

Horacio Valdes

Professor Bertozzi

GDD 201

3 November 2020

Usability Analysis of Skill-Based Matchmaking

Skill-based matchmaking is a system implemented by different games, which makes sure players get put into the same lobbies as players with similar statistics like rank, level, kill-death ratio, score per minute, etc. Games like Activision's *Call of Duty: Modern Warfare* and EA's *Apex Legends* feature this system. In *Call of Duty: Modern Warfare*, skill-based matchmaking has affected its community negatively, since every time Activision makes a major announcement about a new update or *Call of Duty* game being released the community always responds with "Please remove skill-based matchmaking". Although it's an unbeatable battle, the community always finds ways to mention this "problem". The major "problem" that the community addresses is that it doesn't work, since sometimes it matches average players with very good players, and vice versa. This addition to the game has made it so some players change their playstyles. On older *Call of Duty* games, players tended to care about their statistics like kill death ratio, score per minute, and win-loss ratio. With this new system, it discourages some players from the better statistics a player has; they are most likely going to be matched with someone with similar statistics or better. This new matchmaking system promotes players to find ways to go against the system or in a way "break it" since this system was added to *Call of Duty: Modern Warfare*, there has been a rise in reverse boosting¹. Players' reverse boosting makes it hard to tell if a player is good since statistics like kill death ratio and win-loss ratio are

¹ Players kill themselves over and over so their statistics per match are worse and get matched with easier players.

manipulated by some players, so they are matched with easier players. Although a ranked system could help the *Call of Duty* franchise, it is not perfect since a similar game, EA's *Apex Legends*, features a ranked system, but it is not perfect.

Apex Legend is another game that gets the same feedback from its community. *Apex Legends* features a ranked mode where there are different ranked tiers: Bronze, Silver, Gold, Platinum, Diamond, Master, and Apex Predator. It is supposed to match players with the same or similar ranks, but the system doesn't do this successfully, since there are occasions where silver ranked players get matched with Apex Predator's which consist of the top 500 players of the game.

Apex Legend is another game that gets the same feedback from its community. *Apex Legends* features a ranked mode where there are different ranked tiers: Bronze, Silver, Gold, Platinum, Diamond, Master, and Apex Predator. It is supposed to match players with the same or similar ranks, but the system doesn't do this successfully, since there are occasions where silver ranked players get matched with Apex Predator's which consist of the top 500 players of the game. When I used to play *Apex Legends*, I managed to get to gold II in season 2 and would be placed in matches with Apex Predators, and players with levels higher than me. In comparison to *Call of Duty: Modern Warfare*, I was considered a "new player" since I didn't have much playtime and got that rank because I played with skilled partners and they would "carry" me to be able to get wins. Just because I was playing with higher skilled and ranked players, the game assumes that everyone in that party is the same skill level and a "new" player like me would have to deal with those skilled players. Sherif Sead interviewed with design director Jason McCord and game director Chad Grenier, where they spoke about the new release of season 5 and skill-based matchmaking. Grenier explained how they have "turned off skill-based matchmaking, but new

players turn away much sooner, since they are getting matched with higher-tier players” (Grenier).

Both *Call of Duty: Modern Warfare* and *Apex Legends*, which are developed by two completely different studios, face community issues with skill-based matchmaking. Although professional players are not a big percentage of the community, their word is almost always trusted. A professional player from *Apex Legends* named Bowsver shared on Twitter how “ANYONE who has done their research on SBMM knows that it does NOT match players fairly based on skill. The system rigs your matches to make you win or lose in a particular pattern that is statistically shown to keep you playing more. EA has a paper on it” (Bowsver). He proceeded to explain how the system works by prioritizing player retention. It focuses on making sure players play for long periods of time by “rigging” games, the game will know when to put players in easier and harder matches. EA’s abstract on skill-based matchmaking mostly emphasizes on player engagement (Figure 1) optimized matchmaking system. From a business standpoint, this matchmaking looks perfect, since the system makes sure to match players with easier players when they haven’t won in a while, and puts players into harder lobbies when they win a lot. From a players perspective, on the other hand, it is infuriating, since the game is rigged in a way that “skill” could not even be a variable in the future, since the system would be able to get players into matches so easy that they will win, in order to maintain player engagement.

