DESCRIPTION

TITLE

INFORMATION PROCESSING APPARATUS, INFORMATION PROCESSING METHOD, AND PROGRAM

FIELD

The embodiments of the present invention relate generally to an information processing apparatus, an information processing method, and a program, for measuring an advertisement effect.

BACKGROUND

An advertiser may present an advertisement by placing a medium such as a paper or digital signage in the open air. In order to measure the effect of such an advertisement placed in the open air (open-air advertisement), the advertiser needs to specify a user who has come into contact with the open-air advertisement. Conventionally, the advertiser specifies a user who has come into contact with the open-air advertisement by conducting a questionnaire survey or the like.

However, an analog method such as a questionnaire survey entails the problem that only users who have answered the questionnaire can serve as a base from which users who have come into contact with the open-air advertisement can be extracted.

Therefore, a method for effectively specifying a user who has come into contact with an open-air advertisement is desired.

CITATION LIST

PATENT LITERATURE

[Patent Literature 1] JPn. Pat. Appln. KOKAI Publication No. 2016-24386

SUMMARY

In order to solve the above problem, an information processing apparatus, an information processing method, and a program capable of effectively specifying a user who has come into contact with an advertisement are provided.

According to the embodiments, the information processing apparatus includes a storage unit, an acquisition unit, and a determination unit. The storage unit stores advertisement information indicating a location in which one comes into contact with the advertisement. The acquisition unit acquires a user's travel history. The determination unit determines whether the user has come into contact with the advertisement based on the travel history and the advertisement information.

ADVANTAGEOUS EFFECTS OF INVENTION

According to the embodiments, a server apparatus can specify a user who has passed through a place that enables contact with an open-air advertisement, based on a user's travel history. Furthermore, the server apparatus can collect the travel history from a server of a transportation facility or a terminal of the user. As a result, the server apparatus can specify a user who has come into contact with the open-air advertisement without

using a method such as a questionnaire.

Moreover, the server apparatus can generate a cluster of users who have come into contact with the open-air advertisement, based on users' travel histories. In addition, the server apparatus can generate, from the cluster, a sub-cluster of users who have a predetermined attribute. The server apparatus can measure an effect of the open-air advertisement on the users in the sub-cluster. As a result, the server apparatus can measure an effect on users who have come into contact with the open-air advertisement and have a predetermined attribute.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a diagram schematically showing a configuration example of an advertisement system according to a first embodiment.

FIG. 2 is a block diagram schematically showing a configuration example of a server apparatus according to the first embodiment.

FIG. 3 is a diagram showing a configuration example of advertisement information according to the first embodiment.

FIG. 4 is a diagram showing a configuration example of the advertisement information according to the first embodiment.

FIG. 5 is a diagram showing a configuration example of registration information according to the first embodiment.

FIG. 6 is a diagram showing a configuration example of a travel history according to the first embodiment.

FIG. 7 is a flowchart showing an operation example of the server apparatus according to the first embodiment.

FIG. 8 is a diagram showing a configuration example of advertisement information according to a second embodiment.

FIG. 9 is a diagram showing a configuration example of area information according to the second embodiment.

FIG. 10 is a diagram showing a configuration example of the area information according to the second embodiment.

DETAILED DESCRIPTION

Hereinafter, the embodiments will be described with reference to the drawings.

[First Embodiment]

An advertisement system according to the embodiment generates a cluster of users who have come into contact with an advertisement placed in the open air (open-air advertisement). The open-air advertisement is placed at a predetermined location in the open air. For example, the open-air advertisement takes the form of an advertisement poster hung in a train, or digital signage in a train, or digital signage placed on a platform of a station, or a signboard or digital signage placed on a building or the like, etc. The open-air advertisement may take the form of a paper medium such as a poster or a sticker, or digital signage constituted by a display or the like. The location or medium of the open-air advertisement is not limited to a specific configuration.

