

# “Learn to play, noob!”

The identification of ability profiles for different roles in an online multiplayer video game in order to improve the overall quality of the new player experience

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**Abstract**—Being a new player in a multiplayer game is not an easy experience. If the game requires coordinated team play for success, an inexperienced player can receive a high amount of abuse because of what others view as bad plays. While the companies try to alleviate this problem by focusing on the offenders, we present another approach that can also help in decreasing toxic behavior. In our paper we introduce the first steps at researching what it requires to perform well in any given role in a popular multi player game, League of Legends. Using focus groups and online questionnaires we narrow down the list of abilities to 6, in which different profiles would predict different most successful playstyles. Based on these ability profiles the game itself should give more customized tutorial sessions and recommendations to new players who in turn will have an overall improved first impression. Through having better performance, we believe, that some of the toxic behavior experienced by new players can be extinguished.

**Keywords**—video game, user experience, cyberbullying, decision making, attention, motoric skills

## I. INTRODUCTION

Video game players are not different from “normal” people, in that they also differ in many aspects. On how they like to play[1], what drives them [2] and how well can they control their cognitive and basic motoric functions during gameplay[3]. Player differences were analyzed in many different studies but most were interested in how playing a given game changes their abilities [4], [5] not how their already existing set of abilities might influence how they should approach a more complex game. For example, in a team based game, where there are predefined roles, some people might find it easier to identify with one better than the other.

Someone who has a slower reaction time, might find a virtual character who places down static defenses more accessible than a high tempo damage dealer. But if that player is new to a game, he might not know which character is supposed to do what exactly to be helpful for the whole team. This can corrode team unity[6], lead to toxic behavior and will ruin the initial impression of that game for the new player as being a hostile online environment. It is in everybody’s interest to make these first steps as smooth as possible. Of course there are tutorials that teach new players the basics but our idea is to

make these parts adapt to the actual user at hand. While the new player is engaged in the tutorials, the game should try to estimate, based on his actions (and the parameters of these actions), on how to present advanced tutorials or what characters and roles to recommend. It should be able to create a player profile and estimate what kind of playstyle that user has. Based on this, it can recommend characters that match that playstyle and thus increase the chance of success.

In our paper we present the initial steps taken in our research into player abilities and their connection to certain roles in League of Legends (one of the most popular online multiplayer game of our time). We believe that by identifying which role is best suited for each new player (based on their initial hours of gameplay), we can improve on the quality of interaction between man and machine and man and man [7]. Building on this foundation, it will become possible to create new channels of inter-cognitive communication between men and machine [8].

## II. LEAGUE OF LEGENDS: GAMEPLAY, ROLES AND COGNITIVE ABILITIES

### A. League of Legends and the new player experience

League of Legends (LoL) is one of the most successful multiplayer games of our time. The matches in last year’s world championship were viewed online by 4.2 million people on average [9]. This success attracts inexperienced players to the game, who may play it as their first MOBA type game. While it is fairly simple to understand the basics, real competitive play requires a lot of skill and nuanced knowledge of game mechanics. The “metagame” (in case of video games it means a set of ideas about which strategy is the best for certain cases such as how a team composition should look like or which characters are considered strong in a given matchup) is always changing mostly pushed by the championship quality teams but the more involved players on lower levels are also aware of it. When a new player starts to play the game, he probably has no idea of the current metagame. Even if he does, he probably does not understand its real implications without any real game experience. When this new player is matched with others who are more involved even in this early, learning stages of the game, he will perform subpar. This will more

likely elicit toxic behavior from his teammates (verbal harassment in text chat) which will ruin the game experience for the newcomer.

Cyberbullying [10] is of course not the fault of the victim but its source is also not easily identifiable. According to the developer's own research, only 5% of the toxic behavior is attributable to people who are almost always negative. Most bullying comes from "everyday gamers who had a bad day" [11]. This negative behavior is more easily triggered if a teammate is perceived to perform poorly. While the developer is constantly making efforts to reduce toxicity in their game through rewards and punishments, our idea can offer another approach. By providing a more guarded early learning environment with personalized recommendations on selecting roles, new players should have more success from the beginning. If the game could tell which new player is suited for which roles that are deemed good in the current metagame, they would probably perform better compared to their own, mostly random picks at characters.

