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Media overlay publication system

Abstract

Systems and methods are presented that provide for receiving, at a media overlay publication system from a first client device, content to generate a media overlay, and generating the media overlay using the content received from the client device. The generated media overlay is stored in a database associated with the media overlay publication system and associated with a first characteristic of the content received from the first client device. The media overlay is provided to a second client device when a second characteristic of context data associated with the second client device correlates to the first characteristic for the media overlay, causing a display of the media overlay on a user interface of the second client device.

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10282753	12/2018	Cheung	N/A	N/A
10284508	12/2018	Allen et al.	N/A	N/A
10285002	12/2018	Colonna et al.	N/A	N/A
10285006	12/2018	Colonna et al.	N/A	N/A
10289287	12/2018	Rathod	N/A	N/A
10311916	12/2018	Sehn	N/A	N/A
10349209	12/2018	Noeth et al.	N/A	N/A
10354425	12/2018	Yan et al.	N/A	N/A
10395519	12/2018	Colonna et al.	N/A	N/A
10416845	12/2018	Allen et al.	N/A	N/A
10438094	12/2018	Ko et al.	N/A	N/A
10439972	12/2018	Spiegel et al.	N/A	N/A
10440420	12/2018	Hogeg et al.	N/A	N/A
10445777	12/2018	McDevitt et al.	N/A	N/A
10448201	12/2018	Sehn et al.	N/A	N/A
10475079	12/2018	Hagen et al.	N/A	N/A
10476830	12/2018	Allen et al.	N/A	N/A
10509466	12/2018	Miller et al.	N/A	N/A
10514876	12/2018	Sehn	N/A	N/A
10524087	12/2018	Allen et al.	N/A	N/A
10572681	12/2019	Murphy et al.	N/A	N/A
10580458	12/2019	Sehn	N/A	N/A
10581782	12/2019	Tang	N/A	N/A
10582277	12/2019	Tang	N/A	N/A
10614855	12/2019	Huang	N/A	N/A
10616239	12/2019	Allen et al.	N/A	N/A
10616476	12/2019	Ebsen et al.	N/A	N/A
10623891	12/2019	Sehn et al.	N/A	N/A
10659914	12/2019	Allen et al.	N/A	N/A
10694317	12/2019	Cheung	N/A	N/A
10708210	12/2019	Allen et al.	N/A	N/A
10748347	12/2019	Li et al.	N/A	N/A
10779113	12/2019	Sehn et al.	N/A	N/A
10811053	12/2019	Sehn	N/A	N/A
10893055	12/2020	Allen et al.	N/A	N/A
10911575	12/2020	Pavlovskaia et al.	N/A	N/A
10944710	12/2020	Allen et al.	N/A	N/A
10958608	12/2020	Allen et al.	N/A	N/A
10962809	12/2020	Castañeda	N/A	N/A
10990697	12/2020	Murphy et al.	N/A	N/A
10996846	12/2020	Robertson et al.	N/A	N/A
10997787	12/2020	Ge et al.	N/A	N/A
11012390	12/2020	Al Majid et al.	N/A	N/A
11012398	12/2020	Allen et al.	N/A	N/A
11030454	12/2020	Xiong et al.	N/A	N/A
11036368	12/2020	Al Majid et al.	N/A	N/A
11038829	12/2020	Allen et al.	N/A	N/A
11062498	12/2020	Voss et al.	N/A	N/A
11087728	12/2020	Canberk et al.	N/A	N/A

11092998	12/2020	Castañeda et al.	N/A	N/A
11106342	12/2020	Al Majid et al.	N/A	N/A
11126206	12/2020	Meisenholder et al.	N/A	N/A
11143867	12/2020	Rodriguez, II	N/A	N/A
11165988	12/2020	Verna et al.	N/A	N/A
11166121	12/2020	Sehn et al.	N/A	N/A
11169600	12/2020	Canberk et al.	N/A	N/A
11227626	12/2021	Krishnan Gorumkonda et al.	N/A	N/A
11249617	12/2021	Allen et al.	N/A	N/A
11250887	12/2021	Sehn	N/A	N/A
11297399	12/2021	Tang	N/A	N/A
11317240	12/2021	Allen et al.	N/A	N/A
11349796	12/2021	Tang	N/A	N/A
11372608	12/2021	Sehn	N/A	N/A
11411908	12/2021	Allen et al.	N/A	N/A
11468615	12/2021	Yan et al.	N/A	N/A
11522822	12/2021	Allen et al.	N/A	N/A
11558678	12/2022	Tang	N/A	N/A
11627141	12/2022	Allen et al.	N/A	N/A
11783862	12/2022	Sehn	N/A	N/A
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2010/0183280	12/2009	Beauregard et al.	N/A	N/A
2010/0185552	12/2009	Deluca et al.	N/A	N/A
2010/0185665	12/2009	Horn et al.	N/A	N/A
2010/0185750	12/2009	Nakayama	N/A	N/A
2010/0185987	12/2009	Yang et al.	N/A	N/A

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2010/0198870	12/2009	Petersen et al.	N/A	N/A
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2010/0211431	12/2009	Lutnick et al.	N/A	N/A
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2012/0252418	12/2011	Kandekar et al.	N/A	N/A
2012/0254324	12/2011	Majeti et al.	N/A	N/A
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2012/0259815	12/2011	Olson	N/A	N/A
2012/0263439	12/2011	Lassman et al.	N/A	N/A
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Background/Summary

PRIORITY CLAIM (1) This application is a continuation of and claims the benefit of priority of U.S. patent application Ser. No. 17/850,737, filed on Jun. 27, 2022, which is a continuation of and claims the benefit of priority of U.S. patent application Ser. No. 17/248,956, filed on Feb. 15 2021, and issued as U.S. Pat. No. 11,468,615, which is a continuation of and claims the benefit of priority of U.S. patent application Ser. No. 15/673,137, filed on Aug. 9, 2017, and issued as U.S. Pat. No. 10,997,758, which is a continuation of and claims the benefit of priority of U.S. patent application Ser. No. 14/974,321, filed on Dec. 18, 2015, and issued as U.S. Pat. No. 10,354,425, each of which are hereby incorporated by reference herein in their entirety.

TECHNICAL FIELD
(1) The subject matter disclosed herein generally relates to providing context relevant media augmentation. Specifically, the present disclosure addresses systems and methods for a platform for publishing context relevant media augmentations, for presentation on user interfaces.
BACKGROUND
(2) The number of digital photographs and videos taken with mobile wireless devices is increasingly outnumbering photographs taken with dedicated digital and film-based cameras. Thus, there are growing needs to improve the experience associated with mobile wireless digital photography and videography.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
(1) Various ones of the appended drawings merely illustrate example embodiments of the present disclosure and should not be considered as limiting in scope.
(2) FIG. **1** is a network diagram depicting a network system having a client-server architecture configured for exchanging data over a network, according to one embodiment.
(3) FIG. **2** shows a block diagram illustrating one example embodiment of a messaging application.
(4) FIG. **3** shows a block diagram illustrating one example embodiment of a media overlay application.
(5) FIG. **4**A shows a block diagram illustrating one example embodiment of a user-based media overlay publication module.
(6) FIG. **4**B shows an example of a graphical user interface for a user-based media overlay publication module.
(7) FIG. **4**C shows an example of an operation of the graphical user interface of FIG. **4**B.
(8) FIG. **4**D illustrates an example of a publication of a user-based media overlay.
(9) FIG. **5**A shows a block diagram illustrating one example embodiment of a merchant-based media overlay publication module.
(10) FIG. **5**B illustrates an example of a common geolocation.
(11) FIG. **5**C illustrates an example of a graphical user interface for a merchant-based media overlay publication module.
(12) FIG. **5**D illustrates an example of a bid from a first merchant using the graphical user interface of FIG. **5**C.
(13) FIG. **5**E illustrates an example of a bid from a second merchant using the graphical user interface of FIG. **5**C.

(14) FIG. **5**F illustrates an example of an operation of a merchant-based media overlay.
(15) FIG. **6**A shows a block diagram illustrating one example embodiment of a predefined media overlay module.
(16) FIG. **6**B shows a diagram illustrating an example of a media overlay with live data content.
(17) FIG. **6**C shows a diagram illustrating an example of a media overlay with promotional content.
(18) FIG. **6**D shows a diagram illustrating an example of a collectible media overlay.
(19) FIG. **6**E shows a diagram illustrating an example of a media overlay with viral content.
(20) FIG. **6**F shows a diagram illustrating an example of a media overlay with audio content.
(21) FIG. **7** shows an interaction diagram illustrating one example embodiment of an operation of the user-based media overlay publication module.
(22) FIG. **8** shows an interaction diagram illustrating an example embodiment of an operation of the merchant-based media overlay publication module.
(23) FIG. **9** shows a flow diagram illustrating one example embodiment of an operation of the user-based media overlay publication module.
(24) FIG. **10** shows a flow diagram illustrating one example embodiment of an operation of the merchant-based media overlay publication module.
(25) FIG. **11** shows a flow diagram illustrating one example embodiment of an operation of a live event module.
(26) FIG. **12** shows a flow diagram illustrating one example embodiment of an operation of a social network module.
(27) FIG. **13** shows a flow diagram illustrating one example embodiment of an operation of a promotion module.
(28) FIG. **14** shows a flow diagram illustrating one example embodiment of an operation of a collection module.
(29) FIG. **15** shows a flow diagram illustrating one example embodiment of an operation of a progressive use module.
(30) FIG. **16** shows a flow diagram illustrating one example embodiment of an operation of a viral use module.
(31) FIG. **17** shows a flow diagram illustrating one example embodiment of an operation of an actionable module.
(32) FIG. **18** shows a flow diagram illustrating one example embodiment of a media overlay publication module.
(33) FIG. **19** is a block diagram illustrating an example of a software architecture that may be installed on a machine, according to some example embodiments.
(34) FIG. **20** illustrates a diagrammatic representation of a machine in the form of a computer system within which a set of instructions may be executed for causing the machine to perform any one or more of the methodologies discussed herein, according to an example embodiment.
(35) FIG. **21** is a block diagram illustrating a mobile device, according to an example embodiment.

DETAILED DESCRIPTION

(36) Although the present disclosure is described with reference to specific example embodiments, it will be evident that various modifications and changes may be made to these embodiments without departing from the broader spirit and scope of the disclosure. Accordingly, the specification and drawings are to be regarded in an illustrative rather than a restrictive sense.
(37) The addition of labels, drawings, and other artwork (e.g., media overlays) to images (e.g., photographs or video) provides a compelling way for users to personalize, supplement, and enhance these images before storage or publication to a broader audience. An example embodiment seeks to provide users with a set of the media overlays (or other enhancements and augmentations) that may be applied to an image. The set of enhancements and augmentations, in the example form of media overlays, may be determined based on a location associated with the image and other contextual information, such as ambient noise or environmental acoustic (audio) sound, particular

objects associated with the image, etc. The media overlays may be presented to a user for selection and combining with an image based on a determined location of the image, or content of the image. For example, where a user takes a photograph or video on a mobile device at a music concert, a media overlay indicating the name of the concert event and a band playing at a current time may be presented to the user for selection and overlay on the photograph or video. In another example, where a user initiates taking (or has taken) a photograph or video at Disneyland, an image overlay indicating the name “Disneyland”, in a particular style, is presented to the user. Further Disneyland-themed image overlays may also be presented to the user. The presentation of the image overlay may be in response to the user performing a gesture (e.g., a swipe operation, a long press) on a screen of the mobile device. The user is then able to select the image overlay and have it applied to an image (e.g., an image that the user takes before the selection, or takes after the selection), in this way to personalize and enhance the image.