FIG. 1 is a block diagram showing a configuration

example of an advertisement system 1 according to the embodiment. As shown in FIG. 1, the advertisement system 1 includes a server apparatus 10, a medium 20, and a terminal 30, for example. The advertisement system 1 may include a configuration as necessary in addition to the configuration shown in FIG. 1, or may exclude a specific configuration.

The server apparatus 10 (information processing apparatus) measures an effect of an open-air advertisement. The server apparatus 10 retains advertisement information indicating the date and time when the open-air advertisement is displayed and the place where a user comes into contact with the open-air advertisement. Moreover, the server apparatus 10 acquires a travel history which indicates the user's position and the date and time when the user is at the position. The server apparatus 10 clusters users who have come into contact with the open-air advertisement based on the advertisement information and the travel histories. Further, the server apparatus 10 measures an effect of the open-air advertisement based on the behavior of the clustered users. The configuration of the server apparatus 10 will be described in detail later.

The medium 20 is a medium for displaying the open-air advertisement. For example, the medium 20 is placed in the open air where an unspecified number of users can recognize the medium 20.

As described above, the medium 20 may take the form of a paper medium such as a poster or a sticker, or digital

signage constituted by a display or the like.

The medium 20 may be placed in a construction such as a building or a store. Further, the medium 20 may be placed on the roof or the wall surface of a construction such as a building. Moreover, the medium 20 may be placed in a transportation facility such as a train, a monorail, a bus, a ship, or an aircraft. The configuration of the medium 20 is not limited to a specific configuration.

Here, the medium 20 is assumed to take the form of a digital signage placed in a train or a digital signage placed on a platform of a station.

The terminal 30 is a terminal possessed by a user. For example, the terminal 30 is a portable electronic device. For example, the terminal 30 is a feature phone, a smartphone, a laptop PC, a tablet PC, or a wearable terminal. The terminal 30 may be a desktop PC.

The terminal 30 may be capable of performing the conversion intended by the open-air advertisement. For example, if the conversion of the open-air advertisement takes the form of the purchase of a product, the terminal 30 displays a website and the like for the purchase of the product, and acquires the necessary information. If the open-air advertisement is to encourage installation or activation of an application, the terminal 30 installs or activates the application.

The content of the conversion is not limited to a specific configuration.

Next, the server apparatus 10 will be described.

FIG. 2 is a block diagram showing a configuration example of the server apparatus 10.

In the configuration example shown in FIG. 2, the server apparatus 10 includes a processor 11, a ROM 12, a RAM 13, an NVM 14, a communication unit 15, an operation unit 16, a display unit 17, etc. These units are connected to each other via a data bus. The server apparatus 10 may include a configuration as necessary in addition to the configuration shown in FIG. 2, or may exclude a specific configuration.

The processor 11 has a function of controlling the overall operation of the server apparatus 10. The processor 11 may include the internal cache and various interfaces. The processor 11 implements various processing by executing programs stored in advance in the internal memory, the ROM 12, or the NVM 14.

Some of the various functions implemented by execution of the programs by the processor 11 may be implemented by a hardware circuit. In this case, the processor 11 controls the functions executed by the hardware circuit.

The ROM 12 is a nonvolatile memory in which a control program and control data, for example, are stored in advance. The control program and control data stored in the ROM 12 are incorporated in advance in accordance with the specifications of the server apparatus 10. The ROM 12 stores, for example, a program (for example, BIOS) to

control the circuit board of the server apparatus 10.

The RAM 13 is a volatile memory. The RAM 13 temporarily stores, for example, data being processed by the processor 11. The RAM 13 stores various application programs based on instructions from the processor 11. The RAM 13 may store, for example, data necessary for executing the application programs, and results of executing the application programs.

The NVM 14 (storage unit) is a nonvolatile memory in which data can be written and rewritten. The NVM 14 includes, for example, an HDD (Hard Disk Drive), an SSD (Solid State Drive), an EEPROM (registered trademark), or a flash memory, etc. The NVM 14 stores a control program, an application, and various data, etc., in accordance with the operation purpose of the server apparatus 10.

The NVM 14 includes a storage area 14a for storing advertisement information and a storage area 14b for storing registration information. The advertisement information and registration information will be described in detail later.