### B. The map in LoL and its implications for gameplay

There are more than one maps in LoL, however the most important (that is played in tournaments) is called "Summoner's Rift". Its layout is what, in part, defines the roles. The bases are located at the blue dots (Fig. 1) and there are three lanes, a character can get to them (to destroy the enemy's), called top, mid and bottom. There is also a "jungle", where visibility is even more limited and no straight line leads to either bases.

### C. Roles in LoL

As already mentioned, there are three different lanes in LoL. In most team compositions the upper two each have one player while the bottom lane has two. The remaining fifth player is roaming around the map helping around wherever it is needed. Since this setup is the most common, this dictates what kind of skills are needed for each role. To give a general idea about the differences between the roles, we provide short descriptions for each of them. Keep in mind that the most important aspects of a role can shift from time to time based on the metagame changes so it is difficult to highlight one defining characteristic that will always remain important. However the basics of a role never change.



Fig. 1. The most played map in League of Legends showing the different lanes.

#### 1) Top lane

The top lane is in a special spot in the game because the most important damage dealers are on the mid and bot lanes. This means that the big fights involving a lot of players seldom happen in the top lane. Usually this role is reserved for a "tank" character, someone who is able to absorb a lot of damage and probably sustain himself without any help from the team. So in the early game, a top laner usually concentrates on his lane alone and his direct lane enemy not the needs of other lanes. From the mid game period, a top laner should try to protect his teammates and disrupt the high damage dealers of the enemy.

#### 2) Mid lane

The mid lane hero is one of the two high priority damage dealers on the team. These characters can deal a lot of damage in a short period of time but are also quite vulnerable to enemy attacks. During the early game, a mid laner should try to defeat his lane enemy but also be aware of the enemy jungler. A good mid laner should be fast and precise with his skills (to deal the damage needed by the team) and be highly aware of his surroundings (because of his own vulnerability) and position accordingly.

#### 3) Bot lane damage

The bottom lane is the only lane that usually has two players at the same time. One of them is the other high priority damage dealer while the other is there to support the other player. The bot lane damage dealers main job is to get as many minion kills as he can get to have as much currency as possible for items. He has to be fast and precise with his skills and be aware of the surroundings because junglers frequent the bot lane for interventions. As the other damage dealer, he is also vulnerable, so good positioning is also mandatory.

#### 4) Bot lane support

The bot lane support has to take care of the damage dealer next to him. This usually involves some kind of healing or damage absorption. The support generates a very low amount of currency for himself and spends it on items that help the whole team (e.g. grants visions in certain areas of the map). A good support is aware of the current situation and helps at times when its most needed. A support also has to look out for the whole team after the mid game period, so fast decision making is also important.

#### 5) Jungler

The jungler role is very different from the other lane oriented paths. It is not tied to any lane, but the whole map. He gets experience by killing neutral monsters in the "jungle". While a jungler has to be efficient in his clearing of the jungle to keep up with the team, he also has to always on the lookout for teammates in need of help. If one of the lanes is losing to their enemy, a quick aid from the jungler can tip the scales by applying pressure. A good jungler has to make good decisions on when to intervene in other lanes while keeping effective with his jungle clearing. His interventions also have to be useful because otherwise the whole team and himself might suffer for it.

#### D. Roles and their cognitive requirements

As it can be seen from the previous paragraphs, each role in the video game has a unique set of abilities that are required to be successful at it. A person who would be a good damage dealer might not be someone who could play a support role effectively because it requires a different mindset. He would probably be adequate at it because of the shorter reaction times but would most likely be concentrating more on the enemy than the friendly team in high pressure situations.

While we had a list of candidate abilities (working memory capacity, attention, reaction time, task switching, motoric precision and quickness) we did not want it to influence the participants of our study. The exact list of relevant abilities were created based on our participant's responses.

### III. METHODS

To explore what are the real differences between the roles in the game, we conducted a series of experiments.