(38) In an example embodiment, a media overlay may be presented to a user automatically upon detection of a particular event. For example, when a user initiates taking (or has taken) a photograph or video, content in the photograph or video (e.g., audio, an object, a location, etc.) can trigger one or more media overlays to be displayed to the user for selection. For example, a user may be taking a video that includes audio. A particular audio track may be identified from the audio and a media overlay may be created that includes information such as the audio track name, title, artist name, album art, etc. (as examples). This media overlay may be presented to the user to be incorporated with the video content or other content that the user has taken.

(39) Third party entities (e.g., merchants, restaurants, individuals, etc.) may, in one example embodiment, seek to have overlays included in the set presented for user selection at a particular geographic location. For example, a restaurant at a particular location in San Francisco may wish to have its restaurant name and logo included in a set of media overlays presented to a user, for the purposes of augmenting a photograph taken by the user proximate to the restaurant. According to one example embodiment, such third party entities may bid (or otherwise purchase opportunities) to have a particular media overlay included in a set presented to a user for augmentation of a particular image. Below described are various systems and methodologies that may be used to technically implement the above described image enhancement technologies and capabilities.

(40) More specifically, various examples of a media overlay publication application are described. The media overlay publication application operates at a server and generates media overlays that include content based on geographic locations (also referred to as geolocations) and other contextual information (e.g., characteristics of a content item). Other media enhancements or augmentations may include audio and visual content or visual effects that may be applied to augment a content or media item (e.g., photograph or video) at a mobile device. The media overlay publication application includes a user-based media overlay publication platform and a merchant-based media overlay publication platform.

(41) In the user-based media overlay publication platform, the media overlay publication application may provide a Graphical User Interface (GUI) for a user to upload content and select a geolocation on a map. For example, the user may upload a logo and define boundaries on the map to identify a particular geolocation associated with the logo. Once the user submits the logo and identifies the particular geolocation, the media overlay publication application may generate a media overlay that includes the logo associated with the particular geolocation. As such, mobile devices that are located within the particular geolocation have access to the media overlay.

(42) In the merchant-based media overlay publication platform, the media overlay publication application may provide a GUI for merchants to upload content, select geolocations on a map, and submit bids for the corresponding geolocations. A bidding process may determine the merchant with the highest bid amount. That merchant may then exclude publication of media overlays from other merchants at a selected geolocation of the merchant. Therefore, the media overlay of the highest-bidding merchant may be the only media overlay that can be accessed by mobile devices

that are located at the selected geolocation.
(43) In other examples, the media overlay includes context relevant data, such as a current temperature, an identification of a geolocation of the mobile device (e.g., Venice Beach), a name of a live event associated with the geolocation of the mobile device, or a name of a business.
(44) In some embodiments, a media overlay application at a server provides a live event media overlay to a mobile device. The live event media overlay includes live event data associated with a live event, such as a concert event, a sporting event, or an award ceremony, at a geolocation of the mobile device. For example, a user attending a football game can access a sports media overlay that includes the current score of the football game. In another example, a user attending the Oscars award ceremony can access an entertainment media overlay that includes a name of an Oscar winner.
(45) In other embodiments, the media overlay application at the server provides a social network media overlay to the mobile device. The social network media overlay may be based on social network activities of the user of the mobile device. For example, if the user follows a brand such as McDonald's on a social network service, and the mobile device of the user is located at a McDonald's restaurant, the mobile device of the user can access a McDonald's media overlay. Other users located at the same restaurant would not have access to the McDonald's media overlay unless they also follow McDonald's on the social network service. In another example, the order in which the media overlays are presented to users located at a McDonald's restaurant may be modified so that the McDonald's media overlay is served higher for users following McDonald's on the social network service.
(46) In further embodiments, the media overlay application at the server provides a promotion media overlay to mobile device. The promotion media overlay may be based on promotions from a merchant. For example, the media overlay may be used to implement a Monopoly™ game at McDonald's by randomly selecting a media overlay every time the user of the mobile device walks into a McDonald's restaurant and purchases an item. The media overlay can be used to obtain Monopoly puzzle pieces that can be redeemed towards prizes.
(47) In some embodiments, the media overlay application at the server enables the mobile device to collect media overlays. For example, the mobile overlay application provides the mobile device with permanent access to collected media overlays. The collected media overlays may be stored in a collection portfolio for the mobile device. The mobile device may access any of the media overlays in the collection portfolio at any time.
(48) In some embodiments, the media overlay application at the server provides a history media overlay to the mobile device. The history media overlay may be based on geographic locations of historical sites visited by the user of the mobile device. For example, the mobile device is awarded with a unique media overlay associated with one of the Seven Wonders of the World when the mobile device is located at one of the corresponding Seven Wonders geographic locations.
(49) In another embodiment, the media overlay application at the server provides a progressive use media overlay to the mobile device. The content in the progressive use media overlay changes depending on the number of people that have previously used the progressive use media overlay.
(50) In another example embodiment, users can “purchase” a geolocation for a predetermined amount of time and select a media overlay associated with the geolocation. For example, a college can purchase and select a particular media overlay associated with the geolocation of its campus.
(51) In another example embodiment, the media overlay application provides a viral media overlay to the mobile device. For example, when the user of the mobile device obtains the viral media overlay at a geolocation, that user can send the viral media overlay to mobile devices located outside the geolocation of the original user. Users of the mobile devices located outside the geolocation of the original user can make use of the viral media overlay for the next hour. Those users can also forward the viral media overlay to other users.
(52) In another example embodiment, the media overlay application provides an actionable media

overlay to the mobile device. For example, the actionable media overlay can be a link to open a browser page in the mobile device to obtain a coupon. The actionable media overlay can trigger other functions of the mobile device.

(53) FIG. **1** is a network diagram depicting a network system **100** having a client-server architecture configured for exchanging data over a network, according to one embodiment. For example, the network system **100** may be a messaging system where clients may communicate and exchange data within the network system **100**. The data may pertain to various functions (e.g., sending and receiving text and media communication, determining geolocation) and aspects (e.g., publication of media overlays, management of media overlays) associated with the network system **100** and its users. Although the network system **100** is illustrated herein as having a client-server architecture, other embodiments may include other network architectures, such as peer-to-peer or distributed network architectures.

(54) A data exchange platform **102**, in an example, includes a messaging application **120** and a media overlay application **122**, and may provide server-side functionality via a network **104** (e.g., the Internet) to one or more clients. The one or more clients may include users that utilize the network system **100** and, more specifically, the messaging application **120** and the media overlay application **122**, to exchange data over the network **104**. These operations may include transmitting, receiving (communicating), and processing data to, from, and regarding content and users of the network system **100**. The data may include, but is not limited to, content and user data such as user profiles, messaging content, messaging attributes, media attributes, client device information, geolocation information, media overlay content, messaging content persistence conditions, social network information, and live event data information, among others.

(55) In various embodiments, the data exchanges within the network system **100** may be dependent upon user-selected functions available through one or more client or user interfaces (UIs). The UIs may be associated with a client machine, such as client devices **110**, **112** using a programmatic client **106**, such as a client application. The programmatic client **106** may be in communication with the messaging application **120** and media overlay application **122** via an application server **118**. The client devices **110**, **112** include mobile devices with wireless communication components, and audio and optical components for capturing various forms of media including photos and videos. The client devices **110** and **112** may further include a global positioning system (GPS) processor **107**.

(56) Turning specifically to the messaging application **120** and the media overlay application **122**, an application program interface (API) server **114** is coupled to, and provides a programmatic interface to, one or more application server(s) **118**. The application server **118** hosts the messaging application **120** and the media overlay application **122**. The application server **118** is coupled to one or more database servers **124** that facilitate access to one or more databases **126**.

(57) The API server **114** communicates and receives data pertaining to messages and media overlays, among other things, via various user input tools. For example, the API server **114** may send and receive data to and from an application (e.g., the programmatic client **106**) running on another client machine (e.g., client devices **110**, **112** or a third party server).

(58) In one example embodiment, the messaging application **120** provides messaging mechanisms for users of the client devices **110**, **112** to send messages that include text and media content such as pictures and video. The client devices **110**, **112** can access and view the messages from the messaging application **120** for a limited period of time. For example, the client device **110** can send a message to the client device **112** via the messaging application **120**. Once the client device **112** accesses the message from the messaging application **120**, the message is deleted after a predefined duration has elapsed from the time the client device **112** started viewing the message. Components of the messaging application **120** are described in more detail below with respect to FIG. **2**.

(59) In one example embodiment, the media overlay application **122** provides a system and a method for operating and publishing media overlays for messages processed by the messaging

application **120**. The media overlay application **122** supplies a media overlay to the client device **110** based on characteristics of a content item (e.g., photograph or video) or a geolocation of the client device **110**. In another example, the media overlay application **122** supplies a media overlay to the client device **110** based on other information, such as social network information of the user of the client device **110**.

(60) The media overlay may include audio and visual content and visual effects. Examples of audio and visual content include pictures, texts, logos, animations, and sound effects. An example of a visual effect includes color overlaying. The audio and visual content or the visual effects can be applied to a media content item (e.g., a photo) at the client device **110**. For example, the media overlay includes text that can be overlaid on top of a photograph generated at the client device **110**. In another example, the media overlay includes an identification of a location overlay (e.g., Venice Beach), a name of a live event, a name of a merchant overlay (e.g., Beach Coffee House), or a name of a song. In another example, the media overlay application **122** uses the geolocation of the client device **110** to identify a media overlay that includes the name of a merchant at the geolocation of the client device **110**. The media overlay may include other indicia associated with the merchant. Examples of indicia include logos and other pictures related to the merchant. The media overlays may be stored in the database(s) **126** and accessed through the database server **124**.

(61) In one example embodiment, the media overlay application **122** includes a user-based publication platform that enables users to select a geolocation on a map, and upload content associated with the selected geolocation. The user may also indicate other circumstances under which a particular media overlay can be provided. The media overlay application **122** generates a media overlay that includes the uploaded content and associates the uploaded content with the selected geolocation.

(62) In another example embodiment, the media overlay application **122** includes a merchant-based publication platform that enables merchants to select a particular media overlay associated with a geolocation via a bidding process. For example, the media overlay application **122** associates the media overlay of a highest-bidding merchant with a corresponding geolocation for a predefined amount of time. Components of the media overlay application **122** are described in more detail below with respect to FIG. **3**.

(63) FIG. **2** shows a block diagram illustrating one example embodiment of the messaging application **120**. The messaging application **120** may be hosted on dedicated or shared server machines (not shown) that are communicatively coupled to enable communications between the server machines. The messaging application **120** and the media overlay application **122** themselves are communicatively coupled (e.g., via appropriate interfaces) to each other and to various data sources, so as to allow information to be passed between the messaging application **120** and the media overlay application **122**, or so as to allow the messaging application **120** and the media overlay application **122** to share and access common data. The messaging application **120** and the media overlay application **122** may, furthermore, access the one or more databases **126** via the database server(s) **124**.

(64) The messaging application **120** is responsible for the generation and delivery of messages between users of the programmatic client **106**. The messaging application **120** may utilize any one of a number of message delivery networks and platforms to deliver messages to users. For example, the messaging application **120** may deliver messages using electronic mail (e-mail), instant message (IM), Short Message Service (SMS), text, facsimile, or voice (e.g., Voice over IP (VoIP)) messages via wired (e.g., the Internet), plain old telephone service (POTS), or wireless networks (e.g., mobile, cellular, WiFi, Long Term Evolution (LTE), Bluetooth).

