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## INSTALLATION OF GEOFENCES RESPONSIVE TO AD SELECTION

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## INSTALLATION OF GEOFENCES RESPONSIVE TO AD SELECTION

Geofencing is a location-based technology that allows an application (e.g., software application, hardware application, desktop/server application, mobile application, program, or resource) to set up a virtual boundary or fence around a real-world geographic location. By setting up the geofence, the application, a user, or other entity can be notified when a computing device triggers the geofence (e.g., by entering a geofence, exiting a geofence, or dwelling in the geofence for a predetermined duration). Geofences can also be used for distributing or delivering content (e.g., advertisements, coupons, online content, content items, websites, online documents, articles, blogs, posts, images, video, audio, or multimedia content). For example, geofencing can be employed to distribute location based content or advertisements to users of a mobile computing device.

This paper discusses systems and methods for configuring or installing geofences on mobile devices responsive to a user selecting a geofence ad. The system presents a “geofence ad” to a user via the user’s device. The device can include mobile computing devices, mobile telecommunications devices, smart phones, personal digital assistants, laptop computers, notebooks, tablet computers, smart watches, wearable devices, or similar devices. The geofence ad can be associated with an advertiser, a fence radius, and a duration, and the geofence ad can be configured and provided by an advertiser. When the user selects the geofence ad, the geofence ad configures a geofence for the user’s device.

For example, and with reference to Figure 1, the device 1 can include an ad manager 2 that receives ads from an ad platform 3 via a network 6 and saves the ads to a local ad database 4. The ad database 4 of the ad platform 3 and the device 1 can be stored in memory, hard disks, a file servers, etc. The ads saved to the ad database 4 can include geofence ads, non-geofence ads, or a combination thereof. The geofence ads, when displayed to a user, can include an indicator that indicates to the user the geofence ad is a geofence ad and not a standard ad. In some implementations, selecting the geofence ad can also take the user to a website associated with the advertiser. In other implementations, selecting the geofence ad only saves an indication of the

geofence (and the information associated therewith) to the geofence database 5, which, for example, does not take the user away from the application the user is currently using on the device. Applications wishing to display an ad to a user of the device can request the ad from the ad manager 2. When the user selects a geofence ad from within the application, the ad manager 2 can save the data indicating the geofence associated with the selected geofence ad in a geofence database 5 of the device.

Each entry in the geofence database 5 can include a post-fence action, a radius of the geofence for circular geofences or a boundary of the geofence, an advertiser, a duration for the geofence to persist, contextual information, a target location, or a combination thereof. The contextual information can include information such as what application displayed the geofence ad to the user, content from the application that displayed the geofence ad, the time when the geofence ad was displayed, browsing history, network activity, preferences, installed applications, user interests, historical location information, or any combination thereof.

The radius of the geofence can indicate how far the geofence extends from a target location. For example, the target location may be the physical location of the store (or stores) associated with the geofence ad. In this example, if the radius is 1 mile, the geofence can be a circle, centered on the target location, with a 1 mile radius. The geofence can be non-circular. For example, the geofence may be a square or other polygon centered over the target location. In some implementations, the geofence is not centered on the target location. For example, the target location may be a store associated with the advertiser, but the geofence is placed over a competitor's store such that the user receives an ad for the store when the user is near the competitor's store. The geofence can also be generated around a point of interest, landmark, street intersection, zip code, city, or state. In some implementations, the geofence is generated along a border (e.g., of a city) rather than a set radius from a target location.

The post-fence action can indicate what action the ad manager 2 should perform when the ad manager 2 detects the geofence is triggered – for example, by the user entering the geofence. The post-fence action can include displaying an advertisement on the device 1, providing the user with a coupon, or providing the user with additional information. In some implementations,

multiple post-fence actions can be stored in association with each geofence in the geofence database 5. For example, a first action may be performed when the user enters the geofence and a second action may be performed if the user remains in the geofence for a predetermined amount of time. In some implementations, because the information about the geofence ad is stored locally by the ad manager 2, the post-fence action can be triggered when the device 1 is off line – e.g., when the device has no connection to the ad platform 3. In some implementations, the ad manager 2 also reports back to the ad platform 3 when the device 1 crosses or triggers the geofence.

