



## Augmented Dodgeball I (Superhuman Sports Design Challenge)

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From July 2nd to 4th 2018 I participated in the Superhuman Sports Design Challenge, First International Symposium on Amplifying Capabilities, Competing in Mixed Realities. The event took place in Delft, Netherlands.



Figure 1: Design challenge advertisement at the venue

The event had two main parts: oral part where all the chosen projects were presented and described. And the competition part, where all the accepted games and sports had to be demonstrated in the actual use scenario. Each sport had a dedicated time slot to be played by the judges and the visitors.



Figure 2: Presentation about Augmented Dodgeball

The sports that we presented is called Augmented Dodgeball. This sports game is designed to enable players with different skill levels and physical abilities to enjoy playing together. Augmented dodgeball is a game that takes place in two dimensions: the physical layer and the virtual layer. The physical layer means that it is still a ball game and players throw ball at each other in order to win the game. Virtual layer

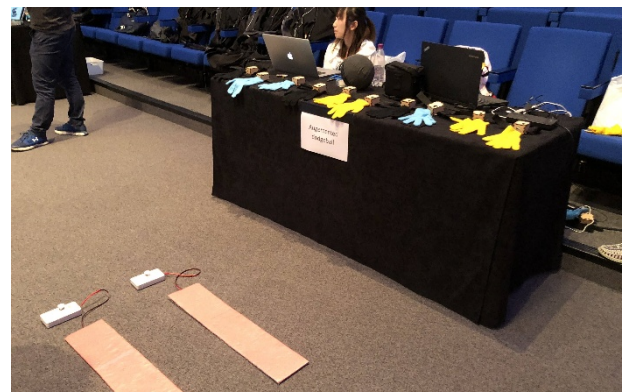


Figure 3: Augmented Dodgeball system ready for the competition

means that all players also have virtual parameters like attack power, defense power and life points like known from computer games. With this virtual layer, we can add additional game elements without creating cognitive overload to the players as they do not have to track and remember all the additional and sometimes complicated rules. Instead, they can track the state of the game and let the computer systems do the work of tracking all the rules set by the game designer(s). In augmented dodgeball, players are aware of the fact that different player roles have different virtual parameters and who is better in what skill, they do not have to keep track of the actual math behind the rules. Instead, what they should think about is how to utilize the player roles for their team. This means that the game can become more strategic and physical abilities and

strategical thinking are combined in the game.

For the competition we updated our hardware system and the competition was the first time we put our updated hardware system to public test. Thanks to the opportunity of participating in the event we were able to get lots of feedback for our system from international sports researchers as well as put our system to test in a demanding environment outside our lab.

During the Superhuman Design Challenge, we ran two Augmented Dodgeball games. Before the game, players were instructed about the game and after the game we asked for feedback and comments.

All participants liked the game and both games the people really got into the game. We could confirm that our new design for thrower detection is working well and fulfills our desire to make thrower detection more seamless and user friendly. The game design in general was also well received by the players.

The outcome of the competition has been that several suggestions that we received from there we have already realized in our system. That includes, having personal displays for players as the pace of the game is fast and therefore the score board is hard to follow during the game. The second change that we have applied is working out a personal balancing system, so that the same characters in different teams can have slightly different virtual parameters in order to further balance between the different skill levels. We have also revised the reliability of all our systems working together. And from the discussions during the event, we have several projects still ongoing in order to make Augmented Dodgeball even more immersive, fun and approachable for different people wanting to play sports together:

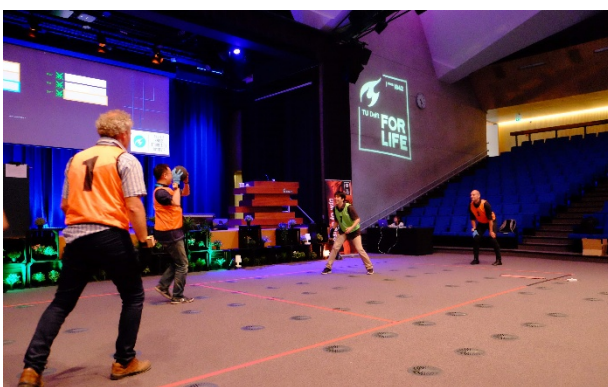


Figure 4: Researchers and judges playing Augmented Dodgeball in the venue

The second big benefit from participating in the Super Human Sports Design Challenge was the chance to see and try other sports that were developed for the competition. In particular, the way the sports were deigned, how and what kind of technology was used as well as seeing the work process of other teams.



Figure 5: Participants of the Super Human Sports Design Challenge

During the event there were also chances to network with other researchers in a more relaxed environment like the field trip to the local botanical garden and the dinner that followed it. We were also able to visit a flight simulator in TU Delft and receive an explanation on how and why this system is used, and how computer–human interaction has put into work for developing such a system. These events helped me to connect with other researchers in the field and have fruitful discussions that support my studies and the completion of my PHD degree so i am very happy and grateful for the Nakayama Foundation for the opportunity to join this event.



Figure 6: Visiting flight simulator in TU Delft