At first we aimed at narrowing down the list of abilities that could be in connection with each role. Also we wanted to link these abilities to roles and add weights to them. Approximating enemy cooldowns (periods when the enemy cannot use a given ability) is probably important for all roles but it is more crucial for a support than a top lane character. With these goals in mind, we conducted two focus group interviews that were at different skill levels. The first group was composed of semi-professional Hungarian players (top 5%) and casters. They are the ones who are guaranteed to be involved with the game on a daily basis. They had a good understanding of the mechanics and saw a lot of games. Apart from the expert's opinion we also wanted to ask the average players. Hence we also had a second focus group made of average level players. They were people who played the game on a weekly basis and had a good understanding of the mechanics. They were included as a validator group; to see if there is an easily identifiable difference in opinion based on player skill level.

As the second part of our research we wanted to ask the opinion of the greater community as well. In part to validate the results of the focus groups and also to gather additional information about the Hungarian community. There were a set of questions where respondents had to decide on a list of importance of abilities for each role. The abilities from which they could choose from were formulated based on the focus groups. The other questions were irrelevant to the topic of the paper.

### IV. RESULTS

We present the results of the focus groups and the online questionnaire as one because they had a very similar goal and result alike. There were only a few discrepancies between the opinion of the greater community and the players in both focus groups. The online questionnaire had 418 full responses and 114 partial responses. Most of the respondents were male (452, 80 female), with the mean age of 19 (SD=2.87).

The six different ability sets (based on the focus groups) were the following:

- Motoric precision – execution of skill sequences: how well a player can learn and execute correct skill sequences to maximize efficiency
- Approximating timings – prospective memory: how well a player can remember timings and approximate enemy cooldowns
- Task switching – target identification: how well a player can abort one task and prioritize another if the need arises
- Situational awareness: the measure of how well a player can notice changes in the environment, and the ability to see a wider
- Reaction time: the measure of how fast the player can react to stimuli
- Motoric precision – aiming: how well a player can aim with their abilities

The abilities are not by any mean independent from each other. Most are linked to visuo-spatial working memory. However, without information from user studies, the exact nature of these dependencies cannot be uncovered. We use them as starting points, a “working theory” based on our data, until we gather enough evidence about actual player-ability profiles.

The different ability profiles can be seen in Fig 2. The scores were calculated using the following method. For each ability, the number of priority votes were summed and then multiplied by a weight (1.0 for priority 1, 0.8 for priority 2 and so on). The next step was to divide this number the number of respondents. And as a final step, all were divided by 2 in order to avoid too huge numbers. This way, it was insured that the priority ratings were descriptive of what the community thought while also being easy to judge them at a glance.

### V. DISCUSSION

In our research we were interested in what kind of cognitive and motoric abilities are required to be successful in different roles in League of Legends. We used focus group interviews followed by online questionnaires to narrow down the list of relevant abilities and also acquire a profile for each role. Based on the over 500 responses, there seems to be a clear picture about what kind of abilities and in what order of importance are needed for each role in LoL. These profiles can form the basis of a new player classification system that could predict the success rate of that player in every role.

The next step in our research is the validation of these profiles. User studies with players of equal skill level are required to reveal if these ability profiles do predict success in a given role. A pilot study with three participants (2 support and 1 jungler player) have already been conducted but the analysis of the data has not yet concluded. The comparison of scores for participants is not self-explanatory and other variables that have to be accounted for are also not easy to formulate.

