

HeapCraft Social Tools **Understanding and Improving Player Collaboration in Minecraft** heapcraft.net

Abstract

We introduce a framework to influence and analyze player collaboration in Minecraft. The framework consists of a telemetry system and several tools to influence player behavior and provide value to server administrators to increase adoption. The data collection includes almost every aspect of gameplay and can be used for analysis beyond player collaboration. We started collecting data from several Minecraft servers in March 2015. Most data will be made available to researchers upon request. We have also demonstrated the use of our framework to statistically analyze player behavior in Minecraft. More details can be found on our website.

Classify

The Classify plugin annotates the in-game list of online players with their current behavior. Available options are: build, mine, fight, explore and idle. The classifier is based on the work of our previous paper and uses data collected by the Epilog plugin.

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🛄 Circus [e]	add
Coloneljesus [e]	anti
Elias23Player [m]	anti
😹 Guy_de_Siguro [b]	ail
Iatb117 [b]	ail
🐯 Shurrikan [e]	ail
TheMichiPower [i]	ail
Scladeport [i]	ail
🚾 degygii [m]	mil
Sfechu0307[e]	mil
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Adoption and Participation

In order to collect enough data for our study on player collaboration, we need as many participating Minecraft servers as possible. While some administrators installed our plugins just to support our research, most participants did so because of the value they provide to them. Classify and the Epilog Dashboard have been created especially for that purpose. DiviningRod includes many features not directly related to collaboration to make it more useful as a universal game aid.

Mar 15

Epilog

The Epilog plugin allows server administrators to send player data to our data collection server. The plugin keeps server performance impact to a minimum and sends data over an encrypted connection. Epilog records almost all player related game events, including player movement, block placement, mining and inventory content. The logging of chat messages can be disabled.



Epilog Dashboard

The Epilog Dashboard is a web-based frontend which provides insight into the collected data to Minecraft server administrators. Available datasets include heat maps of player positions and player properties like number of placed blocks, duration of active gameplay or time spent near other players. The datasets are updated by the Epilog backend as soon as new data is available. This enables observing player activity in real time.

Name Last active Active for Traveled Mined Place [redacted] 209d 22h 1d 16h 139,052 27,595 7,4 [redacted] 182d 9h 1d 12h 211,851 41,762 15,8 [redacted] 228d 4h 1d 0h 191,096 18,696 12,7 [redacted] 84d 20h 23h 41m 186,811 15,448 7,3 [redacted] 134d 23h 22h 3m 217,126 11,140 5,5	all players
[redacted]209d 22h1d 16h139,05227,5957,4[redacted]182d 9h1d 12h211,85141,76215,8[redacted]228d 4h1d 0h191,09618,69612,7[redacted]84d 20h23h 41m186,81115,4487,3[redacted]134d 23h22h 3m217,12611,1405,5	ed Social
[redacted]182d 9h1d 12h211,85141,76215,8[redacted]228d 4h1d 0h191,09618,69612,7[redacted]84d 20h23h 41m186,81115,4487,3[redacted]134d 23h22h 3m217,12611,1405,5	0.037
[redacted]228d 4h1d 0h191,09618,69612,7[redacted]84d 20h23h 41m186,81115,4487,3[redacted]134d 23h22h 3m217,12611,1405,5	357 0.035
[redacted]84d 20h23h 41m186,81115,4487,3[redacted]134d 23h22h 3m217,12611,1405,5	0.093
[redacted] 134d 23h 22h 3m 217,126 11,140 5,5	0.304
	558 0.193
[redacted] 232d 2h 16h 27m 93,127 13,926 9,8	0.057
[redacted] 164d 22h 16h 25m 123,052 10,267 6,2	246 0.333
[redacted] 228d 3h 16h 4m 109,793 8,816 5,7	0.138
[redacted] 231d 1h 16h 3m 100,770 11,200 7,1	17 0.170
[redacted] 161d 23h 15h 46m 101,716 9,369 5,2	0.401

A typical player's behavior over one day, in terms of mining (green), building (orange), fighting (red) and exploring (blue).

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Data Exploration Tools

We built interactive data visualization tools to help us explore the collected datasets.

Graph Miner shows a weighted graph of player relations.



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We are actively collecting data for our research on collaboration and will keep collecting data for future studies. If you run a Minecraft server and want to support us, you can find the Epilog and DiviningRod plugin on our website.



The DiviningRod plugin adds programmable compasses to Minecraft. They can point to players, specific locations or to player-created signs containing hashtags.



The Epilog backend provides DiviningRod with dynamically created player classes based on behavioral analysis. This enables players to find other players with certain properties, e.g. players who spend a lot of time near other players or players who are new to the server. We use DiviningRod to evaluate whether a navigation tool can improve player collaboration. DiviningRod sends detailed usage information to our data collection server over Epilog. Classes of other players and additional compass targets can be set remotely for each individual player.

Map Miner shows a visualization of spatial information over a selected period of time.



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More information, demos and videos on http://heapcraft.net/?p=fdg