(65) In one example embodiment, the messaging application **120** includes a media receiver module **202**, a media overlay application interface **204**, a message generator module **206**, an ephemeral message access module **208**, and an ephemeral message storage module **210**. The media receiver module **202** receives a message from the programmatic client **106** of the client device **110**. The

message may include a combination of text, photo, or video. The media receiver module **202** also receives persistence metadata associated with the message. The persistence metadata defines how long a message can be viewed. For example, the user of the client device **110** may specify that the message be persistent or can only be viewed or accessed for a user-determined amount of time (e.g., ten seconds). The media overlay application interface **204** communicates with the media overlay application **122** to access and retrieve a media overlay associated with the metadata in the message. The message generator module **206** applies the media overlay to the message from the programmatic client **106** to create an ephemeral message, and temporarily stores the ephemeral message using the ephemeral message storage module **210**.

(66) The ephemeral message access module **208** notifies a recipient of the message of the availability of the ephemeral message. The ephemeral message access module **208** receives a request to access the ephemeral message from the recipient and causes the ephemeral message to be displayed on a client device of the recipient for the maximum duration specified in the persistence metadata. Once the recipient views the message for the maximum duration, the ephemeral message access module **208** causes the client device of the recipient to stop displaying the ephemeral message, and deletes the ephemeral message from the ephemeral message storage module **210**.

(67) FIG. **3** shows a block diagram illustrating one example embodiment of the media overlay application **122**. The media overlay application **122** includes a media overlay publication module **304** and a media overlay engine **306**.

(68) The media overlay publication module **304** provides a platform for publication of media overlays. In an example embodiment, the media overlay publication module **304** includes a user-based media overlay publication module **314** and a merchant-based media overlay publication module **316**. The user-based media overlay publication module **314** enables users of client devices (either mobile or web clients) to upload content and select a geolocation for a user-based media overlay. The merchant-based media overlay publication module **316** enables merchants to upload content, select a geolocation, and submit a bid amount for a merchant-based media overlay. The user-based media overlay publication module **314** is described in more detail below with respect to FIG. **4**A. The merchant-based media overlay publication module **316** is described in more detail below with respect to FIG. **5**A.

(69) The media overlay engine **306** generates and supplies a media overlay based on a characteristic of a content item or a geolocation of a client device. In one example embodiment, the media overlay engine **306** includes a predefined media overlay module **318**, a user-based media overlay module **320**, and a merchant-based media overlay module **322**. The media overlay may be based on predefined media overlays from the predefined media overlay module **318**, user-based media overlays from the user-based media overlay module **320**, and merchant-based media overlays from the merchant-based media overlay module **322**.

(70) The predefined media overlay module **318** supplies the client device with one of a set of predefined media overlays. Examples of predefined media overlays are described in more detail below with respect to FIG. **6**A.

(71) The user-based media overlay module **320** supplies the client device with a user-based media overlay generated by the user-based media overlay publication module **314**. The merchant-based media overlay module **322** supplies the client device with a merchant-based media overlay generated by the merchant-based media overlay publication module **316**.

(72) FIG. **4**A shows a block diagram illustrating one example embodiment of the user-based media overlay publication module **314**. The user-based media overlay publication module **314** includes a user-based content upload module **402**, a user-based geolocation selection module **404**, a user-based duration selection module **406**, and a user-based publication engine **408**.

(73) The user-based content upload module **402** receives uploaded content from a user. The content may include a media item such as a photo or a video. The user-based content upload module **402**

may be implemented on a web server to allow a user to upload the content using a GUI as illustrated in FIG. **4**B.

(74) The user-based geolocation selection module **404** receives geolocation identification information from the user to identify a selected geolocation. The geolocation identification information may include an address, an identification of an establishment already associated with the address, Global Positioning System (GPS) coordinates, or a geographic boundary. For example, the address may include a street number, street address, city, state, and country. The user may also identify a location based on an existing establishment. For example, the geolocation information may include “restaurant x” in Venice Beach. The geographic boundary identifies a region or a zone. For example, the geographic boundary may define a region located within a predetermined radius of an address, a point of interest, or an existing establishment.

(75) In one example embodiment, the geolocation identification information may be embedded in a message or communication from a client device to the user-based geolocation selection module **404**. For example, the user of the client device may take a picture of a sunset at Venice Beach and send the picture to the user-based geolocation selection module **404**, which may then extract the geolocation attribute or identification information from metadata associated with the picture of the sunset. The user-based geolocation selection module **404** may be implemented on a web server to present a user with a GUI in a web page that allows the user to select the geolocation for the content as illustrated in FIG. **4**C.

(76) The user-based duration selection module **406** receives, from the user, time duration information related to the uploaded content and selected geolocation. The time duration information may identify a period of time during which the uploaded content is associated with the selected geolocation. Once the period of time has elapsed, the uploaded content is no longer associated with the selected geolocation. For example, if the time duration indicates twenty-four hours, the media overlay engine **306** makes the user-based media overlay available to client devices that are located at the selected geolocation. Once twenty-four hours has elapsed, the user-based media overlay is no longer accessible by the client devices at the selected geolocation.

(77) Other embodiments include periodic time duration information or specific time duration information. For example, for the periodic time duration information, the user-based media overlay is published and made available at the selected geolocation every Sunday (e.g., a religion-related media overlay available on days of religious services). For the specific time duration information, the user-based media overlay is published and made available at the selected geolocation around a specific holiday or date (e.g., Thanksgiving weekend, New Year's day).

(78) The user-based publication engine **408** generates a user-based media overlay that associates the uploaded content from the user-based content upload module **402** with the selected geolocation from the user-based geolocation selection module **404**. The user-based publication engine **408** publishes the user-based media overlay to client devices that are located within the selected geolocation for the time duration identified with the user-based duration selection module **406**.

(79) In another example embodiment, the user-based publication engine **408** determines that no other user-based media overlays exist during the same period of time for the same selected geolocation. The user-based publication engine **408** may publish just one user-based media overlay at any time for the same selected geolocation. In another example embodiment, a limit may be placed on the number of user-based media overlays available at any time for the same selected geolocation. Thus, the user-based publication engine **408** may publish and make available a limited number of user-based media overlays at any time for the same selected geolocation. In another example embodiment, user-based media overlays may be published to only contacts or “friends” of the uploading user.

(80) FIG. **4**B illustrates an example of a GUI **410** for uploading content and for selecting a geographic region on a map. The GUI **410** includes a map **412**, an upload image box **414**, a select location button **416**, a overlay title box **418**, and a submit button **420**. The upload image box **414**

enables a user to upload content (e.g., a picture) to the user-based content upload module **402**. The select location button **416** enables the user to identify a geolocation by drawing boundaries on the map **412** or by inputting an address or a zip code. The identified geolocation is submitted to the user-based geolocation selection module **404**. The overlay title box **418** enables the user to submit a name for the media overlay. The user may submit the content and the requested geolocation by clicking on the submit button **420**. Once the content and requested geolocation are submitted, the user-based publication engine **408** generates a user-based media overlay that includes the uploaded content for the identified geolocation.

(81) FIG. **4**C illustrates an example where user-identified boundary points **424**, **426**, **428**, and **430** on the map **412** define a geolocation **422**. The user has uploaded a picture of the sun **415** displayed in the upload image box **414**. The user has entered the title of the content "Fun in the sun!" in the overlay title box **418**. The user may submit the picture of the sun **415** and the geolocation **422** by clicking on the submit button **420**. Once the picture of the sun **415** and the geolocation **422** are submitted, the user-based publication engine **408** generates a user-based media overlay.

(82) FIG. **4**D illustrates an example of a publication of a user-based media overlay. The media overlay application **122** detects that a mobile device **1802** of a user **1816** is located at the geolocation **422**. The media overlay application **122** retrieves a user-based media overlay **440** corresponding to the geolocation **422** and publishes the user-based media overlay **440** to the mobile device **1802**. The user-based media overlay **440** is applied to media content **1806** in a display **1804** of the mobile device **1802**.

(83) FIG. **5**A shows a block diagram illustrating one example embodiment of the merchant-based media overlay publication module **316**. The merchant-based media overlay publication module **316** includes a merchant-based content upload module **502**, a merchant-based geolocation selection module **504**, a merchant-based duration selection module **506**, a merchant-based bidding module **508**, and a merchant-based publication engine **510**.

(84) The merchant-based content upload module **502** receives content from a merchant. The content may include a media item such as a picture, a video, a graphic, or a text. The merchant-based content upload module **502** may be implemented on a web server to allow a merchant to upload the content using a webpage.

(85) The merchant-based geolocation selection module **504** receives geolocation identification information from the merchant to identify a selected geolocation. The geolocation identification information may include an address of an establishment, an identification of an establishment already associated with the address, GPS coordinates, or a geographic boundary. For example, the address of the establishment may include a street number, street address, city, state, and country. The merchant may also identify a location based on an existing establishment. For example, the geolocation information may include "restaurant x" in Venice Beach. The geographic boundary identifies a region or a zone. For example, the geographic boundary may define a region located within a predetermined radius of an address, a point of interest, or an existing establishment. The merchant may further define the geographic boundary by drawing a virtual fence on a map. The merchant-based geolocation selection module **504** may be implemented on a web server to allow a merchant to draw boundaries on a map in a web page.

(86) The merchant-based duration selection module **506** receives, from the merchant, time duration information related to the uploaded content and selected geolocation. The time duration may identify a period of time in which the uploaded content is associated with the selected geolocation. Once the period of time has elapsed, the uploaded content is no longer associated with the selected geolocation. Other embodiments include periodic time duration information or specific time duration information. For example, for the periodic time duration information, the merchant-based media overlay is published or made available at the selected geolocation (e.g., corner of two identified streets) every Saturday night (e.g., a nightclub-related media overlay available every Saturday night). For the specific time duration information, the selected media overlay is published

or made available at the selected geolocation around a specific date (e.g., party event date).
(87) The merchant-based bidding module **508** provides an interface to enable merchants to submit a bid amount for a common geolocation. The common geolocation may include, for example, a same street address. For example, several businesses may have the same street address but different suite numbers in a shopping center. FIG. **5**B illustrates an example of a common geolocation **516**. Merchant A geolocation boundaries **512** overlap with merchant B geolocation boundaries **514** to define a common geolocation **516**. Thus, merchants A and B may submit respective bids corresponding to the common geolocation **516**. In one example embodiment, the merchant-based geolocation selection module **504** determines common geolocations from the geolocations selected by the merchants. The merchant-based bidding module **508** identifies a highest bidder for the common geolocation **516** and awards the highest bidder with the ability to exclude other merchant-based media overlays from the common geolocation **516** for a predefined amount of time.
(88) In another example embodiment, the merchant-based bidding module **508** prorates bid amounts based on their corresponding time duration information. For example, merchant A submits a bid amount of $100 for one day for a specific geolocation. Merchant B submits a bid amount of $160 for two days for the same specific geolocation. The merchant-based bidding module **508** may prorate the bid from merchant B for one day (e.g., $80) and compare both bids for the same period of time (e.g., one day) to determine a highest bidder.
(89) The merchant-based publication engine **510** generates a merchant-based media overlay that associates the uploaded content of the highest bidder with the geolocation identified by the highest bidder. The merchant-based publication engine **510** publishes the merchant-based media overlay to client devices that are located at the geolocation selected by the highest bidder for the time duration identified with the merchant-based duration selection module **506**. Merchant-based media overlays from other merchants in the common geolocation **516** are excluded from publication. In another embodiment, a quota may be placed on the number of merchant-based media overlays available for the common geolocation **516**. For example, the merchant-based publication engine **510** may publish and make available a limited number of merchant-based media overlays (e.g., a maximum of two merchant-based media overlays) for the common geolocation **516**.
(90) In another example embodiment, the merchant-based publication engine **510** forms a priority relationship that associates the uploaded content of the highest bidder with the geolocation selected by the highest bidder. For example, an order in which media overlays are displayed at the client device **110** may be manipulated based on the results from the merchant-based bidding module **508**. A media overlay of a merchant with the highest bid may be prioritized and displayed first at the client device **110**. Media overlays from other merchants may be displayed at the client device **110** after the media overlay of the highest bidder. In another example embodiment, a merchant may be able to bid on all locations at which it maintains a presence. Thus, a restaurant chain may be able to have its media overlay(s) published at each of its restaurant chain locations.
(91) FIG. **5**C illustrates an example of a GUI **520** for uploading content and for selecting a geolocation on a map. The GUI **520** includes a map **522**, an upload image box **524**, a select location button **526**, an overlay title box **528**, a bid amount entry box **530**, a campaign length entry box **532**, and a submit button **534**. The upload image box **524** enables a merchant to upload content (e.g., a picture, a video, or an animation) to the merchant-based content upload module **502**. The select location button **526** enables the merchant to identify a geolocation by drawing boundaries on the map **522** or by inputting an address or a zip code. The overlay title box **528** enables the merchant to submit a name for the media overlay. The bid amount entry box **530** enables the merchant to enter a bid amount for the identified geolocation. The campaign length entry box **532** enables the merchant to specify a length of a campaign in which the uploaded content is associated with the identified geolocation. The merchant may submit the uploaded content and entered information by clicking on the submit button **534**.
(92) FIG. **5**D illustrates an example where a merchant A has identified boundary points **542**, **544**,

546, and **548** on the map **522** to define a geolocation **540**. Merchant A has uploaded a picture **525** displayed in the upload image box **524**. Merchant A has entered a title "Coffee shop A" in the overlay title box **528**, a bid amount of $300 in the bid amount entry box **530**, and a campaign length of 30 days in the campaign length entry box **532**. Merchant A submits the picture **525**, the requested geolocation **540**, and other entered information by clicking on the submit button **534**. The merchant-based publication engine **510** generates a media overlay for merchant A.