6. CONCLUSION

The paper presents a novel framework to achieve engagement optimized matchmaking (EOMM). It formulates matchmaking as a problem of maximizing the player engagement, and solves the optimization efficiently. EOMM employs three components, a skill model, an engagement predictive model and a minimum weight perfect matching algorithm, each of which can be tailored flexibly for specific applications. We ran simulations whose configurations were based on real data from an online PvP game. The results show that EOMM significantly outperforms all other methods in the number of retained players. EOMM also provides a theoretical framework to analyze various matchmaking algorithms.

Figure 1 Conclusion of Abstract

Call of Duty, on the other hand, hasn't published any information on how their matchmaking system works. There have been studies done by content creators, which conclude that the game knows more than just your kill death ratio, but also considers recent games, and different playstyles. Pro-players have also expressed their concerns on skill-based matchmaking. Pro player Surge Pierce "Gunless" explains how "the reason why I hate SBMM isn't because I have to shoot back against people it's because the game reads me as someone that can carry 5 people so it gives me people with no hands and that is not fun idc what anyone says" (Pierce). Although this comment is from the *Call of Duty: Black Ops Cold War* beta the same system is seen in *Call of Duty: Modern Warfare*; sometimes it seems like very skilled players are matched with very bad teammates, and end up having to do all the work in the team. Skill-based matchmaking in *Call of Duty: Modern Warfare* makes it seem like it only affects players' enemies and not teammates. Skill-based matchmaking should be able to pair players with good teammates if it is able to match players with very skilled enemies. Ex *Call of Duty* pro player Matthew "Nadeshot" Haag also gave his opinion on skill-based matchmaking "I'll never understand why Call of Duty goes through all of the trouble to implement skill-based matchmaking but won't add a ranking system. If you're going to match me up against better players, why can't I have a rank to be proud of and work towards?" I agree with Haag's idea of adding a ranked playlist to show at least show off how good players are.



Figure 2 Gunless Tweet



Figure 3 Nadeshot Tweet

Some solutions to skill-based matchmaking in *Call of Duty: Modern Warfare* could be adding a ranked playlist and removing skill-based matchmaking from the regular lobbies where players that want to be more competitive can go and earn certain ranks. This would work but would leave the normal lobbies vulnerable to skilled players that don't care about rank and only care about getting a lot of kills. My of way solving this "problem" is leaving everything as is but also adding a rank on top of the player's level which could be a progressive medal or some sort of UI that players could be proud of and show off to friends, and other members of the community. Aside from the normal leaderboard, there could be ranked leaderboards that feature the top players of the week; there could be regional and world leaderboards that feature these players. This change would bring another motivation for the player to be engaged with the game and keep playing weekly to see if they are able to get on the weekly leaderboards, and progress their "ranked" medal; this ranked system could make it possible for players to have a reward for skill-based matchmaking while also maintaining good player retention.

Works Cited

Bowser. "ANYONE Who Has Done Their Research on SBMM Knows That It Does NOT Match Players Fairly Based on Skill. The System Rigs Your Matches to Make You Win or Lose in a Particular Pattern That Is Statistically Shown to Keep You Playing More. EA Has a Paper on It: <https://t.co/vql8mrCqQ2>." *Twitter*, Twitter, 19 Sept. 2020, twitter.com/bowser/status/1307457019960582151.

Haag, Matthew "Nadeshot". "I'll Never Understand Why Call of Duty Goes through All of the Trouble to Implement Skill Based Matchmaking but Won't Add a Ranking System. If You're Going to Match Me up against Better Players, Why Can't I Have a Rank to Be Proud of and Work towards?" *Twitter*, Twitter, 25 Mar. 2020, twitter.com/Nadeshot/status/1242602548906754048.

Saed, Sherif. *"We Have Concrete Evidence That SBMM Is Good for the Overall Health of the Game," Says Apex Legends Dev*. 3 June 2020, www.vg247.com/2020/06/03/why-apex-legends-has-sbmm/.

Peirce, Surge. "The Reason Why i Hate SBMM Isnt Because i Have to Shoot Back against People Its Because the Game Reads Me as Someone That Can Carry 5 People so It Gives Me People with No Hands and That Is Not Fun Idc What Anyone Says." *Twitter*, Twitter, 9 Oct. 2020, twitter.com/Gunless/status/1314403032218497025.

EA Skill-based matchmaking Abstract

http://web.cs.ucla.edu/~yzsun/papers/WWW17Chen_EOMM