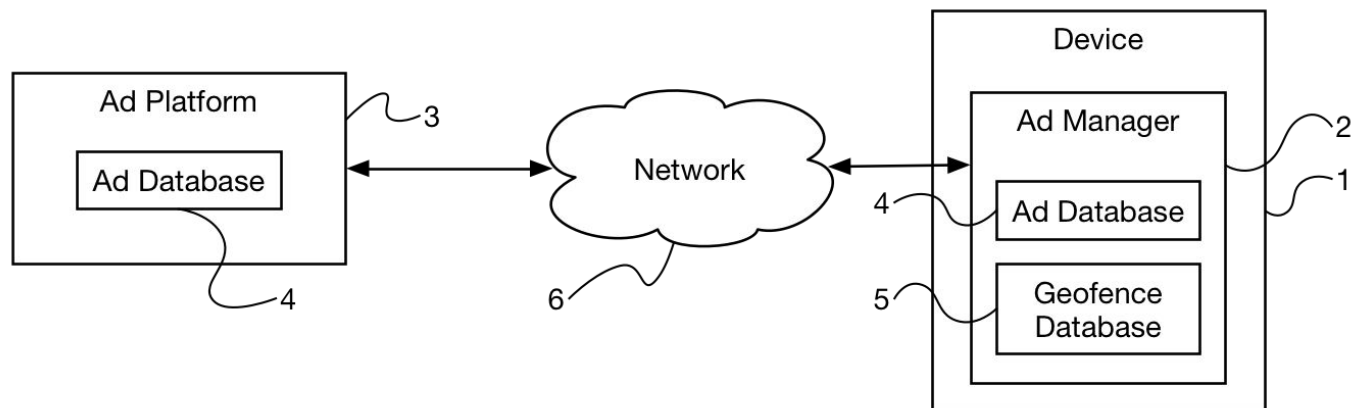


Figure 1

As one example, Figure 2 illustrates a map that includes a local store 51. A geofence 52 surrounds the local store 51, and a smartphone 50 can in and out of the geofence 52. In this example, a user may select a geofence ad within an application executing on the user's smartphone 50. As described above, the ad can be provided to the application by the ad manager 2 on the user's smartphone 50. The geofence ad can be for the local store 51. In this example, the geofence ad can include a radius of 5 miles, a duration of two weeks, and a post-fence action of providing the user with a coupon when the post-fence action is triggered. Selecting the geofence ad in the application can cause a geofence to be saved to the geofence database. In the physical environment, the geofence 52 is logically generated around the local store 51. As the geofence 52 in this example has a radius 53 of 5 miles, the post-fence action is triggered when the smart phone 50 is within 5 miles of the local store 51. The post-fence action is triggered when the

smartphone 50 detects that the smartphone 50 has moved from a first location 54 outside the geofence 52 to a second location 55 within the geofence 52.

In some implementations, the location of the smartphone 50 is determined using GPS, cellular tower triangulation, RFID (or other near field communication techniques), proximity to Bluetooth devices, the detection of WIFI networks, or a combination thereof.

In this example, the post-fence action can be a coupon, which can be presented to the user, via the smartphone 50, when the smartphone 50 detects the smartphone 50 has entered the geofence 52. In this example, the geofence has a duration of two weeks. Accordingly, two weeks after the geofence is added to the geofence database, the ad manager removes the geofence from the geofence database. In other implementations, the geofence can be deleted from the geofence database after the post-fence action is triggered a predetermined number of times. For example, the geofence may be deleted after the post-fence action is triggered 1, 5, 10, 15, 20, or other number of times. In some implementations, the ad manager maintains a predetermined number of geofences in the geofence database. For example, if the ad manager is configured to maintain 5 active geofences (and already has 5 active geofence stored in the geofence database), the selection of a sixth geofence ad would cause the ad manager to replace the oldest geofence in the geofence database with the geofence associated with the sixth geofence ad.

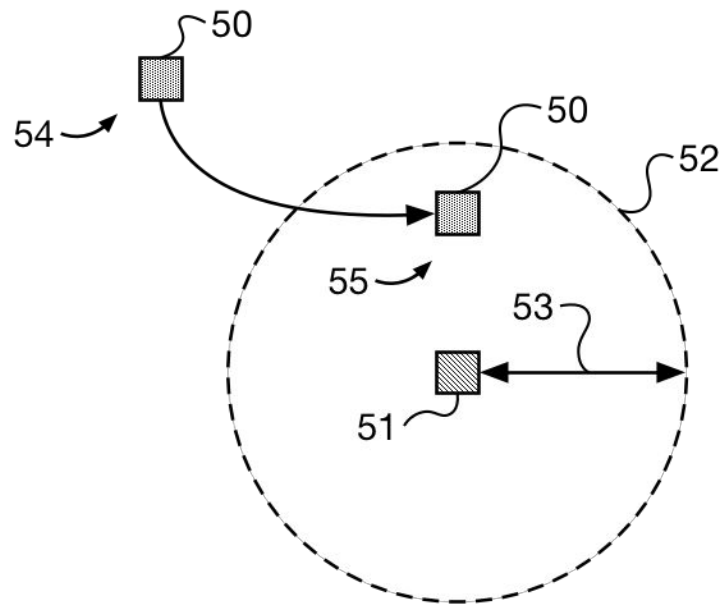


Figure 2