(93) FIG. **5**E illustrates an example where another merchant, merchant B, has identified boundary points **552**, **554**, **556**, and **558** on the map **522** to define a geolocation **550**. Merchant B has uploaded a picture **527** displayed in the content upload box **524**. Merchant B has entered a title "Coffee shop B" in the overlay title box **528**, a bid amount of $500 in the bid amount entry box **530**, and a campaign length of 30 days in the campaign length entry box **532**. Merchant B may submit the picture **527**, the requested geolocation **550**, the bid amount, and the campaign length by clicking on the submit button **534**. The merchant-based publication engine **510** generates a media overlay for merchant B.

(94) FIG. **5**F shows a diagram illustrating an example of a merchant-based media overlay selected based on a bidding process. The geolocation **540** of merchant A and the geolocation **550** of merchant B overlap at a common geolocation **545**. The user **1816** is located at the common geolocation **545** and uses the mobile device **1802** to generate the media content **1806** (e.g., user **1816** takes a picture) in the display **1804** of the mobile device **1802**. The media overlay of the merchant with the highest bid for the common location **545** is published to the mobile device **1802**. In the present example, merchant B has outbid merchant A. As such, a media overlay **560** of merchant B is provided and displayed in the display **1804** on top of the media content **1806**. The media overlay **560** contains the uploaded content from merchant B. In addition, "merchant" in the context of the current example embodiments may include not only entities involved in the trade or sale of merchandise but any other entity as well, including individuals, universities, non-profit organizations, student organizations, clubs, etc.

(95) FIG. **6**A shows a block diagram illustrating one example embodiment of the predefined media overlay module **318**. The predefined media overlay module **318** includes, for example, a live event module **602**, a social network module **604**, a promotion module **606**, a collection module **608**, a progressive use module **610**, a viral use module **612**, an actionable module **614**, a history aware module **616**, and an audio module **618**.

(96) The live event module **602** generates a media overlay based on live event information. The live event information may be related to a live game score of a sporting event associated with a corresponding geolocation, or a live news event related to an entertainment (e.g., concert) or social event associated with a corresponding geolocation. For example, a user of the client device **110** attends a live sporting event (e.g., a game) at a stadium. As such, media metadata from the client device **110** may identify the location of the stadium with a date and time. The live event module **602** uses that information to search for a live event associated with the location of the stadium, date, and time. The live event module **602** retrieves a current or nearly current game score associated with the live sporting event at the stadium (e.g., via the ESPN API). The live event module **602** may also retrieve insignias or team logos associated with the live sporting event. As such, the live event module **602** generates a media overlay containing the latest score based on news sources covering the live sporting event.

(97) In another example, the user of the client device **110** attends a live social event at a venue. Similarly, media metadata identifies the location of the venue with a date and time. The live event module **602** uses that information to search for a live event associated with the location of the venue, date, and time from sources such as a social network server or news media service. The live event module **602** retrieves a news feed associated with the live social event at the venue. As such, the live event module **602** generates a media overlay containing information or content based on news retrieved from a news feed associated with the live social event at the venue.

(98) The social network module **604** generates a media overlay based on social network information of a user of the client device **110**. The social network information may include social network data retrieved from a social network service provider. The social network data may include profile data of the user, “likes” of the user, establishments that the user follows, friends of the user, and postings of the user, among others. For example, the media overlay associated with a restaurant may be available to the user at the location of the restaurant if the user has identified himself as a fan of the restaurant or indicates a “like” of the restaurant with the social network service provider. In another example, the ranking or priority of displaying the media overlay in the client device **110** of the user may be based on the profile of the user or the number of “check-ins” of the user at the restaurant.
(99) In another example embodiment, the media overlay may be restricted and available only to the user and the social network (e.g., friends or other users in different categories) of the user of the client device **110**. As such, the user may forward the media overlay to his friends.
(100) The promotion module **606** generates media overlays for a promotion (e.g., a game, contest, lottery). For example, a set of unique media overlays may be generated. One media overlay from the set of unique media overlays may be provided to the client device **110** when the client device **110** is at a predefined location associated with the media overlays or when an object (e.g., name, logo, product, etc.) is recognized in a photograph or video taken by the user. For example, the user may visit a fast food restaurant. The media metadata from the client device **110** identifies the location of the fast food restaurant. The promotion module **606** retrieves a unique media overlay from the set of unique media overlays and provides it to the client device **110**. The promotion module **606** may remove the unique media overlay from the set of unique media overlays after it has been provided to the client device **110**. In another embodiment, the promotion module **606** removes the unique media overlay from the set of unique media overlays after it has been provided to other client devices for a predefined number of times.
(101) In another example, a promotional media overlay may be generated based on occurrences in another application (e.g., communicated to the media overlay application **122** via an API). For example, the media overlay may be an image of a character from a video game provided to the client device **110**, or made available to a user, when the user completes a level in the video game. The media overlay may be available for a single use, multiple uses, for a period of time, or indefinitely.
(102) In another example, a media overlay may be provided to the client device **110** or made available to a user based on another account that the user has linked with the media overlay application (e.g., via an account associated with the media overlay application). For example, the user may have an Xbox account that is linked to the user's account for the media overlay application. The user may be a first user and the first user may beat a second user on Xbox (e.g., playing a football game). The game or application on the Xbox may communicate the fact that the first user beat the second user on Xbox to the media overlay application **122** (e.g., via an API). A media overlay may be generated and provided to the client device **110** or made available to the first user, that includes information regarding the first user beating the second user. For example, the media overlay may include the fact that the first user beat the second user, the score, the overall record of the first user vs. the second user, etc.
(103) In another example, a user may have linked a frequent flier account (e.g., an American Airlines account) to the media overlay application. When the user is boarding an airplane for a flight or is on a flight associated with the frequent flier account (e.g., on American Airlines flight number **10** from LAX to JFK), the user may receive a media overlay associated with the flight. For example, the user may receive a media overlay that includes the airlines logo, the flight route, the departure and arrival time, a decorative image of the departure and arrival cities (e.g., Los Angeles and New York), etc.
(104) The media overlay includes content related to a game or promotion. In another example, the

media overlay may include dynamic content adjusted based on the game or promotion. For example, the dynamic content may include a current number of remaining media overlays of the game or promotion. The media overlays from the promotion module **606** may be "collected" by the client device **110**. For example, the client device **110** may store the media overlay in a collection at the client device **110**. A prize may be redeemed upon collection of each overlay of a predefined set of media overlays.

(105) The collection module **608** generates collectible media overlays. For example, the client device **110** is provided with a media overlay associated with the geolocation of the client device **110**. The media overlay may be collected by the client device **110** and be made permanently available to the client device **110**. The client device **110** may store the collected media overlay in a collection folder at the client device **110**.

(106) The progressive use module **610** generates media overlays with dynamic content that changes based on a number of uses of the media overlays. For example, a media overlay can be set to be used for a limited number of times. Every time the media overlay is provided to a client device, a content of the media overlay is adjusted. For example, the media overlay may include a fundraising progress bar in which a level of the bar rises every time the media overlay is used. The dynamic content in the media overlay may include a countdown displaying the number of remaining usages of the media overlay.

(107) The viral use module **612** generates media overlays that can be forwarded to other users outside a geolocation associated with the media overlays. For example, the client device **110** receives a media overlay based on a geolocation of the client device **110**. The client device **110** can send the media overlay to the client device **112** that is outside the geolocation of the client device **110**. The forwarded media overlay may be available for use by the client device **112** for a predefined time limit (e.g., one hour). Similarly, the client device **112** may forward the media overlay to other client devices outside the geolocation of the client device **110** for use within the predefined time limit.

(108) The actionable module **614** generates media overlays with an action associated with a content item of the media overlays. For example, the media overlay can start a browser of the client device **110** and open a predetermined website in the browser. In another embodiment, the media overlay is capable of opening other functionalities (e.g., a payment application) or executing other programs at the client device **110**. For example, a user can tap on the media overlay to download or display a coupon associated with the media overlay at the client device **110**.

(109) The history aware module **616** generates media overlays based on geolocation of the client device **110** and historical events associated with the geolocation. For example, a media overlay may include pictures of a pyramid associated with the geolocation of the client device **110**. The media overlays may be collected based on the historical events or, for example, for each of the Seven Natural Wonders of the World. For example, a media overlay associated with a national park may be collected when the user visits the national park. The client device **110** can collect all media overlays associated with all national parks.

(110) The audio module **618** generates media overlays based on audio content (e.g., an audio track) associated with a content item received from a client device **110**. For example, a media overlay may include one or more of a title associated with the audio content, an artist name associated with the audio content, an album name associated with the audio content, album artwork associated with the audio content, lyrics associated with the audio content, etc. In another embodiment, the media overlay is capable of opening other functionalities (e.g., to buy the song associated with the audio content, to get more information about the song, etc.). For example, a user can tap on the media overlay to download or display a coupon associated with the media overlay at the client device **110**.

(111) FIG. **6**B shows a diagram illustrating an example of a media overlay **1820** with live data content. The media overlay **1820** contains live data associated with a geolocation of the mobile device **1802**. For example, the live data contains a live weather status **1822** and a latest score

update **1824** of a sporting event associated with the geolocation of the mobile device **1802**. The mobile device **1802** displays the media overlay **1820** on top of (e.g., as a transparent overlay) the media content **1806** on the display **1804**. In one example embodiment, the media overlay **1820** may be implemented with the live event module **602** of FIG. **6**A.

(112) FIG. **6**C shows a diagram illustrating an example of a media overlay **1830** with promotional content. For example, the media overlay **1830** includes a digital coupon **1832** that can be redeemed at a coffee shop. The media overlay **1830** may include dynamic content **1834**. For example, the dynamic content **1834** may include a remaining number of times the coupon can be used. Furthermore, the media overlay **1830** may include an actionable area **1836** that is associated with an executable function. For example, when the user taps the actionable area **1836**, the media overlay **1830** is forwarded to a mobile device of a friend of the user. The mobile device **1802** displays the media overlay **1830** on top of the media content **1806** on the display **1804**. In one example embodiment, the media overlay **1830** may be implemented with the social network module **604**, the promotion module **606**, the progressive use module **610**, and the actionable module **614** of FIG. **6**A.

