Sports Technology of the Future

Shakunt Pandey
The rapid advent of technology has changed the face of sports forever and for better. Now it’s fairer and most importantly easily available to one and all. The Video Assistant Referee (VAR) which was successfully used in the recently concluded mega World Cup Football Championship is the most talked about sports technology at present.

Sports has been enriched by adopting technology and it is now being applied to just about every aspect right from the manufacture of sports equipments to electronic and video decision making to performance enhancing therapies. Athletes and players worldwide are breaking old records and setting new records thanks to improved physical training, health care, and eating habits. This is unfathomable without sports technology – the tools, machines and materials that make good athletes even better.

And so, when present world of sports is full of such awe inspiring technologies, what about the sports technologies of the future? Let’s take a look at some of these exciting future technologies.

The World of Cricket
For the people of the Indian subcontinent, cricket is not just another game, but a religion. We love, live and breathe cricket. Technology has completely transformed this gentlemen’s game which W.G. Grace, Donald Bradman, Sir Garfield Sobers, Vivian Richards, or our original Little Master Sunil Gavaskar, and other cricketing jewels graced. Hawk Eye, Snickometer, Hot Spot, Stump Camera, Stump Microphone, Speed Gun, Third Umpire and the DRS are in use and have made the game more interesting, captivating as well as fairer.

The basic equipment of cricketers is undergoing a sea change and with amazing new technologies coming up it won’t be a long wait for players to use lighter, stronger and durable cricket bats and lighter and breathable protective gears like gloves, pads, helmet, thigh pad and protector. The annoying Velcro strapping will soon be a thing of the past.

The ICC is adopting bats that have swing sensing chips inside. These sensors jointly developed by tech giant Intel and sports start up company Specular will measure the bat’s speed and angle during back lift, impact and follow through. The figures will then be transmitted for immediate analysis by coaches and TV broadcasters. Like the Hawk Eye Technology this will lead to detailed visualisations during each game. Already devices attached to players’ bodies or clothing are becoming a reality of elite international cricket, helping players to understand what is required of them, preventing injuries, identifying illegal bowling actions (chucking), if any.

Bowling machines are in demand but obviously they are for the advantage of batsmen. How about a tech that helps both the batsmen and the bowlers? The answer lies in Dartfish Video Technology and this will become more popular in the coming days. The players can watch themselves bowl and bat as it happens!

Through Dartfish Technology the cricket coach captures the video footage of the player’s stroke and delivery and works through it frame by frame as it is viewed on the TV right next to the player in the centre. The coach is able to draw on the screen highlighting the areas that need the player’s attention. Information can be saved on the computer for future references and players can even take a copy of it to work upon. Dartfish technology can be used in other sports as well like football, tennis, rugby, baseball, swimming, skiing, track and field, gymnastics, combat sports, etc.

Rain has always and still does spoil a good day’s play. Calling off matches altogether or a nail biting finish coming to an abrupt end and results being decided by the Duckworth-Lewis Method has left millions of cricket fans fuming and exasperated. To save the good game of cricket from inclement weather cricket stadiums of the future may come up with retractable stadium roofs. Time and again former English cricketer Kevin Pietersen has rooted for this technology. He knows about this technology because it is used in his home country, at the Mecca of lawn tennis – the Wimbledon’s Centre Court. This can be used in cricket stadiums of the future too.

The cricket stadium roofs of the future may be made of speedily moving folding roof made of PTFE (polytetrafluoroethylene) fabric which is strong, flexible and translucent and allows natural light in but keeps dampness off the ground by controlled air conditioning. Poor light also cannot hinder play as lights installed on the roofs switch on their own.

In a do-or-die situation in a cricket match, the catch-or-miss scenario can sometimes turn cloudy and controversial wherein video shots or zoomed in picture frames from different angles fail to reveal the real picture as to whether the fielder...
had managed to pull back the ball from the boundary ropes cleanly in the nick of time or not. To solve this problem LED boundary ropes may be seen in stadiums. Already LED stumps and bails have become common in today’s cricketing world – it’s only a matter of time when LED boundary ropes will make a debut.

The job of the umpires is the most thankless and their roles may be sometimes deemed to be biased. To make umpiring fair and unbiased there are umpteen technologies that aid in correct decision making. Time is not far when human umpires will give way to robot umpires with artificial intelligence and embedded with all the latest tech and gadgets that will make umpiring foolproof.

The World of Football

The recently concluded World Cup in Russia saw the emergence of new technologies like Video Assistant Referees and Goal-Line Technology being used. Football is all about audience engagement and technology has always been used to improve the quality of play and audience participation beyond the stadium.

Ian Pearson who is involved in predicting future technologies and an owner of Futurizon in his paper titled “Future of Football” predicted how the game played with our feet (ere with no hands of God!) will change with several technologies coming into use with time. He believes that the key to bigger and better technological role in football lies in the development of smart phone technology. Time is not far when advanced smart phones will have ultra realistic 3D video simulation and immersion capability technology in place that will make the apps let people immerse in the game even better. 3D immersion technology will make football even more socially inclusive because the feeling of being there in a stadium would be equally available to people viewing remotely, as would the associated interaction with the play that could be enabled.