The communication unit 15 is an interface for transmitting and receiving data to and from an external device through a communication network such as the Internet. The communication unit 15 is, for example, an interface that supports LAN connection.

The operation unit 16 accepts the input of various operations from the operator. The operation unit 16

transmits a signal indicating the accepted operation to the processor 11. For example, the operation unit 16 is constituted by a keyboard, a numeric keypad, and a touch panel.

The display unit 17 displays various information under the control of the processor 11. For example, the display unit 17 is constituted by a liquid crystal monitor. If the operation unit 16 is constituted by a touch panel or the like, the display unit 17 may be formed integrally with the operation unit 16.

Next, advertisement information will be described.

The advertisement information is constituted by information indicating an advertisement (open-air advertisement) that the medium 20 displays, a date and time when the advertisement is displayed, and a place where a user comes into contact with the advertisement. Here, the storage area 14a stores advertisement information 21 related to an advertisement displayed on a digital signage in a train car and advertisement information 22 related to an advertisement displayed on a digital signage placed on a platform of a station.

First, the advertisement information 21 will be described.

The advertisement information 21 indicates an advertisement displayed on a digital signage in a train car, a date and time when the advertisement is displayed, and a train car where the advertisement is displayed (a place

where a user comes into contact with the advertisement).

FIG. 3 shows a configuration example of the advertisement information 21.

As shown in FIG. 3, the advertisement information 21 stores "advertisement", "date and time", and "train car" in association with each other.

The "advertisement" indicates an advertisement. For example, the "advertisement" is information to identify an advertisement, such as a name or an identification number of the advertisement.

The "date and time" indicates the date and time when the advertisement is displayed. For example, the "date and time" indicates a period during which the advertisement is displayed. In the example shown in FIG. 3, "date and time" specifies a period during which an advertisement is displayed based on a date and time. The "date and time" may specify a period during which an advertisement is displayed based on a date.

The "train car" indicates a train car where a digital signage for displaying an advertisement is placed. Here, the "train car" indicates a formation composed of a plurality of train cars. An advertisement to be displayed is set for each formation.

In the example shown in FIG. 3, for example, the advertisement information 21 indicates that an advertisement A is displayed on a digital signage of a train car A from 6:00 to 11:59 on April 1st.

Next, the advertisement information 22 will be described.

The advertisement information 22 indicates an advertisement displayed on a digital signage placed at a station, a date and time when the advertisement is displayed, and the station where the advertisement is displayed (a location where a user comes into contact with the advertisement).

FIG. 4 shows a configuration example of the advertisement information 22.

As shown in FIG. 4, the advertisement information 22 stores "advertisement", "date and time", and "station" in association with each other.

The "advertisement" and "date and time" are as described above.

The "station" indicates a station where a digital signage for displaying the advertisement is placed. For example, "station" is information for specifying a station, such as a station name or an identification number.

In the example shown in FIG. 4, for example, the advertisement information 22 indicates that an advertisement G is displayed on a digital signage at a station A from 6:00 to 10:59 on April 1st.

The configuration of the advertisement information is not limited to a specific configuration.

The advertisement information is stored in the storage area 14a in advance. For example, the processor 11 may

acquire advertisement information from the operator through the operation unit 16. In addition, the processor 11 may acquire advertisement information from an external device through the communication unit 15. The advertisement information may be updated as appropriate.

Next, the registration information will be described.

The registration information is information related to users to determine whether or not they have come into contact with an advertisement in order to generate a cluster of users who have come into contact with the advertisement. Here, the registration information indicates a user attribute and an "e-mail address".

FIG. 5 shows a configuration example of the registration information. As shown in FIG. 5, the registration information stores user attributes and an "e-mail address" in association with each other. As user attributes, the registration information stores "user ID", "gender", "date of birth", "occupation", "annual income", "place of residence", "work location", etc. The registration information may include a configuration as necessary in addition to the configuration shown in FIG. 5, or may exclude a specific configuration.