(113) FIG. **6**D shows a diagram illustrating an example of a collectible media overlay **1840**. The collectible media overlay **1840** may be randomly supplied to the mobile device **1802** in response to detecting the mobile device **1802** at a geolocation associated with the collectible media overlay **1840**. The collectible media overlay **1840** can be stored at the mobile device **1802**. Once the mobile device **1802** detects that related collectible media overlays have been stored, the mobile device **1802** may cause the related collectible media overlays or a corresponding unique media overlay to be displayed in the display **1804**. The mobile device **1802** displays the media overlay **1840** on top of the media content **1806** on the display **1804**. In one example embodiment, the media overlay **1840** may be implemented with the collection module **608** of FIG. **6**A.

(114) FIG. **6**E shows a diagram illustrating an example of a viral media overlay **1850**. The viral media overlay **1850** may include dynamic content **1854** and an actionable area **1852**. For example, the dynamic content **1854** shows a progress bar and a goal of a fundraising event. The progress bar is adjusted based on a latest amount raised. The actionable area **1852** may trigger the mobile device **1802** to cause a financial transaction (e.g., donation) and a communication to another mobile device (e.g., message to another mobile device using the messaging application **120**). The mobile device **1802** displays the viral media overlay **1850** on top of the media content **1806** on the display **1804**. In one example embodiment, the viral media overlay **1850** may be implemented with the progressive use module **610**, the viral use module **612**, and an actionable module **614** of FIG. **6**A.

(115) FIG. **6**F shows a diagram illustrating an example of a media overlay **1860** with audio content. The media overlay **1860** may include dynamic content **1864** that includes, for example, a song title **1862** and a band name. The dynamic content **1864** may also include an actionable area **1866**. The actionable area **1866** may provide additional information about the song, how to buy the song, etc. The mobile device **1802** may display the media overlay **1860** on top of the media content **1806** (e.g., content item) on the display **1804**. In one example, the media overlay **1860** may be implemented with the audio module **618** and the actionable module **614** of FIG. **6**A. In the alternative, or in addition, the actionable area **1866** may be in another location (e.g., below the media content **1806**). In another example, a user gesture (e.g., a finger swipe upwards on the media content **1806**), may cause an action to occur (e.g., buy the song, listen to the full track, learn more about the artist, etc.).

(116) FIG. **7** shows an interaction diagram illustrating one example embodiment of an operation of the user-based media overlay publication module **314**. At operation **711**, the client device **110** of a first user uploads content and sends a requested geolocation and a requested time duration to the media overlay application **122**. At operation **713**, the media overlay application **122** generates a media overlay based on the uploaded content and associates the media overlay with the requested geolocation for the requested time duration. In one example embodiment, operations **711** and **713**

may be implemented with the user-based media overlay publication module **314** of FIG. **3**.
(117) At operation **714**, the client device **112** of a second user sends geolocation information to the messaging application **120**. At operation **715**, the messaging application **120** identifies, from the media overlay application **122**, a media overlay based on the geolocation information of the client device **112**. At operation **718**, the media overlay application **122** supplies the client device **112** with the identified media overlay. In one example embodiment, operations **716** and **718** may be implemented with the media overlay engine **306** of FIG. **3**.
(118) FIG. **8** shows an interaction diagram illustrating an example embodiment of an operation of the merchant-based media overlay publication module **316**. At operation **808**, a client device **802** of merchant A uploads content with geolocation information (e.g., geolocation X) and a bid amount (e.g., bid amount A) to the media overlay application **122** to form media overlay A. At operation **810**, a client device **804** of merchant B uploads content with the same geolocation information (e.g., geolocation X) and a bid amount (e.g., bid amount B) to the media overlay application **122** to form media overlay B. At operation **812**, the media overlay application **122** determines a highest bidder, and associates the media overlay of the highest bidder with geolocation X. For example, if bid amount A is greater than bid amount B, media overlay A is provided to client devices that are located at geolocation X. In one example embodiment, operations **808**, **810**, and **812** may be implemented with the merchant-based media overlay publication module **316** of FIG. **3**.
(119) At operation **814**, a client device **806** at geolocation X sends its geolocation information to the messaging application **120**. At operation **816**, the messaging application **120** identifies, from the media overlay application **122**, the media overlay associated with the geolocation X. At operation **818**, the media overlay application **122** supplies the client device **806** with media overlay A. In one example embodiment, operations **816** and **818** may be implemented with the media overlay engine **306** of FIG. **3**. In another example embodiment, the media overlay application **122** supplies both media overlays A and B to the client device **806** with instructions for the client device **806** to display media overlay A first before media overlay B since merchant A was the highest bidder.
(120) FIG. **9** shows a flow diagram illustrating one example embodiment of a method **901** of the user-based media overlay publication module **314**. At operation **903**, the user-based media overlay publication module **314** receives uploaded content and a requested geolocation from a first client device. In one example embodiment, operation **903** may be implemented with the user-based content upload module **402**, the user-based geolocation selection module **404**, and the user-based duration selection module **406** of FIG. **4**A.
(121) At operation **904**, the user-based media overlay publication module **314** forms a user-based media overlay that includes the uploaded content and is associated with the requested geolocation. In one example embodiment, operation **904** may be implemented with the user-based publication engine **408** of FIG. **4**A.
(122) At operation **906**, the user-based media overlay publication module **314** receives geolocation information from a second client device. At operation **908**, the user-based media overlay publication module **314** determines whether the geolocation of the second client device is within the requested geolocation from the first client device. At operation **909**, the user-based media overlay publication module **314** publishes the user-based media overlay from the first client device to the second client device in response to the geolocation of the second client device being within the requested geolocation from the first client device. In one example embodiment, operation **909** may be implemented with the user-based media overlay module **320** of FIG. **3**.
(123) At operation **911**, the media overlay engine **306** supplies predefined media overlays corresponding to the geolocation of the second client device to the second client device, in response to the geolocation of the second client device not being within the requested geolocation from the first client device. In one example embodiment, operation **911** may be implemented with the predefined media overlay module **318** of FIG. **3**.
(124) FIG. **10** shows a flow diagram illustrating one example embodiment of a method **1000** of

operation for the merchant-based media overlay publication module **316**. At operations **1002** and **1004**, the merchant-based media overlay publication module **316** receives uploaded content, geolocation information, and corresponding bid amounts from merchants. For example, at operation **1002**, the merchant-based content upload module **502** receives content A from merchant A. The merchant-based geolocation selection module **504** receives geolocation X from merchant A. The merchant-based bidding module **508** receives bid amount A from merchant A.

(125) At operation **1004**, the merchant-based content upload module **502** receives content B from merchant B. The merchant-based geolocation selection module **504** receives geolocation X from merchant B. The merchant-based bidding module **508** receives bid amount B from merchant B.

(126) At operation **1006**, the highest bid amount is determined. In one example embodiment, operation **1006** may be implemented with the merchant-based bidding module **508** of FIG. **6**A. If bid amount A is greater than bid amount B, the merchant-based publication engine **510** generates a merchant-based media overlay A based on content A and geolocation X at operation **1008**. At operation **1010**, the merchant-based media overlay module **322** supplies merchant-based media overlay A to client devices that are located at geolocation X.

(127) If bid amount B is greater than bid amount A, the merchant-based publication engine **510** generates a merchant-based media overlay B based on content B and geolocation X at operation **1014**. At operation **1016**, the merchant-based media overlay module **322** supplies merchant-based media overlay B to client devices that are located at geolocation X.

(128) FIG. **11** shows a flow diagram illustrating one example embodiment of a method **1100** of operation for the live event module **602**. At operation **1104**, the live event module **602** receives geolocation information from a client device. At operation **1106**, the live event module **602** identifies a live event associated with the geolocation information. At operation **1108**, the live event module **602** accesses live event data related to the live event. At operation **1110**, the live event module **602** generates a live event media overlay based on the live event data. At operation **1112**, the live event module **602** supplies the live event media overlay to the client device.

(129) FIG. **12** shows a flow diagram illustrating one example embodiment of a method **1200** of operation for the social network module **604**. At operation **1202**, the social network module **604** receives social network information from a client device. At operation **1204**, the social network module **604** accesses social network data from social network service providers based on the social network information from the client device. At operation **1206**, the social network module **604** identifies a geolocation from geolocation information of the client device. At operation **1208**, the social network module **604** generates a social network-based media overlay based on the social network data and geolocation of the client device. At operation **1210**, the social network module **604** supplies the social network-based media overlay to the client device.

(130) FIG. **13** shows a flow diagram illustrating one example embodiment of a method **1300** of operation for the promotion module **606**. At operation **1302**, the promotion module **606** generates a set of media overlays for a merchant for a predefined geolocation. At operation **1304**, the promotion module **606** receives geolocation information from a client device. At operation **1306**, the promotion module **606** identifies the geolocation of the client device from the geolocation information. At operation **1308**, the promotion module **606** accesses the set of media overlays for the merchant associated with the geolocation. At operation **1310**, the promotion module **606** randomly selects at least one media overlay from the set of media overlays. At operation **1312**, the promotion module **606** supplies the randomly selected media overlay(s) to the client device.

(131) FIG. **14** shows a flow diagram illustrating one example embodiment of a method **1400** of operation for the collection module **608**. At operation **1402**, the collection module **608** receives geolocation information from a client device. At operation **1404**, the collection module **608** determines the geolocation of the client device from the geolocation information. At operation **1406**, the collection module **608** accesses media overlays associated with the geolocation of the client device. At operation **1408**, the collection module **608** stores the media overlays in a media

overlay collection associated with the client device. At operation **1410**, the collection module **608** presents the media overlays in the media overlay collection to the client device for use.

(132) FIG. **15** shows a flow diagram illustrating one example embodiment of a method **1500** of operation for the progressive use module **610**. At operation **1502**, the progressive use module **610** generates a progressive use media overlay for a geolocation. At operation **1504**, the progressive use module **610** receives geolocation information from a first client device at the geolocation. At operation **1506**, the progressive use module **610** supplies the progressive use media overlay to the first client device, and generates a first modified media overlay based on the progressive use media overlay. At operation **1508**, the progressive use module **610** receives geolocation information from a second client device at the geolocation. At operation **1510**, the progressive use module **610** supplies the first modified media overlay to the second client device, and generates a second modified media overlay based on the first modified media overlay.

(133) FIG. **16** shows a flow diagram illustrating one example embodiment of a method **1600** of operation for the viral use module **612**. At operation **1602**, the viral use module **612** generates a media overlay for a geolocation. At operation **1604**, the viral use module **612** receives media metadata from a first client device at the geolocation. At operation **1606**, the viral use module **612** supplies the media overlay to the first client device at the geolocation. At operation **1608**, the viral use module **612** receives a request from the first client device to forward the media overlay to a second client device outside the geolocation. At operation **1610**, the viral use module **612** provides the media overlay for a limited time to the second client device outside the geolocation.

(134) FIG. **17** shows a flow diagram illustrating one example embodiment of a method **1700** of operation for the actionable module **614**. At operation **1702**, the actionable module **614** generates an actionable media overlay having an actionable portion associated with a function. At operation **1704**, the actionable module **614** provides the actionable media overlay to a first client device. At operation **1706**, the actionable module **614** receives a media item (e.g., a photo) with the media overlay from the first client device. At operation **1708**, the actionable module **614** supplies the media item with the media overlay to a second client device. At operation **1710**, the actionable module **614** identifies a selection of the actionable portion from the second client device. At operation **1712**, the actionable module **614** executes a function associated with the actionable portion at the second client device.

