# AR in the Sports Worlds

Skyler Booth | Colin Koppen | David Reed

## Our Trend

- Real time statistics and analysis

## Research

- Sports fans have always wanted to know one thing: can their team win? With the introduction of statistics, the answer to this question has been easier to find. Advanced sports statistics is a relatively new concept that is quickly taking over the area. The market for statistical analysts is projected to grow by 27% by 2022, well over the national average. Fans enjoy looking at computerized predictions of how their team will perform, and teams have begun to use advanced analytical practices to try and gain a competitive edge on the other teams. Teams have begun to create in house analytical departments to see how they can be more efficient. Websites like FiveThirtyEight, STATS, and Kenpom have large followings that can be attributed to the rise of useable statistics.

- Augmented reality has already been used in sports broadcasting. Sportvision and PVI are the two companies that lead the way in this field. They make AR features such as the yellow first down line in football and advertisements on the side of the field in soccer. Most of these enhancements were met with acclaim from audiences. However, audiences did not enjoy all of these improvements. For example, in 1994, Fox created a way to make following hockey easier called FoxTrax. Because the object of motion is a small black puck, Fox surrounded the puck in a blue glow and a red line appeared when the puck was shot at the net. While casual viewers enjoyed being able to see the action more clearly, more dedicated viewers of the sport thought it was annoying to watch. FoxTrax only lasted about two and a half years before being removed from broadcasts. Another example of audiences not enjoying an augmented reality experience is K Zone. In 2015, ESPN teamed up with Sportvision to produce K Zone for their baseball broadcasts. K Zone is a live pitch tracker that shows a virtual strike zone for the batter and shows whether a pitch was a ball or a strike. Fans did not like this feature, as the virtual strike zone cluttered the action and was inaccurate.

# Insights

- An insight that we can gain from this research is that audiences want augmented reality when it enhances the game and does not distract them from the action. Audiences enjoy seeing the first down line in football because it gives them a solid thing to look at to tell how far the offense needs to go. Sideline advertisements in soccer do not take away from the game, but advertise away from the action so the viewer is not distracted. On the other end of the spectrum, FoxTrax was a commercial failure because instead of watching the players, the viewer was distracted by a blue dot showing where the puck was. Viewers currently do not like ESPN's live K Zone because not only does it obstruct the one place on the field where the action takes place, it is not consistently accurate. If an augmented reality solution would be implemented into sports broadcasting, it must enhance the game without taking away from the action.

# Key Insight

- The trend in statistical analysis and augmented reality in sports broadcasting are very similar. Both are trying to cater to an audience that want to know more about the game that what you can see on the field. By adding in ways to follow the game in depth easier, the viewer feels more connected to the action.

# Solutions
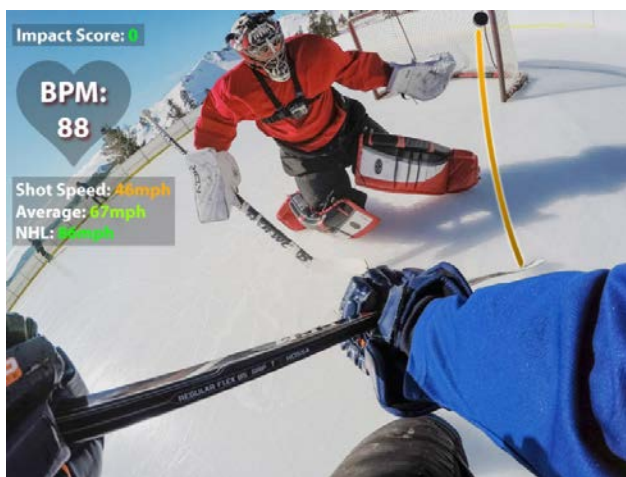


- Our first sketch is for an AR system for practicing sports. The technology for our system would cover a wide range of sports but for simplicity sake we will talk about hockey since it is showcased in the sketch. The ideal user experience would for users to increase their playing ability. The program would be integrated into the facemasks for hockey. The whole goal is to use real-time analysis and statistics to help increase a player's performance. The analysis part of the program could help

a player find weaknesses in defensive by highlighting openings to increase field vision, notify the user when the program finds open players increase awareness, and predict trajectory of the puck to help the player increase their predicting ability. The real-time statistics would be used to track the player's biometric statistics as well as performance statics. The biometrics statistics, such as heart rate and distance traveled, could help improve a player's overall physical ability by setting targets for training. The performance statistics, such as shot/pass speed, could help the player learn how hard they should shoot/pass from given distances. All in all the ideal use case would be for a player to put on the AR system with our practicing software and with every use they would get far more results in playing ability than without using the system.

