

Analyzing Network Traffic of Online Fighting Games and Improving Peer-to-Peer Gaming

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Most video games featuring multiplayer modes have moved from local multiplayer setups to online multiplayer setups. In a local setting the performance of the game was only reliant on the game itself but over the Internet multiplayer games face several network-reliant performance issues. Players in these multiplayer games, such as Starcraft or League of Legends, want connections that are both fast and stable. Since games in different genres have different constraints on the number of players and game duration, our focus will be limited to the genre of fighting action games. These games, such as Street Fighter or Marvel vs. Capcom, are played as 1v1 setups and can be conducted as peer-to-peer sessions. Games in this genre also require fast and stable setups, as games can be won off minor differences in input frames.

There have been efforts put in by the gaming community to introduce middleware that attempts to improve the reliability of fighting action games. Currently there are two such middleware platforms: GGPO¹ and FightCade². There has also been research conducted and presented through the annual NetGames conference, but this conference has not presented any papers on fighting action games in particular. Papers have been presented on detecting and reducing lag as well as analyses of similar video game genres, but few exist for fighting action games.

This project aims to give a technical breakdown of how middleware such as GGPO and FightCade improves the network performance and/or reliability of fighting action games. Furthermore, this project also aims to compare the network performance of fighting action games that use middleware like GGPO with fighting action games that do not use middleware. These comparisons would be conducted through packet captures from which various statistics (such as RTT and drop rate) would be computed over the duration of gaming sessions.

Expected Project Timeline and Deliverables

February 17th: Research on prior game network-related papers completed

February 24th: Technical analysis on GGPO/FightCade completed

March 17th: Reliable packet captures for selected fighting action games obtained

March 31st: Analysis of packet captures completed

Website link: <https://pandakar.github.io/netanalysis/>

Resources needed:

- Copies of games using GGPO or FightCade
- Copies of games not explicitly using middleware

¹ GGPO's site can be found at <http://ggpo.net/> but at the time of retrieval the site was disabled.

² FightCade, an alternative recommended by GGPO, can be found at <http://www.fightcade.com/>