(135) FIG. **18** shows a flow diagram illustrating one example embodiment of a method **1800** of operation for a media overlay publication module **304**. At operation **1882**, the media overlay publication module **304** may receive a content item (e.g., photograph, video, etc.) from a client device **110** (for example). For instance, a user of the client device **110** may be taking a photograph or a video using the client device **110**. While the user is taking the photograph or video, or after the user has taken the photograph or video, the client device **110** may send a portion of the video, audio related to the photograph or video (e.g., playing in the background), or the captured photograph or video to the media overlay publication module **304**.

(136) At operation **1884**, the media overlay publication module **304** may determine whether one or more characteristics of the content item match a trigger for a media overlay. Exemplary characteristics or triggers may include a geolocation associated with the content item or client device **110**, audio content in the content item, a speed of the client device **110** based on movement data from the client device **110**, a timestamp associated with the content item, data associated with a machine-readable code (e.g., a bar code, a QR code), an object in the content item, adding a new recipient for the content item, etc. If one or more characteristics of the content item match a trigger for a media overlay, at operation **1886** the media overlay publication module **304** may generate a media overlay associated with the content item. A media overlay may include a creative overlay, a geo lens, an audio filter, a music clip, creative tools, access to additional features or functionality, audio clips, etc.

(137) For example, the media overlay publication module **304** may detect audio content in the

content item and identify an audio track based on the audio content in the content item (e.g., matching a fingerprint of the audio content to known fingerprints to identify an audio track). The audio track may trigger generation of a media overlay associated with the audio track. A media overlay may be generated that includes at least one of a title associated with the audio track, an artist name associated with the audio track, an album name associated with the audio track, album artwork associated with the audio track, lyrics associated with the audio track, etc. (see, e.g., FIG. **6**F).

(138) The audio track may be playing at a live event, such as a concert, in one example. Different media overlays may be generated based on which band is playing at the concert, which song is playing, etc. For example, a media overlay may be generated that includes the particular song and band that is playing, the next song or band that will play, the previous song or band that played, a highlighted song and/or band amongst a list of songs and/or bands that are playing or will play during the course of the event, one or more timestamps for when the song is playing or will end, etc. The media overlay publication module **304** may use other information (e.g., schedule information) associated with the event to supplement the information received from the client device **110**.

(139) In another example, the media overlay may provide additional audio content to include with the content item. For example, the content item may include one or more photographs or video with a particular audio track playing in the background. The media overlay publication module **304** may identify the audio track as described above and provide a continuous version of the audio track set to the photograph(s) or video.

(140) In another example, the media overlay publication module **304** may detect a particular object in the content item (e.g., in a photograph or video) and identify the object (e.g., using object recognition technology). A media overlay may be generated associated with the object. For example, a media overlay may be provided to the client device **110** in response to the user taking a photograph or video of a certain object (e.g., an incentive or reward for taking the photograph or video). The media overlay may be related to the object or have further information about the object. For example, the media overlay publication module **304** may recognize an object indicating that the user is at Disneyland and present a Disney-themed media overlay. In another example, the media overlay publication module **304** may recognize an object such as a logo, brand name, product, particular person (e.g., celebrity), etc.

(141) In another example, the media overlay publication module **304** may detect data from a machine-readable code (e.g., barcode, QR code, etc.) in the content item. A media overlay may be created or selected based on the code provided. For example, a machine-readable code may be created for a musical artist and a media overlay may be created for the musical artist. A user may use the client device **110** to scan the machine-readable code related to the musical artist and the media overlay publication module **304** may generate the media overlay associated with the musical artist. Additionally or alternatively, additional accessories or features (e.g., tools for editing photographs or video, etc.) may be provided to a user.

(142) In another example, the media overlay publication module **304** may detect a geolocation associated with the content item and generate a media overlay associated with that geolocation (e.g., a media overlay with a real-time score of a game, a media overlay of concert information, etc.), as discussed in further detail above.

(143) At operation **1888**, the media overlay publication module **304** may send the media overlay to the client device **110**. The media overlay may be displayed on the client device **110** (e.g., overlaid on the photograph or image), or a notification may be displayed to the user indicating that one or more media overlays are available for the photograph or video (e.g., audio media overlay, creative tool, etc.) The user may access the one or more media overlays by interacting with the client device **110** (e.g., pressing a button, long pressing the screen, swipe or other gesture, etc.). In addition, or alternatively, the media overlay may be already stored locally on the client device **110** and the

media overlay publication module **304** may send an indication to the client device **110** to “unlock” the media overlay to provide to a user.
(144) The user may select to use the media overlay and then send the content item including the media overlay to one or more recipients. The media overlay publication module **304** may receive the content item including the media overlay in operation **1890**. The media overlay publication module **304** may send the content item with the media overlay to a second client device **112** (or one or more client devices) at operation **1892**. The content item with the media overlay may be displayed on the second client device **112**.
(145) Before sending the content item with the media overlay to the second client device, the media overlay publication module **304** may generate a second media overlay for the content item. The media overlay publication module **304** may send the content item with the media overlay (e.g., the first media overlay) and the second media overlay to the second client device **112**. For example, the first media overlay may include audio track information, and the second media overlay may include a link or shortcut to other information about the audio track (e.g., detail about the track, artist, album, or lyrics, how to buy the audio track or album, etc.) that can be displayed and/or accessed by a user of the second client device. In one example, the second media overlay may be an actionable media overlay as described above.
(146) Characteristics of a content item may trigger other things in addition to or instead of a media overlay. For example, geolocation information indicating that a user is in a particular store may trigger access to a particular eCommerce store related to the physical store the user has entered.
(147) Certain embodiments are described herein as including logic or a number of components, modules, or mechanisms. Modules may constitute either software modules (e.g., code embodied (1) on a non-transitory machine-readable medium or (2) in a transmission signal) or hardware-implemented modules. A hardware-implemented module is a tangible unit capable of performing certain operations and may be configured or arranged in a certain manner. In example embodiments, one or more computer systems (e.g., a standalone, client, or server computer system) or one or more processors may be configured by software (e.g., an application or application portion) as a hardware-implemented module that operates to perform certain operations as described herein.
(148) In various embodiments, a hardware-implemented module may be implemented mechanically or electronically. For example, a hardware-implemented module may comprise dedicated circuitry or logic that is permanently configured (e.g., as a special-purpose processor, such as a field programmable gate array (FPGA) or an application-specific integrated circuit (ASIC)) to perform certain operations. A hardware-implemented module may also comprise programmable logic or circuitry (e.g., as encompassed within a general-purpose processor or other programmable processor) that is temporarily configured by software to perform certain operations. It will be appreciated that the decision to implement a hardware-implemented module mechanically, in dedicated and permanently configured circuitry, or in temporarily configured circuitry (e.g., configured by software) may be driven by cost and time considerations.
(149) Accordingly, the term “hardware-implemented module” should be understood to encompass a tangible entity, be that an entity that is physically constructed, permanently configured (e.g., hardwired), or temporarily or transitorily configured (e.g., programmed) to operate in a certain manner or to perform certain operations described herein. Considering embodiments in which hardware-implemented modules are temporarily configured (e.g., programmed), each of the hardware-implemented modules need not be configured or instantiated at any one instance in time. For example, where the hardware-implemented modules comprise a general-purpose processor configured using software, the general-purpose processor may be configured as respectively different hardware-implemented modules at different times. Software may, accordingly, configure a processor, for example, to constitute a particular hardware-implemented module at one instance of time and to constitute a different hardware-implemented module at a different instance of time.

(150) Hardware-implemented modules can provide information to, and receive information from, other hardware-implemented modules. Accordingly, the described hardware-implemented modules may be regarded as being communicatively coupled. Where multiples of such hardware-implemented modules exist contemporaneously, communications may be achieved through signal transmission (e.g., over appropriate circuits and buses that connect the hardware-implemented modules). In embodiments in which multiple hardware-implemented modules are configured or instantiated at different times, communications between such hardware-implemented modules may be achieved, for example, through the storage and retrieval of information in memory structures to which the multiple hardware-implemented modules have access. For example, one hardware-implemented module may perform an operation, and store the output of that operation in a memory device to which it is communicatively coupled. A further hardware-implemented module may then, at a later time, access the memory device to retrieve and process the stored output. Hardware-implemented modules may also initiate communications with input or output devices, and can operate on a resource (e.g., a collection of information).
(151) The various operations of example methods described herein may be performed, at least partially, by one or more processors that are temporarily configured (e.g., by software) or permanently configured to perform the relevant operations. Whether temporarily or permanently configured, such processors may constitute processor-implemented modules that operate to perform one or more operations or functions. The modules referred to herein may, in some example embodiments, comprise processor-implemented modules.
(152) Similarly, the methods described herein may be at least partially processor-implemented. For example, at least some of the operations of a method may be performed by one or more processors or processor-implemented modules. The performance of certain of the operations may be distributed among the one or more processors, not only residing within a single machine, but deployed across a number of machines. In some example embodiments, the processor or processors may be located in a single location (e.g., within a home environment, an office environment, or a server farm), while in other embodiments the processors may be distributed across a number of locations.
(153) The one or more processors may also operate to support performance of the relevant operations in a “cloud computing” environment or as a “software as a service” (SaaS). For example, at least some of the operations may be performed by a group of computers (as examples of machines including processors), with these operations being accessible via the network **104** (e.g., the Internet) and via one or more appropriate interfaces (e.g., APIs).
(154) Example embodiments may be implemented in digital electronic circuitry, or in computer hardware, firmware, or software, or in combinations of them. Example embodiments may be implemented using a computer program product (e.g., a computer program tangibly embodied in an information carrier, e.g., in a machine-readable medium for execution by, or to control the operation of, data processing apparatus, e.g., a programmable processor, a computer, or multiple computers).
(155) A computer program can be written in any form of programming language, including compiled or interpreted languages, and it can be deployed in any form, including as a standalone program or as a module, subroutine, or other unit suitable for use in a computing environment. A computer program can be deployed to be executed on one computer or on multiple computers at one site or distributed across multiple sites and interconnected by a communication network.
(156) In example embodiments, operations may be performed by one or more programmable processors executing a computer program to perform functions by operating on input data and generating output. Method operations can also be performed by, and apparatus of example embodiments may be implemented as, special purpose logic circuitry (e.g., an FPGA or an ASIC).
(157) The computing system can include clients and servers. A client and server are generally remote from each other and typically interact through a communication network. The relationship

of client and server arises by virtue of computer programs running on the respective computers and having a client-server relationship to each other. In embodiments deploying a programmable computing system, it will be appreciated that both hardware and software architectures merit consideration. Specifically, it will be appreciated that the choice of whether to implement certain functionality in permanently configured hardware (e.g., an ASIC), in temporarily configured hardware (e.g., a combination of software and a programmable processor), or in a combination of permanently and temporarily configured hardware may be a design choice. Below are set out hardware (e.g., machine) and software architectures that may be deployed in various example embodiments.

(158) FIG. **19** is a block diagram **700** illustrating an architecture of software **702**, which can be installed on any one or more of the devices described above. For example, in various embodiments, the client devices **110** and **112** and the data exchange platform **102** (e.g., application server **118**, database server **124**, etc.) may be implemented using some or all of the elements of the software **702**. FIG. **19** is merely a non-limiting example of a software architecture, and it will be appreciated that many other architectures can be implemented to facilitate the functionality described herein. In various embodiments, the software **702** is implemented by hardware such as a machine **900** of FIG. **20** that includes processors **910**, memory **930**, and I/O components **950**. In this example architecture, the software **702** can be conceptualized as a stack of layers where each layer may provide a particular functionality. For example, the software **702** includes layers such as an operating system **704**, libraries **706**, frameworks **708**, and applications **710**. Operationally, the applications **710** invoke API calls **712** through the software stack and receive messages **714** in response to the API calls **712**, consistent with some embodiments.