The "user ID" is an identifier that specifies a user. For example, the "user ID" is a character string, a numerical value, or a combination thereof. Here, the "user ID" is a numerical value.

The "gender" indicates the gender of a user.

The "date of birth" indicates the date of birth of a user. The registration information may include "age" indicating the age of a user instead of "date of birth".

The "occupation" indicates the occupation of a user.

The "annual income" indicates the annual income of a user.

The "place of residence" indicates the place of residence of a user.

The "work location" indicates the work location of a user.

The "e-mail address" indicates the e-mail address of a user.

In the example shown in FIG. 5, for example, the registration information indicates that "gender", "date of birth", "occupation", "annual income", "place of residence", "work location", and "e-mail address" of a user "0001" are "male", "May 12, 1990", "company employee", "oo yen", "ΔΔ district", "oo district", and "aaa@bbb", respectively.

The configuration of the registration information is not limited to a specific configuration.

The registration information is stored in the storage area 14b in advance. For example, the processor 11 may acquire registration information from the operator through the operation unit 16. Further, the processor 11 may acquire registration information from an external device through the communication unit 15. The registration information may be updated as appropriate.

For example, the processor 11 generates and appropriately updates registration information via opt-in from the user.

Next, functions implemented by the processor 11 of the server apparatus 10 will be described. The following functions are implemented by the processor 11 executing a program stored in the NVM 14, for example.

First, the processor 11 has a function (an acquisition unit) of acquiring a travel history indicating the user's position (a position of the terminal possessed by the user) and a date and time when the user was at the position (a date and time associated with the position). Here, the travel history is a use history of a train used by the user using an IC card (a terminal possessed by the user) or the like. For example, the travel history is a use history of a travel card common to public transportation facilities or the like.

FIG. 6 shows a configuration example of the travel history. As shown in FIG. 6, the travel history includes "user ID", "boarding station", "boarding date and time", "arrival station", "arrival date and time", for example.

The "user ID" is as described above.

The "boarding station" indicates a station at which the user indicated by the "user ID" got on board.

The "boarding date and time" indicates the date and time at which the user indicated by the "user ID" entered the "boarding station".

The "arrival station" indicates a station at which the user indicated by the "user ID" disembarked.

The "arrival date and time" indicates the date and time at which the user indicated by the "user ID" exited the "arrival station".

In the example shown in FIG. 6, for example, the travel history indicates that the "boarding station", "boarding date and time", "arrival station", and "arrival date and time" of the user "0001" are "station A", "April 1st, 9:00", "station B", and "April 1st, 10:00", respectively.

Other elements may be added to the travel history as appropriate. The configuration of the travel history is not limited to a specific configuration.

For example, the processor 11 acquires a travel history from an external device through the communication unit 15. For example, the processor 11 acquires a travel history from a server of a railway company or the like.

Further, the processor 11 has a function of acquiring advertisement information corresponding to an advertisement for generating a cluster of users who have come into contact with the advertisement.

The processor 11 sets an advertisement for generating a cluster of users who have come into contact with the advertisement. For example, the processor 11 receives, through the operation unit 16, an input of an operation to set an advertisement for generating a cluster of users who

have come into contact with the advertisement.

After setting an advertisement for generating a cluster of users who have come into contact with the advertisement, the processor 11 acquires advertisement information corresponding to the advertisement from the storage area 14a. For example, if an "advertisement A" is specified as an advertisement for generating a cluster of users who have come into contact with the advertisement, the processor 11 acquires the advertisement information 21 ("advertisement A", "April 1st, from 6:00 to 11:59", and "train car A") corresponding to the "advertisement A" from the storage area 14a.

Further, if an "advertisement G" is specified as an advertisement for generating a cluster of users who have come into contact with the advertisement, the processor 11 acquires the advertisement information 22 ("advertisement G", "April 1st, 6:00 to 10:59", and "station A") corresponding to "advertisement G" from the storage area 14a.

