tracking System would detect this player's positions and will inform the Official who is responsible for that half of the Playing Area by means of an Audio/Visual device that the Official will have. Whenever the ball is played forward in the direction of that player the Official will already know that a player is in an offside position. The Official can then make a decision as to whether that player is interfering with play and an infringement has been committed.

In order to provide the best results the Transmitters worn by each Player 2 should be as small and as powerful as possible. The master Transmitter/Receiver 4 should be positioned as to successfully triangulate the positions of Players 2. Transmitters will be located around the boundaries of the Playing Area 3 to show the playing boundaries. Each Official will have an Audio/Visual device which will inform him of positions of players and any possible infringements.

Each Official 7 is only responsible for their own half of the Playing Area 3, so each will only receive data relating to that half.

The Computer System would also recognise if any Transmitters were malfunctioning and alert the Officials.

CLAIMS

1 A Player Tracking And Position Analysis System comprising Transmitters worn by each player and placed at fixed points within the Playing Area, which send its position to a computer system. This computer analyses the data and passes the results to a Transmitter which sends the data to an Official with a Audio/Visual device, informing that Official if a player is causing an infringement in that said Officials half of the playing area.

2 A Player Tracking And Position Analysis System as claimed in Claim 1, wherein any statistical information built up from the computer analysis can be used for overall play analysis.

The Patent Office

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Claims searched: all **Date of search:** 9 September 1998

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P):

Int Cl (Ed.6): G01S

Other: Online: WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	EP0693206A1	DAVER	1,2
X	WO9510337A1	KLEIN	1,2
X	WO9301867A1	DAVER	1,2
X	US5524081	PAUL	1,2
X	WPI accession no. 98-209531 & FR2753633A1		1,2
X	WPI accession no. 96-241191 & FR2726370A1		1,2

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.