(159) In various implementations, the operating system **704** manages hardware resources and provides common services. The operating system **704** includes, for example, a kernel **720**, services **722**, and drivers **724**. The kernel **720** acts as an abstraction layer between the hardware and the other software layers, consistent with some embodiments. For example, the kernel **720** provides memory management, processor management (e.g., scheduling), component management, networking, and security settings, among other functionality. The services **722** can provide other common services for the other software layers. The drivers **724** are responsible for controlling or interfacing with the underlying hardware, according to some embodiments. For instance, the drivers **724** can include display drivers, camera drivers, BLUETOOTH® or BLUETOOTH® Low Energy drivers, flash memory drivers, serial communication drivers (e.g., Universal Serial Bus (USB) drivers), WI-FI® drivers, audio drivers, power management drivers, and so forth.

(160) In some embodiments, the libraries **706** provide a low-level common infrastructure utilized by the applications **710**. The libraries **706** can include system libraries **730** (e.g., C standard library) that can provide functions such as memory allocation functions, string manipulation functions, mathematic functions, and the like. In addition, the libraries **706** can include API libraries **732** such as media libraries (e.g., libraries to support presentation and manipulation of various media formats such as Moving Picture Experts Group-4 (MPEG4), Advanced Video Coding (H.264 or AVC), Moving Picture Experts Group Layer-3 (MP3), Advanced Audio Coding (AAC), Adaptive Multi-Rate (AMR) audio codec, Joint Photographic Experts Group (JPEG or JPG), or Portable Network Graphics (PNG)), graphics libraries (e.g., an OpenGL framework used to render in two dimensions (2D) and three dimensions (3D) in graphic content on a display), database libraries (e.g., SQLite to provide various relational database functions), web libraries (e.g., WebKit to provide web browsing functionality), and the like. The libraries **706** can also include a wide variety of other libraries **734** to provide many other APIs to the applications **710**.

(161) The frameworks **708** provide a high-level common infrastructure that can be utilized by the applications **710**, according to some embodiments. For example, the frameworks **708** provide various graphic user interface (GUI) functions, high-level resource management, high-level location services, and so forth. The frameworks **708** can provide a broad spectrum of other APIs

that can be utilized by the applications **710**, some of which may be specific to a particular operating system **704** or platform.

(162) In an example embodiment, the applications **710** include a home application **750**, a contacts application **752**, a browser application **754**, a book reader application **756**, a location application **758**, a media application **760**, a messaging application **762**, a game application **764**, and a broad assortment of other applications such as a third party application **766**. According to some embodiments, the applications **710** are programs that execute functions defined in the programs. Various programming languages can be employed to create one or more of the applications **710**, structured in a variety of manners, such as object-oriented programming languages (e.g., Objective-C, Java, or C++) or procedural programming languages (e.g., C or assembly language). In a specific example, the third party application **766** (e.g., an application developed using the ANDROID™ or IOS™ software development kit (SDK) by an entity other than the vendor of the particular platform) may be mobile software running on a mobile operating system such as IOS™, ANDROID™, WINDOWS® Phone, or another mobile operating system. In this example, the third party application **766** can invoke the API calls **712** provided by the operating system **704** to facilitate functionality described herein.

(163) Some embodiments may particularly include a content gallery application **767**. In certain embodiments, this may be a standalone application that operates to manage communications with a server system such as the data exchange platform **102**. In other embodiments, this functionality may be integrated with another application, such as the media application **760** or another such application. The content gallery application **767** may manage collection of content using a camera device of the machine **900**, communication with a server system via the I/O components **950**, and receipt and storage of received content in the memory **930**. Presentation of content and user inputs associated with content may be managed by the content gallery application **767** using different frameworks **708**, library **706** elements, or operating system **704** elements operating on the machine **900**.

(164) FIG. **20** is a block diagram illustrating components of a machine **900**, according to some embodiments, able to read instructions from a machine-readable medium (e.g., a machine-readable storage medium) and perform any one or more of the methodologies discussed herein. Specifically, FIG. **20** shows a diagrammatic representation of the machine **900** in the example form of a computer system, within which instructions **916** (e.g., software, a program, an application **710**, an applet, an app, or other executable code) for causing the machine **900** to perform any one or more of the methodologies discussed herein can be executed. In alternative embodiments, the machine **900** operates as a standalone device or can be coupled (e.g., networked) to other machines. In a networked deployment, the machine **900** may operate in the capacity of a server machine (e.g., application server **118**, database server **124**) or a client device **110**, **112** in a server-client network environment, or as a peer machine in a peer-to-peer (or distributed) network environment. The machine **900** can comprise, but not be limited to, a server computer, a client computer, a personal computer (PC), a tablet computer, a laptop computer, a netbook, a set-top box (STB), a personal digital assistant (PDA), an entertainment media system, a cellular telephone, a smart phone, a mobile device, a wearable device (e.g., a smart watch), a smart home device (e.g., a smart appliance), other smart devices, a web appliance, a network router, a network switch, a network bridge, or any machine capable of executing the instructions **916**, sequentially or otherwise, that specify actions to be taken by the machine **900**. Further, while only a single machine **900** is illustrated, the term “machine” shall also be taken to include a collection of machines **900** that individually or jointly execute the instructions **916** to perform any one or more of the methodologies discussed herein.

(165) In various embodiments, the machine **900** comprises processors **910**, memory **930**, and I/O components **950**, which can be configured to communicate with each other via a bus **902**. In an example embodiment, the processors **910** (e.g., a central processing unit (CPU), a reduced

instruction set computing (RISC) processor, a complex instruction set computing (CISC) processor, a graphics processing unit (GPU), a digital signal processor (DSP), an application specific integrated circuit (ASIC), a radio-frequency integrated circuit (RFIC), another processor, or any suitable combination thereof) include, for example, a processor **912** and a processor **914** that may execute the instructions **916**. The term "processor" is intended to include multi-core processors **910** that may comprise two or more independent processors **912**, **914** (also referred to as "cores") that can execute instructions **916** contemporaneously. Although FIG. **19** shows multiple processors **910**, the machine **900** may include a single processor **910** with a single core, a single processor **910** with multiple cores (e.g., a multi-core processor **910**), multiple processors **912**, **914** with a single core, multiple processors **912**, **914** with multiples cores, or any combination thereof.

(166) The memory **930** comprises a main memory **932**, a static memory **934**, and a storage unit **936** accessible to the processors **910** via the bus **902**, according to some embodiments. The storage unit **936** can include a machine-readable medium **938** on which are stored the instructions **916** embodying any one or more of the methodologies or functions described herein. The instructions **916** can also reside, completely or at least partially, within the main memory **932**, within the static memory **934**, within at least one of the processors **910** (e.g., within the processor's cache memory), or any suitable combination thereof, during execution thereof by the machine **900**. Accordingly, in various embodiments, the main memory **932**, the static memory **934**, and the processors **910** are considered machine-readable media **938**.

(167) As used herein, the term "memory" refers to a machine-readable medium **938** able to store data temporarily or permanently and may be taken to include, but not be limited to, random-access memory (RAM), read-only memory (ROM), buffer memory, flash memory, and cache memory. While the machine-readable medium **938** is shown, in an example embodiment, to be a single medium, the term "machine-readable medium" should be taken to include a single medium or multiple media (e.g., a centralized or distributed database, or associated caches and servers) able to store the instructions **916**. The term "machine-readable medium" shall also be taken to include any medium, or combination of multiple media, that is capable of storing instructions (e.g., instructions **916**) for execution by a machine (e.g., machine **900**), such that the instructions **916**, when executed by one or more processors of the machine **900** (e.g., processors **910**), cause the machine **900** to perform any one or more of the methodologies described herein. Accordingly, a "machine-readable medium" refers to a single storage apparatus or device, as well as "cloud-based" storage systems or storage networks that include multiple storage apparatus or devices. The term "machine-readable medium" shall accordingly be taken to include, but not be limited to, one or more data repositories in the form of a solid-state memory (e.g., flash memory), an optical medium, a magnetic medium, other non-volatile memory (e.g., erasable programmable read-only memory (EPROM)), or any suitable combination thereof. The term "machine-readable medium" specifically excludes non-statutory signals per se.

(168) The I/O components **950** include a wide variety of components to receive input, provide output, produce output, transmit information, exchange information, capture measurements, and so on. In general, it will be appreciated that the I/O components **950** can include many other components that are not shown in FIG. **20**. The I/O components **950** are grouped according to functionality merely for simplifying the following discussion, and the grouping is in no way limiting. In various example embodiments, the I/O components **950** include output components **952** and input components **954**. The output components **952** include visual components (e.g., a display such as a plasma display panel (PDP), a light emitting diode (LED) display, a liquid crystal display (LCD), a projector, or a cathode ray tube (CRT)), acoustic components (e.g., speakers), haptic components (e.g., a vibratory motor), other signal generators, and so forth. The input components **954** include alphanumeric input components (e.g., a keyboard, a touch screen configured to receive alphanumeric input, a photo-optical keyboard, or other alphanumeric input components), point-based input components (e.g., a mouse, a touchpad, a trackball, a joystick, a

motion sensor, or other pointing instruments), tactile input components (e.g., a physical button, a touch screen that provides location and force of touches or touch gestures, or other tactile input components), audio input components (e.g., a microphone), and the like.

(169) In some further example embodiments, the I/O components **950** include biometric components **956**, motion components **958**, environmental components **960**, or position components **962**, among a wide array of other components. For example, the biometric components **956** include components to detect expressions (e.g., hand expressions, facial expressions, vocal expressions, body gestures, or eye tracking), measure biosignals (e.g., blood pressure, heart rate, body temperature, perspiration, or brain waves), identify a person (e.g., voice identification, retinal identification, facial identification, fingerprint identification, or electroencephalogram based identification), and the like. The motion components **958** include acceleration sensor components (e.g., accelerometer), gravitation sensor components, rotation sensor components (e.g., gyroscope), and so forth. The environmental components **960** include, for example, illumination sensor components (e.g., photometer), temperature sensor components (e.g., one or more thermometers that detect ambient temperature), humidity sensor components, pressure sensor components (e.g., barometer), acoustic sensor components (e.g., one or more microphones that detect background noise), proximity sensor components (e.g., infrared sensors that detect nearby objects), gas sensor components (e.g., machine olfaction detection sensors, gas detection sensors to detect concentrations of hazardous gases for safety or to measure pollutants in the atmosphere), or other components that may provide indications, measurements, or signals corresponding to a surrounding physical environment. The position components **962** include location sensor components (e.g., a GPS receiver component), altitude sensor components (e.g., altimeters or barometers that detect air pressure from which altitude may be derived), orientation sensor components (e.g., magnetometers), and the like.

(170) Communication can be implemented using a wide variety of technologies. The I/O components **950** may include communication components **964** operable to couple the machine **900** to a network **980** or devices **970** via a coupling **982** and a coupling **972**, respectively. For example, the communication components **964** include a network interface component or another suitable device to interface with the network **980**. In further examples, the communication components **964** include wired communication components, wireless communication components, cellular communication components, near field communication (NFC) components, BLUETOOTH® components (e.g., BLUETOOTH® Low Energy), WI-FI® components, and other communication components to provide communication via other modalities. The devices **970** may be another machine **900** or any of a wide variety of peripheral devices (e.g., a peripheral device coupled via a Universal Serial Bus (USB)).

