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IT in Sports

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Анотація

Стаття розповідає про IT інновації та їх використання у індустрії спорту. Ілюструється залежність сучасного спорту від інформаційних технологій та перспективи його розвитку. Також описані системи, що забезпечуватимуть відстеження стану організму спортсмена дистанційно.

Ключові слова: IT, спорт, технології, інновації, інформація, інженерія.

Abstract

The article tells about IT innovations and their implementations in the sport industry. Also it shows the dependence of modern sport on information technologies and prospects of its development. It describes the systems which will provide remote tracking of the sportsman's body state.

Keywords: IT, sport, technologies, innovations, information, engineering.

The modern world is becoming more and more bound with informational technologies. The integration of the computers to our everyday life grows faster and faster, and mostly people are dependent on them and it comes not from addiction but from inability to make something without a computer. But in general IT is tending to make our life easier and more comfortable, especially in the field of humans' health. So the developers are thinking about the new ways of controlling the body state and other conditions.

There are a lot of novelties on the market which became popular from the first sales and some were not released in mass products. Let's talk about some of them.

One of the most gaining popularity IT-sport product today is a fitness bracelet. This device contacts the software on your smartphone and provides bi-connection with your body. It sends the signals about your pulse, also counts your steps per day, calories and other characteristics depending on the model and manufacturer. All the info is displayed in the app or even on the bracelet. This device can wake you up counting the best time due to your biorhythms. There are a lot of different manufacturers who proposes their specific release of the bracelet. All the models are represented on the market and available for customer, depending on his needs and abilities.

The other concepts will change the future of sport.

The second-leading cause of death in athletes is the heat exhaustion. It's very difficult to monitor the temperature change of the person, especially when it's a sportsman whose state can change immediately. The person makes lots of moves while doing sports, fast movements cause pressurization, increasing of heart rate which leads to the sudden increasing of body temperature. Mostly athletes ignore the first signs of overheating, so it may cause a big problem. The thermometer pill will solve this problem. It was developed by NASA and Johns Hopkins University to monitor astronauts from space. The pill contains a quartz crystal sensor and micro-battery wrapped in silicon. Once swallowed, a sensor transmits temperature and heart rate data to the trainer. That device allows to track the temperature data by the responsible person [1].

The next measuring invention is the smart clothing. It uses embedded microscopic sensors and wireless networks to monitor athletes' heart rate, body temperature, hydration and more. All the gathered info can be transmitted to the trainer. You cannot even imagine all the benefits you'll have with this technology. All the medical devices which can be huge and unstable will be built in one shirt.

Using of 3D scanning and computing helps in modelling of different moves to calculate fluid dynamics. Computational fluid dynamics - the subfield of physics that focuses on the movement of air, water or gasses - is indispensable to the design of anything that moves. It is very important when developers want to reduce the air or water resistance with athlete's moving. Using this technology engineers can analyze skin friction. It helps to create special materials and shapes to make aerodynamic costumes. For example, Speedo's AQUALAB used computerized scans of hundreds of athletes to pin-point areas of high friction on

the athlete's body. Using this information swimsuit designers were able to position low-friction fabric in the right locations to reduce drag.

If the athlete has money he can afford the custom-fit equipment. The other way of making appropriate costume, specific one for each person is using the 3D body scanners that analyze body geometry and kinematics in couple with tool-less or direct manufacturing. This technology will make the custom-made clothes on the spot using the information about thousands of the scanned points.

IT is widely used in different spheres which surround modern sport. It is about photo and video recording, sport predictions etc. High quality video capturing, especially slow motion, is used for the monitoring and reviews of some moments. It helps to determine the person who came first, if there are a few people who had finished simultaneously, or to find the reason of someone's fault, or to reproduce the special moment. Sport prediction software is gaining popularity, it proposes statistics and history to predict the winners of the next game and make a bet. It will help sports fans to make money on their hobbies. Scientists are working on the technologies of genetic algorithms to make predictions more accurate and real.

The next novelty is a Smart Soccer Ball. This device will help players to track their skills digitally. The ball has a sensor to measure all the main characteristics: ball speed, spin, its trajectory, and one very important thing – strike point. This sensor is located in the centre of the ball. The mechanism collects all the data and sends it to the paired wireless accepting device. The player will know all the flight details. He will have the opportunity to check features of the other football-players and try to repeat some tricks after them. It has never been so easy to learn how to bend a ball like your idol. With this description you will know exactly how much force you have to exert and where you should place your kick. This ball has accepted weight – maximum approved by FIFA. Player will not feel difference playing with the a Smart Soccer Ball instead of ordinary one [2].

The other unique invention which will help to learn playing tricks is a basketball court in Shanghai called The House of Mamba. It is developed by AKQA and Nike, and it allows to display your recommended direction of moving during the game It has a floor that lights up to guide players through expertly designed training programs. The court is made of LED screens, sensors, and motion-tracking devices, so coaches can upload programs for their teams to follow. Artificial intelligence helps players practice the skills they need to work on, and muscle memory kicks in so that athletes will know what to do when they're playing for real.

So today's sport life depends not only on the physical achievements of a human, but also on the competition of engineers, developers, chemists and so on who tries to use science and information technologies to improve the results of the athlete actions.

Aerospace engineer Kim B. Blair, founder of the Sports Innovation Group LLC, an affiliate of the Massachusetts Institute of Technology, thinks the story is changing. "We've hit a plateau," he says. "The next big thing is the information revolution." These advances will move all developments into the computer era, where everything will be tracked, monitored, optimized, refined and disseminated in ways that athletes can't possibly imagine.

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