### The importance of skills in League of Legends for each role

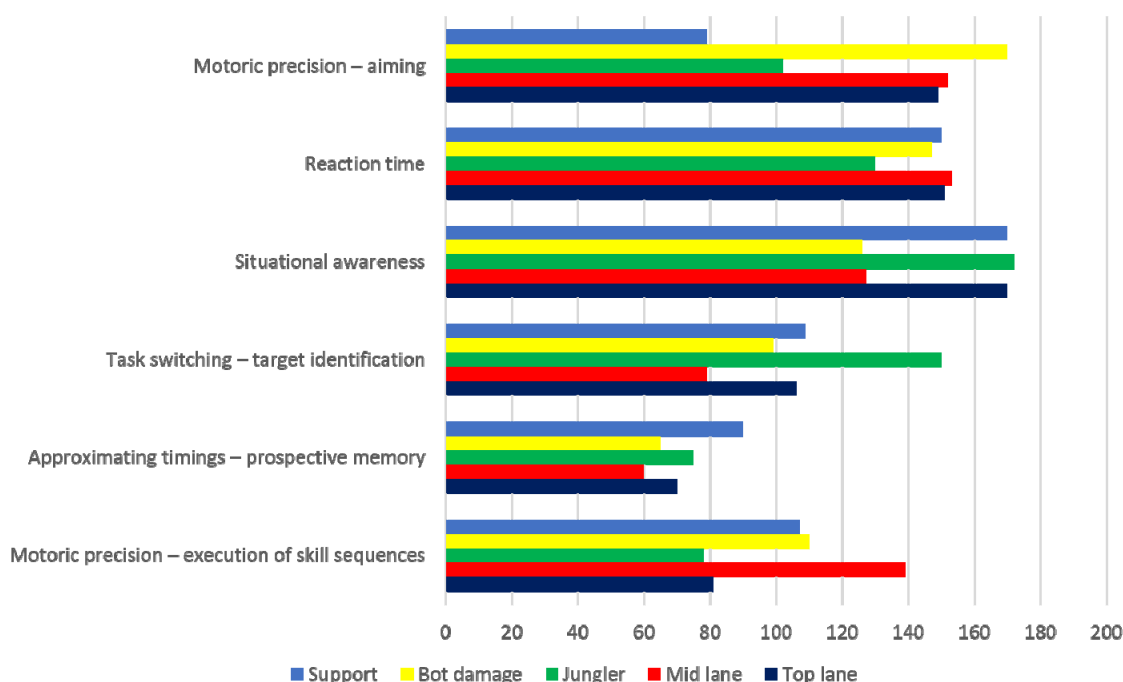


Fig.2. The importance of the six skills by roles, identified by the focus groups. Higher numbers mean higher priority.

For example, player traits beyond the six we’ve found are also influential on role selection. Personality traits, for example can alter how one sees his performance [12] or how likely will he adhere to recommendations[13]. A player with high empathy will most likely want to play a support role no matter what the game will recommend. And while the information needed to identify the six abilities can be acquired from gameplay logs, these other influential factors will be unknown. However, at this stage, we cannot say for certain how well these ability profiles describe each role. It will be impossible to build a 100% accurate classifier for most successful role based on gameplay, but the question is, how low it will drop without personality traits in the equation.

Creating descriptive values for measuring success at a given role is also a difficult obstacle for the future. Because LoL is a team game, where one player usually cannot win a match all by himself, win rate might not be the best measure of success. We have to look for “total healing done”, or “damage absorbed” numbers (which can be obtained). The earlier of these two should be high priority for a support and low priority for a top laner, in the case of the latter, it is the opposite. Comparing these measures of successes over different classes will be a serious challenge.

One could argue, that if a player has low reaction times, than he will be better at all classes. Probably a single general factor would be the most influential on success. However, studies seem to show otherwise[14]. Reaction time is not a good measure of personal success (where success is defined as the rank at which a player is at in the online ranking system). Probably someone with short reaction times will be a slightly better than an average player, but not equally better in all roles.

The myth of the average user is one we should try to eliminate from practice. It is now widely accepted, that there is no single way of education or that is equally good for everyone [15]. This way of viewing students has to find its way into gaming. If a game has roles that are fundamentally different from each other, then one person cannot be as equally good in every one of them. Identifying which role fits a given player based on basic cognitive and motoric abilities could provide a way of creating a more custom tailored experience for users. This would not only improve player satisfaction in the earliest phases of gameplay (leading to more play time) but also have other beneficial effects. If a player is viewed as good teammate, who understands the necessities of a role, it will decrease overall toxic behavior.

To our knowledge, our research is the first to explore the different cognitive and motoric ability sets behind different roles in an online game. Although a fair amount of information is still needed to validate our findings, these are the first steps toward a more personalized way introducing new players to complex, multi player games. It can also mark the beginning of a new channel of interaction between software and user, because ideally the phase of testing should not be a separate module within games [8]. It needs to be integrated into the gameplay seamlessly. While the user will now about these measures of performance; he should not be aware of it while playing.

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