(171) Moreover, in some embodiments, the communication components **964** detect identifiers or include components operable to detect identifiers. For example, the communication components **964** include radio frequency identification (RFID) tag reader components, NFC smart tag detection components, optical reader components (e.g., an optical sensor to detect one-dimensional bar codes such as a Universal Product Code (UPC) bar code, multi-dimensional bar codes such as a Quick Response (QR) code, Aztec Code, Data Matrix, Dataglyph, MaxiCode, PDF417, Ultra Code, Uniform Commercial Code Reduced Space Symbology (UCC RSS)-2D bar codes, and other optical codes), acoustic detection components (e.g., microphones to identify tagged audio signals), or any suitable combination thereof. In addition, a variety of information can be derived via the communication components **964**, such as location via Internet Protocol (IP) geolocation, location via WI-FI® signal triangulation, location via detecting a BLUETOOTH® or NFC beacon signal that may indicate a particular location, and so forth.

(172) In various example embodiments, one or more portions of the network **980** can be an ad hoc network, an intranet, an extranet, a virtual private network (VPN), a local area network (LAN), a wireless LAN (WLAN), a wide area network (WAN), a wireless WAN (WWAN), a metropolitan

area network (MAN), the Internet, a portion of the Internet, a portion of the public switched telephone network (PSTN), a plain old telephone service (POTS) network, a cellular telephone network, a wireless network, a WI-FI® network, another type of network, or a combination of two or more such networks. For example, the network **980** or a portion of the network **980** may include a wireless or cellular network, and the coupling **982** may be a Code Division Multiple Access (CDMA) connection, a Global System for Mobile communications (GSM) connection, or another type of cellular or wireless coupling. In this example, the coupling **982** can implement any of a variety of types of data transfer technology, such as Single Carrier Radio Transmission Technology (1×RTT), Evolution-Data Optimized (EVDO) technology, General Packet Radio Service (GPRS) technology, Enhanced Data rates for GSM Evolution (EDGE) technology, third Generation Partnership Project (3GPP) including 3G, fourth generation wireless (4G) networks, Universal Mobile Telecommunications System (UMTS), High Speed Packet Access (HSPA), Worldwide Interoperability for Microwave Access (WiMAX), Long Term Evolution (LTE) standard, others defined by various standard-setting organizations, other long range protocols, or other data transfer technology.

(173) In example embodiments, the instructions **916** are transmitted or received over the network **980** using a transmission medium via a network interface device (e.g., a network interface component included in the communication components **964**) and utilizing any one of a number of well-known transfer protocols (e.g., Hypertext Transfer Protocol (HTTP)). Similarly, in other example embodiments, the instructions **916** are transmitted or received using a transmission medium via the coupling **972** (e.g., a peer-to-peer coupling) to the devices **970**. The term "transmission medium" shall be taken to include any intangible medium that is capable of storing, encoding, or carrying the instructions **916** for execution by the machine **900**, and includes digital or analog communications signals or other intangible media to facilitate communication of such software.

(174) Furthermore, the machine-readable medium **938** is non-transitory (in other words, not having any transitory signals) in that it does not embody a propagating signal. However, labeling the machine-readable medium **938** "non-transitory" should not be construed to mean that the medium is incapable of movement; the medium **938** should be considered as being transportable from one physical location to another. Additionally, since the machine-readable medium **938** is tangible, the medium **938** may be considered to be a machine-readable device.

(175) FIG. **21** is a block diagram illustrating an exemplary mobile device **1900**, according to an example embodiment. The mobile device **1900** may include a processor **1902**. The processor **1902** may be any of a variety of different types of commercially available processors **1902** suitable for mobile devices **1900** (for example, an XScale architecture microprocessor, a microprocessor without interlocked pipeline stages (MIPS) architecture processor, or another type of processor **1902**). A memory **1904**, such as a random access memory (RAM), a flash memory, or another type of memory, is typically accessible to the processor **1902**. The memory **1904** may be adapted to store an operating system (OS) **1906**, as well as applications **1908**, such as a mobile location enabled application that may provide location-based services (LBSs) to a user. The processor **1902** may be coupled, either directly or via appropriate intermediary hardware, to a display **1910** and to one or more input/output (I/O) devices **1912**, such as a keypad, a touch panel sensor, a microphone, and the like. Similarly, in some embodiments, the processor **1902** may be coupled to a transceiver **1914** that interfaces with an antenna **1916**. The transceiver **1914** may be configured to both transmit and receive cellular network signals, wireless data signals, or other types of signals via the antenna **1916**, depending on the nature of the mobile device **1900**. Further, in some configurations, a GPS receiver **1918** may also make use of the antenna **1916** to receive GPS signals.

(176) Throughout this specification, plural instances may implement components, operations, or structures described as a single instance. Although individual operations of one or more methods are illustrated and described as separate operations, one or more of the individual operations may

be performed concurrently, and nothing requires that the operations be performed in the order illustrated. Structures and functionality presented as separate components in example configurations may be implemented as a combined structure or component. Similarly, structures and functionality presented as a single component may be implemented as separate components. These and other variations, modifications, additions, and improvements fall within the scope of the subject matter herein.

(177) Although an overview of the inventive subject matter has been described with reference to specific example embodiments, various modifications and changes may be made to these embodiments without departing from the broader scope of embodiments of the present disclosure. Such embodiments of the inventive subject matter may be referred to herein, individually or collectively, by the term “invention” merely for convenience and without intending to voluntarily limit the scope of this application to any single disclosure or inventive concept if more than one is, in fact, disclosed.

(178) The embodiments illustrated herein are described in sufficient detail to enable those skilled in the art to practice the teachings disclosed. Other embodiments may be used and derived therefrom, such that structural and logical substitutions and changes may be made without departing from the scope of this disclosure. The Detailed Description, therefore, is not to be taken in a limiting sense, and the scope of various embodiments is defined only by the appended claims, along with the full range of equivalents to which such claims are entitled.

(179) As used herein, the term “or” may be construed in either an inclusive or exclusive sense. Moreover, plural instances may be provided for resources, operations, or structures described herein as a single instance. Additionally, boundaries between various resources, operations, modules, engines, and data stores are somewhat arbitrary, and particular operations are illustrated in a context of specific illustrative configurations. Other allocations of functionality are envisioned and may fall within a scope of various embodiments of the present disclosure. In general, structures and functionality presented as separate resources in the example configurations may be implemented as a combined structure or resource. Similarly, structures and functionality presented as a single resource may be implemented as separate resources. These and other variations, modifications, additions, and improvements fall within a scope of embodiments of the present disclosure as represented by the appended claims. The specification and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense.

(180) The Abstract of the Disclosure is provided to comply with 37 C.F.R. § 1.72(b), requiring an abstract that will allow the reader to quickly ascertain the nature of the technical disclosure. It is submitted with the understanding that it will not be used to interpret or limit the scope or meaning of the claims. In addition, in the foregoing Detailed Description, it can be seen that various features are grouped together in a single embodiment for the purpose of streamlining the disclosure. This method of disclosure is not to be interpreted as reflecting an intention that the claimed embodiments require more features than are expressly recited in each claim. Rather, as the following claims reflect, inventive subject matter lies in less than all features of a single disclosed embodiment. Thus, the following claims are hereby incorporated into the Detailed Description, with each claim standing on its own as a separate embodiment.

Claims

1. A server comprising: a memory that stores instructions; and one or more processors configured by the instructions to perform operations comprising: receiving, from a client device, a content item comprising a photograph captured by the client device; detecting a characteristic of the content item indicating a live event associated with the photograph; determining that the live event matches a trigger for a media overlay that comprises data associated with the live event including a name of the live event; generating the media overlay comprising the data associated with the live event

including the name of the live event; and providing the media overlay comprising the data associated with the live event including the name of the live event to the client device.
2. The server of claim 1, wherein providing the media overlay to the client device causes a display of the media overlay on a user interface of the client device.
3. The server of claim 1, wherein the characteristic of the content item comprises at least one of a group comprising: audio, speed, timestamp, data associated with a machine-readable code, a particular object in the content item, a geolocation of the client device, or a recipient for the content item.
4. The server of claim 1, wherein the live event corresponds to a concert event, a sporting event, a news event, an entertainment event, and award ceremony, or a social event.
5. The server of claim 1, wherein the data associated with the live event comprises at least one of a current score of a sporting event, a name of an award winner at an award ceremony, an insignia or logo associated with a sporting event, news retrieved from a news feed associated with the live event, or a live weather status.
6. The server of claim 1, wherein generating the media overlay comprising the data associated with the live event further comprises: identifying the live event based on a geolocation of the client device; accessing live event data related to the live event; and generating the media overlay based on the live event data and the geolocation of the client device.
7. The server of claim 1, wherein the trigger is associated with more than one media overlay and wherein generating the media overlay comprises generating more than one media overlay and wherein providing the media overlay comprises providing more than one media overlay.
8. The server of claim 1, wherein the client device is a first client device and the operations further comprising: receiving the content item including the media overlay from the first client device; and sending the content item including the media overlay to a second client device.
9. The server of claim 1, wherein the client device is a first client device and the media overlay is a first media overlay, and the operations further comprise: receiving the content item including the first media overlay from the first client device; generating a second media overlay associated with the characteristic of the content item; and sending the content item including the first media overlay and the second media overlay to a second client device.
10. The server of claim 1, wherein the live event is a sporting event, the media overlay further comprises a current game score and the name of the live event comprises the sporting event.
11. The server of claim 1, wherein the live event is an award ceremony, media overlay comprises a name of an award winner and the name of the live event comprises the award ceremony.
12. The server of claim 1, wherein the client device is a first client device, the media overlay is a progressive use media overlay associated with a geolocation of the first client device, and the operations further comprise: modifying dynamic content of the progressive use media overlay to generate a first modified progressive use media overlay; receiving geolocation information from a second client device at the geolocation; supplying the first modified progressive use media overlay to the second client device; and modifying the dynamic content of the first modified progressive use media overlay to generate a second modified progressive use media overlay.
13. A method comprising: receiving, at a server computer from a client device, a content item comprising a photograph captured by the client device; detecting, by the server computer, a characteristic of the content item indicating a live event associated with the photograph; determining, by the server computer, that the live event matches a trigger for a media overlay that comprises data associated with the live event including a name of the live event; generating, by the server computer, the media overlay comprising the data associated with the live event including the name of the live event; and providing, by the server computer, the media overlay comprising the data associated with the live event including the name of the live event to the client device.
14. The method of claim 13, wherein the characteristic of the content item comprises at least one of a group comprising: audio, speed, timestamp, data associated with a machine-readable code, a

particular object in the content item, a geolocation of the client device, or a recipient for the content item.

15. The method of claim 13, wherein the live event corresponds to a concert event, a sporting event, a news event, an entertainment event, and award ceremony, or a social event.

16. The method of claim 13, wherein the data associated with the live event comprises at least one of a current score of a sporting event, a name of an award winner at an award ceremony, an insignia or logo associated with a sporting event, news retrieved from a news feed associated with the live event, or a live weather status.

17. The method of claim 13, wherein generating the media overlay comprising the data associated with the live event further comprises: identifying the live event based on a geolocation of the client device; accessing live event data related to the live event; and generating the media overlay based on the live event data and the geolocation of the client device.

18. The method of claim 13, wherein the trigger is associated with more than one media overlay and wherein generating the media overlay comprises generating more than one media overlay and wherein providing the media overlay comprises providing more than one media overlay.

19. The method of claim 13, wherein the client device is a first client device and the media overlay is a first media overlay, and further comprising: receiving the content item including the first media overlay from the first client device; generating a second media overlay associated with the characteristic of the content item; and sending the content item including the first media overlay and the second media overlay to a second client device.

20. A non-transitory computer-readable storage medium storing a set of instructions that, when executed by a processor of a machine, cause the machine to perform operations comprising: receiving, from a client device, a content item comprising an image or video captured by the client device; detecting a characteristic of the content item indicating a live event associated with the image or video; determining that the live event matches a trigger for a media overlay comprising content relevant data associated with the live event; generating the media overlay comprising content relevant data associated with the live event; and providing the media overlay comprising the content relevant data associated with the live event to the client device.