

Big Data Reduction: Lessons Learned From Analyzing One Billion Data2 Matches



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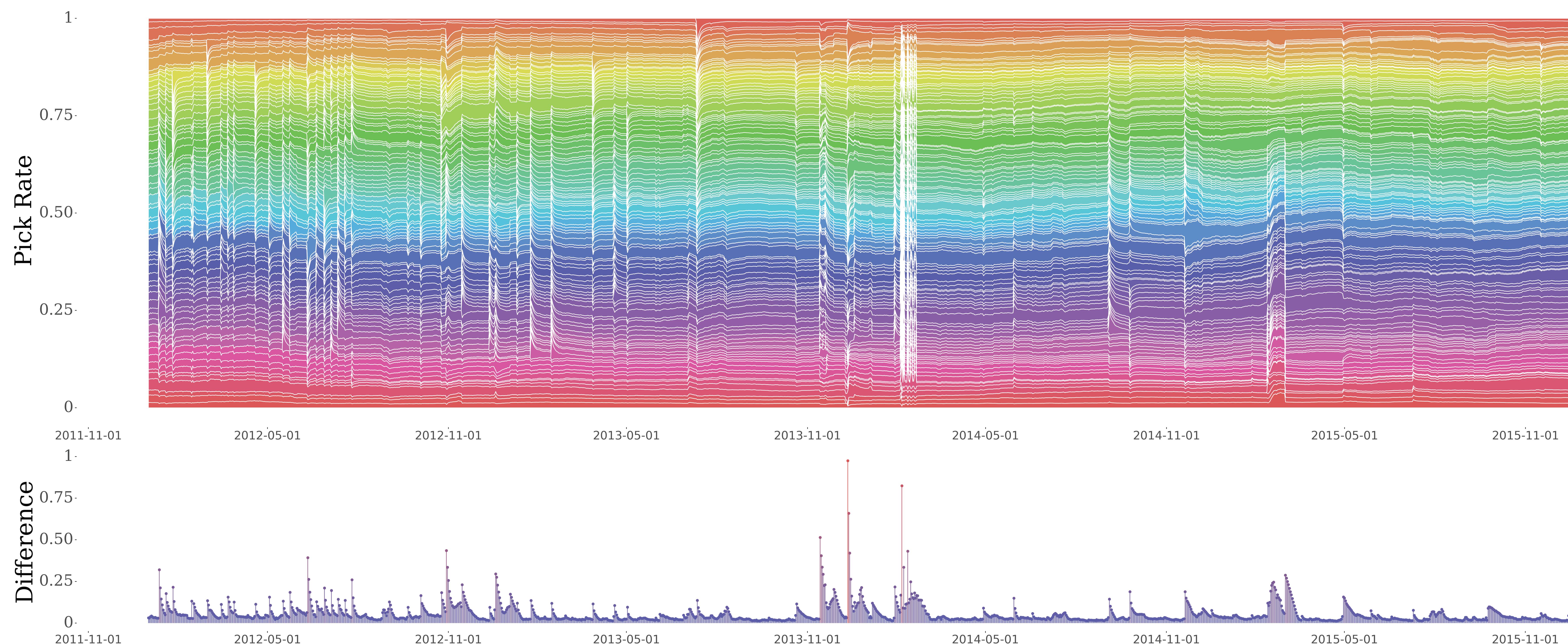
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Heroes Pick Rates (2011-11-22 - 2016-04-23)



Why Study DOTA2?

Dota 2 is a Multiplayer Online Battle Arena, more commonly known as a MOBA. The core gameplay revolves around teams of five players choosing from a character pool of over one hundred characters and facing off against another five person team in a race to destroy a large structure located in the enemy's base called The Ancient. The publisher of Dota 2, Valve, hosts an annual tournament with a prize poll in the millions of dollars. To keep the game bug free, competitive and fresh, Valve implements frequent patches affecting character balance as well as introducing new playable characters. Thanks to the OpenDota (formally Yasp) project, a very large dataset has been created that has gathered over one billion matches of Dota 2 from 2011 to 2016. We will use this data to predict changes in the metagame due to patches as well as observe the impact of The International tournament.

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Poor Man's Solution

Java 8 Streams (Bad idea! Keep it simpler!). With such a large amount of data to be processed, it is not viable to load the data in memory, and it is necessary to process it iteratively. Initially, we sought to use Java 8 Streams to do so to avoid having to decompress it ahead of time. However, we quickly discovered that Streams add significant overhead and quickly exhaust a consumer computer's memory. A simple for-loop (well, an iterator really) was much more performant!

Metagame Shifts

The spikes in the graph above show the change in pick rate heroes compared to the average of the last two weeks. The first peak of our graph shows the introduction of four characters into the game as well as fine tuning on preexisting characters. As Dota 2 was in beta until July 2013, the graph looks quite turbulent up until then, this is caused by multiple characters a month being ported from Dota to Dota 2. These smaller peaks show users trying out the new heroes. The larger peaks indicating balance changes to these added characters.

Once Dota 2 was fully released the meta was relatively consistent up until November of that year. A special event featuring newly introduced heroes Earth Spirit and Ember Spirit as well as revamped Storm Spirit. Patch 6.79c released in December and removed the hero Skeleton King from the game, replacing him with Wraith King. Legion Commander was also ported from Dota. Earth Spirit played a big role in the November 2013 spike as he was nerfed this patch.

Future Developments

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References

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