- Another one of our sketches was using augmented reality at a live sport game. In this case we decided to focus on a live hockey game. There are
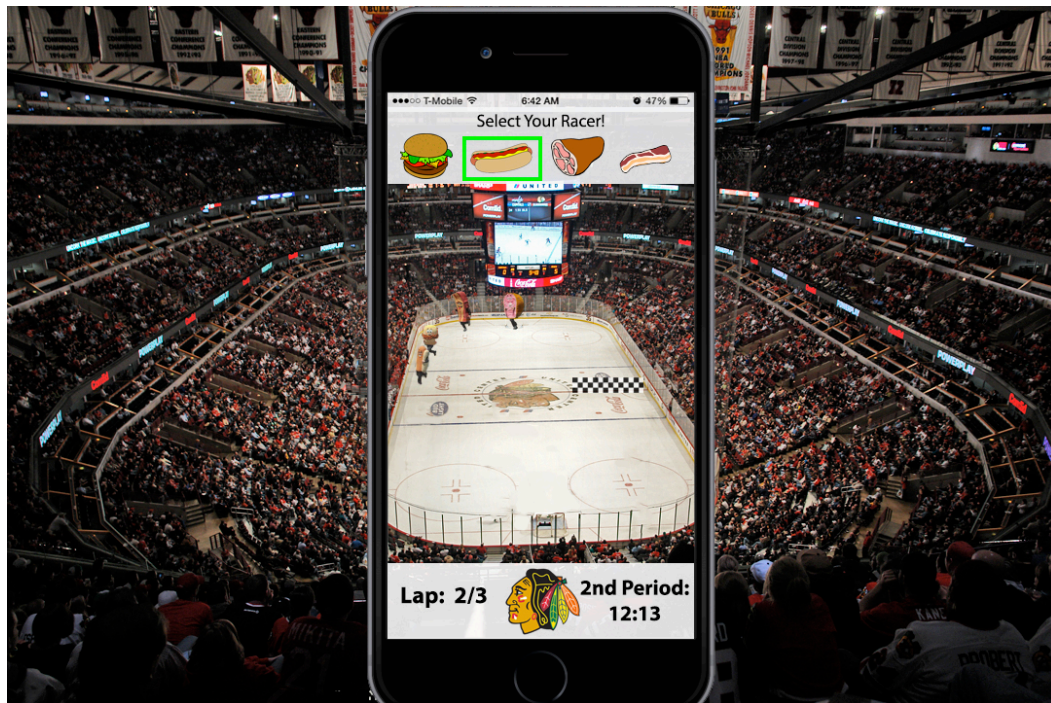


many when at a live sporting event that play stops, especially in a sport like hockey. Whether it be for an injury, TV timeouts, or intermission, the play will stop quite a bit. We wanted to devise a way to make the stoppages a little more entertaining. At many sporting events there will be events that take place at halftime and intermissions. These events can be fun things like kids playing the sport on the field, Jumbo Tron entertainment, or other random events happening on the field or in the stands. We decided that we could use Augmented Reality to provide even more events and entertainment to these stoppages. The great thing about using Augmented

Reality is that sports teams do not have to organize for real people to do anything during the stoppages. A preprogrammed event can happen right before the supporter's eyes.  Our ideal use case would be during a TV timeout.  When there isn't enough time to bring something onto the ice, complete the event, and then take it down, augmented reality would be ideal. We focused on a food item race like those that happen at baseball games. The fan would hold up their mobile device with the application open, and watch as the event happened right in front of them.  They would be able to pick who they think would win the event, and if they picked right would get a coupon stored in their virtual wallet for the prize (most likely a free hamburger).  The coupon being immediately added to a fan's virtual wallet would be where the real time analysis comes in.  The application would be displaying the event in real time, and immediately providing the fan with a coupon should they choose correctly.  This would allow for advertisers to create events, the teams to gain money from the sponsorship deals, and for fans to get free things on top of additional entertainment.

- Lastly, we focused on using Augmented Reality to enhance the viewing experience of sports.  Again, we focused on hockey in order to keep



everything consistent. We believe this trend best exemplifies the use of real time statistics and analysis.  The Augmented Reality would allow a viewer to get real time statistics of players currently playing, their bios, their career stats, and allow them to see the scores of other games currently being played.  Our ideal use case for this would be a hardcore sport fan watching a game on television in their home.  The Augmented Reality would give them a more in-depth experience.  We also wanted to avoid the negative aspects that came from the 3D TVs.  A huge issue with those was that a viewer was required to wear the glasses in order to watch the TV in general.  Our goal was to make a technology that only enhanced the viewing experience. We made it so that the experience is fully customizable in what the user sees, and also made it so that if they didn't want to wear the glasses, the TV would look exactly the same.

# Implementation

- The solution we chose to try to implement is the augmented reality for watching sports on a television. The only subject matter expertise we would need is software developers. We would need them because our solution is a program that gets integrated into already existing AR headsets or viewers. However, we would need buy-ins from multiple sources. First of all, we would like to combine forces with an already up and coming AR headset company, such as CastAR or Meta, since they already have the hardware that can utilize our software. This would also allow use to keep expenses down since we wouldn't be using a R&D budget to develop a headset. The next major buy-in we would need would have to come from television networks, such as FOX, NBC, ESPN, ETC. We would need them to buy-in in order for us to gain all the necessary viewing rights to avoid lawsuits in the future. We would also have to get the same buy-in from Major Sports Leagues, such as FIFA, NFL, NCAA, ETC., for the same reason as the television networks. We would also have to get a buy-in from ESPN in order to use their databases for our real-time statistics and because to save time and effort by not hosting our own database for these statistics. Finally, we would need to enlist a buy-in from Wikipedia in order to get an approval to crawl their site in order to get information of players for our databases.