Furthermore, the processor 11 has a function (a cluster generation unit) of generating a cluster of users (for example, user IDs) who have come into contact (or may have come into contact) with the advertisement, based on the advertisement information corresponding to the advertisement and the travel history.

First, the processor 11 determines whether or not a user has come into contact with the advertisement (a

determination unit). The "determination" may be replaced with "estimation" or "prediction".

For example, the processor 11 determines whether or not a user has come into contact with the medium 20. In other words, the processor 11 determines whether or not the user's position is included in the "location where the user comes into contact with the advertisement" indicated by the advertisement information. If it is determined that the user's position is included in the "location where the user comes into contact with the advertisement" indicated by the advertisement information, the processor 11 determines whether or not the medium 20 was displaying the advertisement at the date and time when the user came into contact with the medium 20. In other words, the processor 11 determines whether or not the date and time when the user came into contact with the medium overlaps the "date and time" of the advertisement information. If it is determined that the date and time when the user came into contact with the medium overlaps the "date and time" of the advertisement information, the processor 11 determines that the user came into contact with the advertisement. If it is determined that the user came into contact with the advertisement, the processor 11 classifies the user into a cluster of users who have come into contact with the advertisement.

First, a case where the processor 11 acquires the advertisement information 21 will be described.

The processor 11 acquires "boarding station", "boarding date and time", "arrival station", and "arrival date and time" of a user from the storage area 14a. From the "boarding station" and the "arrival station", the processor 11 specifies the train car (formation of the train cars) boarded by the user. For example, the processor 11 specifies a train car that travels on a route from the "boarding station" to the "arrival station" as the train car boarded by the user.

After specifying the train car boarded by the user, the processor 11 determines whether the train car boarded by the user boarded matches the "train car" indicated by the advertisement information 21. If it is determined that they match, the processor 11 determines that the "location where the user comes into contact with the advertisement", indicated by the advertisement information, exists on the route traveled by the user.

After determining that the "location where the user comes into contact with the advertisement" indicated by the advertisement information exists on the route traveled by the user, the processor 11 specifies a period during which the user was on board the train car based on the "boarding date and time" and the "arrival date and time". After specifying the period during which the user was on board the train car, the processor 11 determines whether or not the period during which the user was on board the train car overlaps the "date and time" indicated by the advertisement

information 21.

If it is determined that the period during which the user was on board the train car overlaps the "date and time" indicated by the advertisement information 21, the processor 11 determines that the date and time when the user came into contact with the medium overlaps the "date and time" indicated by the advertisement information 21. After determining that the date and time when the user came into contact with the medium overlaps the "date and time" indicated by the advertisement information 21, the processor 11 classifies the user into a cluster of users who came into contact with the advertisement.

Next, a case where the processor 11 acquires the advertisement information 22 will be described.

The processor 11 acquires "boarding station", "boarding date and time", "arrival station", and "arrival date and time" of a user from the storage area 14a. The processor 11 specifies "boarding station" and "arrival station" as stations used by the user. If there is a transfer station on the way from the "boarding station" to the "arrival station", the processor may also specify the transfer station as a station used by the user.

After specifying the stations used by the user, the processor 11 determines whether or not at least one of the stations used by the user matches the "station" indicated by the advertisement information 22. If it is determined that they match, the processor 11 determines that a

"location where the user comes into contact with the advertisement" indicated by the advertisement information exists on the route traveled by the user.

After determining that the "location in which the user comes into contact with the advertisement" indicated by the advertisement information exists on the route on which the user traveled, the processor 11 determines whether or not "boarding date and time" or "arrival date and time" is included in the "date and time" indicated by the advertisement information 22. For example, if the "boarding station" matches the location of the advertisement, the processor 11 determines whether or not the "boarding date and time" is included in the "date and time" indicated by the advertisement information 22. Further, if the "arrival station" matches the location of the advertisement, the processor 11 determines whether or not the "arrival date and time" is included in the "date and time" indicated by the advertisement information 22.

If the transfer station matches the location of the advertisement, the processor 11 may specify the date and time at which the user was at the transfer station by calculating the travel time from the "boarding date and time" to the transfer station. The processor 11 may determine whether or not the specified date and time is included in the "date and time" indicated by the advertisement information 22.

