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An Algorithm that Uses Live Updates Provided by Clustered Users Attending a Live Event to Show Updates for the Live Event on Google Search and Assistants

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As technology improves, users increasingly turn to electronic devices to obtain various information in which they are interested. Information services can be provided to deliver information that users are interested in upon request. Particularly, information describing the current state of live sporting events can be of particular interest to users who are not in attendance at the live sporting event. However, accessing and disseminating information for live events while those events are occurring can be difficult.

In some examples, organizations associated with live events can make live updated information available for online services to access and the online services can then distribute that live updated information to users. However, in some cases, no live data is published online such that an online service can access that data. In addition, even if live update data is published online, it may not be in a form that is easily accessible to online services. Specifically, information for live events may be published by a large number of independent sources such that it is difficult to centralize all the information quickly enough to provide live updates to other users.

This may be especially true for areas with a large number of live events (e.g., both professional sports and amateur sports) without a developed infrastructure for disseminating information about those events to the users. Thus, to provide live updates for a live event to users, another solution must be found.

A system for providing accurate and timely updates about a live event can include a live event update system for identifying live events as they occur. For example, a live event update system can include a system for communicating with one or more user devices, an interface for communicating over a network, a live event analysis system (for determining when a live event is occurring), a guide communication system (for communicating with a live event guide user), and one or more databases. See Figure 1. The live event update system can determine that a live event is occurring based on metadata about live events contained in a live event database. In some examples, a live event database can include data about scheduled live
events published on the internet, through information submitted by users, and by predicting live events based on data of past live events.

[0005] Data about a given live event can include a geographic location associated with the live event. In some examples, the live event data can include the time that the live event is to occur, a location of the live event, a venue associated with the live event, a schedule for the live event, and any other relevant information associated with the live event.

[0006] In some examples, the live event is a sporting match. However other types of live events can include but are not limited to competitions, rallies, concerts, speeches, marches, protests, and any other live event.

[0007] Once the live event update system determines that a live event is occurring, the live event update system can deter the number of people in the geographic location associated with the live event. In some examples, the number of users is determined by accessing location data from one or more user devices associated with the users at the live event. For example, a plurality of users can transmit geographic location data (e.g., GPS data from a smartphone). In some examples, the crowd size can be determined (or estimated) based on other sensor data for a user device at the location associated with the live event. For example, if a user has a smartphone at the live event, they can use their camera to capture images representing the size of the crowd at the live event. In another example, a user device can include other sensors (e.g., RADAR sensors) that can be used to gather data for the area near the user device. This data can be transmitted to the live event update system for analysis.

[0008] If the number of people attending a given event surpasses a threshold crowd size (e.g., 5000 people), the live event update system can determine whether a threshold number of preselected live event guide users are attending the event.

[0009] Live event guide users can be users that have been previously selected by the live event update system and have agreed to provide live event update data. In some examples, each live event guide user is associated with a particular live event type (e.g., a specific sport, political issue, and so on).

[0010] In some examples, each event guide user can have an associated confidence level. The confidence level associated with a particular event guide user represents the degree to which the
data they reported is trusted by the live event data gathering system. In some examples, the confidence level associated with a particular live event guide user can be adjusted up or down based on the degree to which the updates that they submit are determined to be reliable.

[0011] The threshold number of preselected live event guide users can be a fixed number (e.g., 50 people) or a percentage of the total crowd (e.g., 1-2%). If the number of pre-selected guide users exceeds a threshold number, the live event update system can group them into a plurality of clusters based on physical location. See Figure 2.

[0012] The live event monitoring system can select a single live event guide user from each group. In this way, the live event monitoring system can ensure that no single group of users can intentionally report faulty update data and mislead the system. In some examples, by only selecting one user from a particular cluster of live event guide users, a live event monitoring system can reduce the chance of intentionally misleading update data is submitted to the system.

[0013] Also, by selecting geographically disparate live event guide users can ensure that there is no single point of failure that will disrupt live event data submission. For example, if a given live event is within proximity of three cell towers, the failure of a single cell tower (or other wireless connection systems) cannot disrupt the submission update data as long as the selected live event guide users connect to a variety of cell towers. In some examples, live event guide users can be grouped based on the connection type that the user uses to connect to the system.

[0014] The live event guide users can be grouped based on existing social connection data. For example, with user permission, the live event update system can access public user connection data (connections on a social networking system, public messages, phone calls, and so on) and group live event guide users such that users with previous social connections are grouped. In this way, a group of friends, even if sitting in different geographic locations, can be clustered. By doing so, the chance of a coordinated disinformation campaign by a group of socially connected users can be thwarted.

[0015] The live event update system can randomly select one or more guides from each cluster and periodically prompts them to provide update data for the live event (e.g., scores). The frequency with which prompts are transmitted to live event guide users is determined based on the type of live event. For example, basketball games (which have relatively high scoring frequency) may involve more frequent prompts than soccer games (which have a lower scoring
frequency). In other examples, the rate at which prompts are sent to the users is based on submitted user preferences.

[0016] The requests for updates are sent periodically two or more live event guide users. In some examples, the live event monitoring system can transmit simultaneous requests to two or more live event guides. By requesting data from more than one live event guide user simultaneously, the live event monitoring system can receive update data from approximately the same time period.

[0017] This live event update data can be compared to the live event data from other guides in other clusters. When live event data from two or more live event guide users are compared, the live event update system can determine a difference between two different values. In some examples, the difference can be determined by comparing reported scores and determining the difference in values. Live event data can include scores, time remaining, substitutions, penalties, current status, topics discussed, speaker identities, quotes from speeches, crowd movements (e.g., for protests), playlists (e.g., for concerts), and so on.

[0018] For example, the live event update system can compare the update data from the first user and update data from a second user. The live event update system can compare the update data received from the first user to the update data received from the second user to determine the difference between the first update data and the second update data. If the difference between the first update data and the second update data is within a difference threshold, the live event update system can determine that the update data is accurate.

[0019] If the live event update system determines that the difference of the update data is within a given threshold and is therefore accurate (or likely to be accurate), the live event update system can transmit the live event update data to a plurality of users not currently at the geographic location associated with the currently occurring live event. For example, the live event update system can maintain a list of users who have previously registered to receive updates for a certain type of live event. A user that is a fan of a particular sport or team can subscribe to a feed for live update data associated with that particular sport or feed. Other users can indicate an interest in the news associated with a particular geographic area (a given state or province). Such users can receive live event data for live events occurring within a given concerning within that geographic location.
Live event data can also be stored by a data services system for delivery to a user in response to a specific query or selection. Thus, if a user is interested in updated data for a current event, the user can query (e.g., via a web browser or other search tool) and the updated live event data can be transmitted to the user.

In some examples, the live event update system can determine a user’s interests (only with the user’s permission) based on the user’s previous indications (e.g., page views, searches, likes, shares, and so on). The live event update system can then share live update data for live events associated with the user’s determined interests.
Figure 1
Figure 2