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Livestreaming includes transmitting live media over a network by a user device to a server device or other user devices. Users of a livestream may include a streamer (e.g., a user of a user device that is capturing and/or transmitting the live media) and one or more viewers (e.g., users of user devices that are receiving and playing the live media). Some livestreaming platforms allow users to post chat messages (e.g., share information via text or image, post a message, etc.) that are visible to other users via a chatroom (e.g., a public message board, synchronous conferencing, etc.) while the live media is being transmitted and viewed. The chatroom may display a limited quantity of chat messages and once the limited quantity is met, the older chat messages may scroll out of view as new chat messages are posted. An engaging chatroom experience for users may include providing the users with chat messages that are relevant and that do not scroll too quickly. A popular livestream may have greater than a threshold number of viewers or greater than a threshold number of viewers that are commenting. For popular livestreams, many users may be posting chat messages during a short period of time (e.g., thousands of chat messages may be posted per minute) which leads to the displayed chat messages scrolling faster than a user can read the displayed chat messages. For popular livestreams, users may post chat messages in different languages, so that not all of the chat messages are relevant to (e.g., not in a language understood by) all of the users. For popular livestreams, users with different view-points may discuss different topics which may lead to the displayed messages being off-topic and not being appealing or relevant to all of the users.

The above and other deficiencies are addressed by automatically bucketing viewers with traits in common into their own chatrooms. The viewers of a livestream are determined and

automatically bucketed by characteristics (e.g., age, geolocation, viewpoint, degree of interest, level of involvement, etc.) to give the viewers a more meaningful and readable live chat experience. For example, viewers of a certain language or region can be bucketed together so that they can engage with each other.

FIGS. 1 and 2 depict flow diagrams for illustrative examples of methods for bucketing viewers with traits in common into their own chatrooms. The methods in FIGS. 1-2 are example methods from the perspective of a device (e.g., server device, user device) that is to bucket the users. The methods may be performed by processing devices that may include hardware, software, or a combination of both. FIGS. 1 and 2 refer to chat messages and a chatroom, but may be applied to any type of live messages. FIGS. 1 and 2 refer to a livestream, but may be applied to any type of media.

Referring to FIG. 1, the processing device determines that an amount of viewers of a livestream meets a first threshold (e.g., determines the stream is a popular stream). In one implementation, the processing device determines that the amount of viewers of the livestream that are commenting meets a first threshold. It may be determined that when the amount of viewers meets the first threshold (e.g., 1,000 viewers), the viewers can have a more engaging experience if grouped into corresponding chatrooms. A more engaging experience may be provided by the chat messages scrolling at a slower rate and the chat messages being more relevant (e.g., same language, on-topic, similar view point, from viewers of the same region, etc.).

The processing device receives user information of the viewers. The user information may include one or more of geolocation (e.g., Internet Protocol (IP) address) of the viewers, language associated with the viewers, media watched or listened to by the viewers, type of

language used by viewers (e.g., conservative language, slang, etc.), view-points of the users, etc. The user information may be input by the viewer. For example, a viewer could input the one or more languages that the viewer speaks.

The processing device determines, based on the user information, subsets (e.g., buckets) of the viewers. Each of the subsets includes a corresponding amount of viewers that meets a second threshold. It may be determined that when the amount of viewers in a chatroom does not meet the second threshold (e.g., a chatroom has less than 100 viewers), the viewers do not have an engaging experience (e.g., there are not enough chat messages, the chat messages scroll too slowly). The processing device may determine one or more user characteristics (e.g., common traits, language, view-point, etc.) based on the user information, on which the subsets of viewers are to be based. In some implementations, a viewer can mention one or more viewers in a chat message (e.g., include the text of the name of the one or more viewers, tag the one or more viewers, include a hyperlink to the profile of the one or more viewers, etc.). By mentioning each other in posted chat messages, two or more viewers can chat with each other in a chatroom. The determining of subsets of the viewers may take into account viewers that chat with each other (e.g., within a threshold amount of time) so that the providing corresponding chatrooms for subsets of viewers does not interrupt a chat between users.

The processing device provides a corresponding chatroom for each of the subsets of viewers (e.g., buckets the viewers with common traits in their own chatrooms). The corresponding chatrooms may be provided in a way that is seamless for the users (e.g., users continue to have an engaging experience). The providing of corresponding chatrooms may provide the streamer with posted chat messages in the language of the streamer. The providing of corresponding chatrooms may provide the viewers with an engaging experience because the

corresponding chatroom of each viewer improves the posted chat messages the viewer sees. For example, as a result of the method of FIG. 1, from the perspective of the user, the chat messages may scroll at a more readable rate, the language of the chat messages of the user may be in a language associated with the user, and the chat messages may be more relevant to the user.