If it is determined that the "boarding date and time"

or "arrival date and time" is included in the "date and time" of the advertisement information, the processor 11 determines that the date and time at which the user came into contact with the medium overlaps the "date and time" of the advertisement information. If it is determined that the date and time at which the user came into contact with the medium overlaps the "date and time" of the advertisement information, the processor 11 classifies the user into a cluster of users who have come into contact with the advertisement.

The processor 11 determines whether or not each user is classified into a cluster with reference to the travel history, and generates a cluster of users who have come into contact with the advertisement.

Furthermore, the processor 11 has a function (sub-cluster generation unit) of generating a sub-cluster from a cluster based on the user attribute. In other words, the processor 11 sets an attribute of a user upon whom the advertisement effect is intended to be measured, and generates a sub-cluster of users possessing this attribute.

The processor 11 sets an attribute of a user upon whom advertisement effect is intended to be measured. For example, the processor 11 accepts an input of an operation to set an attribute of a user upon whom advertisement effect is intended to be measured through the operation unit 16. For example, the processor 11 accepts an input of "female" as an attribute.

After setting the user attribute, the processor 11 generates a sub-cluster of users having the attribute from the cluster with reference to the registration information. The processor 11 acquires an attribute of a user classified into a cluster with reference to the registration information. After acquiring the attribute of the user, the processor 11 determines whether or not the user's attribute matches the attribute for generating the sub-cluster. If it is determined that they match, the processor 11 classifies the user into the sub-cluster. For example, the processor 11 classifies a user whose "gender" is "female" into a sub-cluster.

The processor 11 performs similar operations for each user classified into the cluster, so as to generate a sub-cluster. A sub-cluster is a cluster of users who have come into contact with the advertisement and have a predetermined attribute.

The sub-cluster may be a cluster of users having any one or every one of a plurality of attributes. The condition for generating a sub-cluster is not limited to a specific configuration.

Further, the processor 11 has a function (measurement unit) of measuring the effect of the advertisement upon the users classified into a sub-cluster.

For example, the processor 11 acquires the e-mail addresses of the users classified into the sub-cluster with reference to the registration information. The processor 11

sends a questionnaire about the advertisement to the acquired e-mail addresses at a predetermined timing.

The questionnaire includes questions for measuring the advertisement effect. For example, the questionnaire includes questions inquiring, for example, as to whether the user saw the advertisement, the user's impressions of the advertisement, the user's impressions of the product or the like caused by the advertisement (whether the product is desired), or whether the user preformed conversion related to the advertisement.

For example, a questionnaire is answered on a website. The processor 11 sends an e-mail including the URL of the website for answering the questionnaire.

The processor 11 acquires the questionnaire results to measure the advertisement effect. For example, the processor 11 aggregates answers to each question of the questionnaire to measure the advertisement effect. Another external device may acquire the results of the questionnaire to measure the advertisement effect.

Further, the processor 11 may measure the advertisement effect based on the access log of the terminal 30 possessed by a user classified into the sub-cluster.

For example, the processor 11 acquires, from another external device or the like, the access log of the terminal 30 possessed by a user classified into the sub-cluster. The access log is a history of access by the terminal 30 to a

server (such as a web server) through the Internet.

The processor 11 determines whether or not the user has performed conversion of the advertisement based on the access log. For example, if the conversion takes the form of purchase of a product, the processor 11 determines whether or not the user purchased the product from a website or the like for users to purchase the product after the user came into contact with the advertisement.

If the conversion takes the form of installation of an application, the processor 11 determines whether or not the user's terminal 30 downloaded the application from a predetermined server after the user's contact with the advertisement.

Further, if the conversion takes the form of activation of an application, the processor 11 determines whether or not access has occurred from the user's terminal 30 caused by activation of the application after the user's contact with the advertisement. For example, the processor 11 determines whether or not there is an access log to the server accessed upon activation of the application.