Football boots of players may have embedded sensors to measure every step and allow apps to recreate every move, and also measure the strength and angle of impact with the ball, or another player’s leg. This data could be available to referees to help decide if a player was guilty of a foul. Footballers could carry on their clothes health or fitness monitoring sensors, which will display pulse, blood pressure, blood sugar, oxygen and carbon dioxide levels, sweating and hydration which will help the coach to decide when a player should be substituted.

Robots and Humanoid Players

Ian Pearson believes that by the year 2030 football footage will be streamed live for broadcasting by insect-like flying robots which will follow the players around the field. Cameras installed in their ‘eyes’ will give an incredible view of the game as the robots fly around the players, also going behind the scenes before and after matches and capturing footage of training.

Humanoids (human-like robots) in near future will also play the game of football. Within fifty years or less they will look and feel like people and become stronger and more agile. They won’t be based on cogs and wheels and wires but on a strong skeleton overlaid with polymer gel muscles which will make them agile and the football game exciting. They will be of course very well networked so that every aspect of their play and condition could be used in supporter apps.

Many homes will have humanoid assistants who may join humans in a game of football or enjoy their own game. Dedicated fans may control their behaviour and play against each other without actually joining in the game.
This could very well bridge the gap between physical football and computer game variations. Older or infirm people could remotely control humanoids and take part in the game as if they were playing themselves.

**Chess and Tennis**

The game of chess which is said to have originated in our country is slowly transforming itself into a hi-tech game and in the future one may play remote control chess from anywhere in the world or may be play against an AI robot or witness a duel between AI robots.

A futuristic hi-tech chess board connected to wireless networks will allow people to connect and play board games with each other from anywhere in the globe. AI bots which not only play chess but have mastered the skill to beat one and all have been developed and the quest to develop better ones continues.

Taiwan’s Industrial Technology Research Institute (ITRI) has developed its chess playing robot which they have christened ‘Turk’. Deep Mind, Google’s sibling, has also created a chess playing robot which they have named ‘Alphazero’ which took just four hours to learn the rules of chess before beating the world champion chess program, Stockfish8, in a hundred game match up.

The game of tennis may in the near future witness an interactive tennis surface. A Swiss start-up called Technis is developing this technology of the future. The company has developed intelligent flooring which can be integrated into synthetic and resin courts and combines advanced sensor technology with artificial intelligence. The interactive surface consists of modular mats which can be placed anywhere on the court to enhance players’ experience and generates information while they play. The fully tactile surface can sense anything and everything that happens during a match.

The software recognizes the events happening on the surface and sends the data to mobile and web applications to allow users to monitor their activity in real time. The data is displayed on a screen positioned on the edge of the court and can be used by umpires when making decisions about shots being in or out. The Pad records a range of events during a match. It can detect the players’ position on the court and where the ball bounces. It can be used as a smart target in training and it provides coaches with data that allows them to evaluate the player’s tennis level, identify any areas that need improvement, and get a clear picture of the player’s progress over time.

The interactive court also allows players to set their own challenges. They can, for instance, define the exact point on the court to practice aiming their service and see the results in real time during practice.

**Technology for 2020 Olympics**

Tokyo is reeling under an unprecedented heat wave and this has sent the host country of the 2020 Olympic Games in a tizzy. The Olympic organisers are looking at ways to combat the heat when the 2020 Games rolls into town in two years.

Experts have warned of the risks of heat strokes at the games. Keeping the welfare of a large number of spectators and sportspersons from worldwide who will converge at the games, the Tokyo Metropolitan Government has developed mist spraying technologies, which are nano (micro)-particle-sized, and plans to spray more than hundred kilometres of road, including the routes for the marathon and walking events that will help reflect heat and ultraviolet rays.

Japanese broadcaster NHK is planning to go super hi-tech for its coverage of 2020 Olympics. The games will be offered in 8K which is 16 times sharper than high definition televisions and microphones that can zoom in on sound anywhere in the stadium. Japan will also use robots to help visitors with language translation. The technologies being planned to be used by Japan to make the sporting experience wonderful will be watched keenly and may be implemented by other nations too.

It is worth observing that sports technology developed for a particular sport is not restricted to it but becomes a part of other sports too in due course of time. For instance, Hawk Eye Technology is used in cricket, tennis, badminton, football, volleyball and many other sports. Similarly, Goal Line Technology is now used in many sports.

The upcoming future technologies in sports are exciting. With rapid advancement in technology and Artificial Intelligence, the time is not very far when robots will be pitted against our race or against their own kind in a game of the future.

Mr. Shakunt Pandey is a popular science writer, an author and a senior freelance journalist. Address: Lake Utsav, P-331 Parnasree Pally, Flat-3A, Kolkata-700060; Email: shakuntpan33@gmail.com