The processing device may switch a viewer from a first corresponding chatroom to a second corresponding chatroom in response to the user information of the viewer changing (e.g., the user no longer uses conservative language, the geolocation of the user changes, etc.). As viewers join and leave the livestream or as viewers are switched to a different chatroom, the processing device may determine whether the updated amount of viewers meets the first threshold and whether the updated corresponding amount of viewers of each subset meets the second threshold. In response to determining the first threshold is not met, the processing device may provide a single chatroom for all viewers and in response to determining the second threshold is not met, the processing device may determine new subsets (e.g., based on different characteristics). For example, if the subsets were based on the corresponding city of the viewers and the amount of viewers in a subset dropped below the second threshold, new subsets may be based on the corresponding country of the viewers. The method of FIG. 1 may create a more engaging chatroom experience for the users because the streamer may not need to set up subsets in advance, the processing device may automatically adjust the number of viewers in each subset, and the processing device may automatically adjust the types of subsets.

Referring to FIG. 2, the processing device receives user input of a plurality of chatrooms for a livestream (e.g., a user may self-create buckets). In one implementation, the user input is provided by a streamer. A streamer may be livestreaming live media that has many viewers and the streamer may not be able to read all of the posted chat messages or the streamer may not be

able to quickly access the posted chat messages that are most relevant to the streamer. The streamer may provide user input of chatrooms to group chat messages that are more relevant. For example, the streamer provides user input of a first chatroom for viewers associated with the language that the streamer speaks (e.g., and one or more chatrooms for viewers associated with other languages) to be able to get access to the first chatroom. In another implementation, the user input is provided by a viewer. A viewer may provide user input of chatrooms to group posted chat messages that are more relevant to the viewer. For example, if the viewer is watching a sporting event between a first team and a second team, the viewer could provide user input of a first chatroom for viewers that support the first team and a second chatroom for viewers that support the second team and the viewer could access the chatroom of the sports team that the viewer supports.

The processing device may determine that an amount of viewers of a livestream meets a first threshold. In one implementation, the processing device determines that the amount of viewers of the livestream that are commenting meets the first threshold.

The processing device receives user information of the viewers. The processing device may receive user information related to the user input. For example, if the streamer provided user input of a chatroom for viewers associated with the language the streamer speaks, the processing device may receive user information of the language with which the viewer is associated (e.g., detect language of previous chat messages of the viewer, detect a language on the profile of the user, detect a language associated with the hosting site of the livestream that the viewer accessed, etc.). In another example, the processing device may receive user information by requesting viewer input (e.g., which sports team the viewer supports) corresponding to the user input (e.g., chatrooms for viewers that support specific sports teams).

The processing device may determine, based on the user information and the user input, subsets of the viewers that each include a corresponding amount of viewers that meets a second threshold. For example, if the user input is a first chatroom for a first sports team and a second chatroom for a second sports team, the processing device may determine based on user information that the amount of viewers that support the first sports team meets the second threshold and the amount of viewers that support the second sports team meets the second threshold.

The processing device provides, based on the user input, a corresponding chatroom for each of the subsets of viewers. In one implementation, if the amount of viewers does not meet the first threshold or if the corresponding amount of viewers associated with a chatroom based on the user input does not meet the second threshold, the processing device may provide a single chatroom for all of the viewers. In another implementation, if the first or second thresholds are not met, the processing device may provide corresponding chatrooms that are not based on the user input (e.g., adjust the user input, provide chatrooms per the method of FIG. 1, etc.).

The processing device may switch a viewer from a first corresponding chatroom to a second corresponding chatroom in response to the user information of the viewer changing (e.g., a viewer starts supporting a different sports team in the sporting event). As viewers join and leave the livestream or as viewers are switched to a different chatroom, the processing device may determine whether the updated amount of viewers meets the first threshold and whether the updated corresponding amount of viewers of each subset meets the second threshold. In response to determining the first threshold is not met, the processing device may provide a single chatroom for all viewers. and in response to determining the second threshold is not met, the processing device may determine new subsets. For example, if the subsets were based on the

user input and the amount of viewers in a subset dropped below the second threshold, new subsets may not be based on the user input.

ABSTRACT

A method for automatically bucketing users with traits in common into their own chatrooms is described. A processing device determines that an amount of viewers of a livestream meets a first threshold and receives user information of the viewers. The processing device determines, based on the user information, subsets of the viewers, where each of the subsets includes a corresponding amount of viewers that meets a second threshold. The processing device provides a corresponding chatroom for each of the subsets. In one implementation, the processing device receives user input of a plurality of chatrooms for a livestream, determines subsets of viewers based on user information and the user input, and provides a corresponding chatroom for each of the subsets based on the user input.

Keywords: chat session, message, chat, email, ping, text, buzz, instant messaging, IM, commenting, bucket, combine, group, put together, stream, video stream, live video, game sessions