The processor 11 determines whether or not each user of the sub-cluster has performed conversion. The processor 11 counts the number of performed conversions.

The processor 11 calculates a conversion rate, which is a probability that a user having come into contact with the advertisement performs conversion, based on the number of users classified into the sub-cluster and the number of

conversions. The processor 11 acquires the conversion rate as an advertisement effect.

The method by which the processor 11 measures the result of the advertisement is not limited to a specific method.

Next, an operation example of the server apparatus 10 will be described.

FIG. 7 is a flowchart for explaining an operation example of the server apparatus 10.

First, the processor 11 of the server apparatus 10 acquires a travel history (S11). When the travel history is acquired, the processor 11 sets an advertisement for generating a cluster of users who have come into contact with the advertisement (S12).

After setting the advertisement, the processor 11 acquires advertisement information corresponding to the advertisement from the storage area 14a (S13). After acquiring the advertisement information, the processor 11 generates a cluster of users who have come into contact with the advertisement based on the travel history and the advertisement information (S14).

After generating the cluster, the processor 11 sets the attribute of users to be the target for measuring the effect of the advertisement (S15). After setting the attribute, the processor 11 generates a sub-cluster of users having the attribute from the cluster (S16).

After generating the sub-cluster, the processor 11

measures the effect of the advertisement on the user of the sub-cluster (S17). After measuring the effect of the advertisement, the processor 11 ends the operation.

The processor 11 may generate a cluster based on "a location where a user comes into contact with the advertisement." For example, if the medium 20 continuously displays the same advertisement, the processor 11 generates a cluster based on "a location where a user comes into contact with the advertisement." In other words, if there is "a location where a user comes into contact with the advertisement" on a travel route of the user, the processor 11 classifies the user into a cluster.

Further, the processor 11 does not have to generate a sub-cluster. The processor 11 may measure the effect of the advertisement upon the users classified into the cluster.

Furthermore, the processor 11 may generate a cluster by using, as a travel history, a use history of a transportation facility other than a train; for example, a bus, a monorail, a ship, or an aircraft. For example, the processor 11 generates a cluster based on advertisement information related to an advertisement displayed at a station or on a train car of a transportation facility and a use history.

[Second Embodiment]

Next, a second embodiment will be described.

The advertisement system 1 according to the second embodiment is different from that of the first embodiment

in that the advertisement system 1 according to the second embodiment determines whether or not a user has come into contact with the advertisement based on the user's coordinates. Accordingly, the other elements are denoted by the same reference numerals, and detailed description thereof is omitted.

The terminal 30 is a portable electronic device. For example, the terminal 30 is a feature phone, a smartphone, a tablet PC, a laptop PC, or a wearable terminal.

The terminal 30 acquires its own position (coordinates). For example, the terminal 30 acquires its position in time series by a predetermined application. For example, the terminal 30 acquires global coordinates (longitude and latitude) by the GPS. The terminal 30 stores the coordinates obtained by the GPS in time series.

The terminal 30 may acquire its position by using communication radio waves from a plurality of base stations for cellular communication. Moreover, the terminal 30 may acquire three-dimensional coordinates as its own position.

The terminal 30 transmits its own position acquired in time series to the server apparatus 10 as a travel history. Here, the travel history is the coordinates of the terminal 30 (the user) in time series. For example, the terminal 30 may transmit the travel history to the server apparatus 10 at a predetermined timing. In addition, the terminal 30 may transmit the travel history in response to a request from the server apparatus 10.

The storage area 14a stores advertisement information 23. The advertisement information 23 relates to an advertisement placed on the wall surface or the rooftop of a construction such as a building, or on the road shoulder.

The advertisement information 23 indicates the advertisement displayed on the digital signage, the date and time when the advertisement is displayed, and the area where a user comes into contact with the advertisement (the location where a user comes into contact with the advertisement).

FIG. 8 shows a configuration example of the advertisement information 23.

As shown in FIG. 8, the advertisement information 23 stores "advertisement", "date and time", and "area information" in association with each other.

The "advertisement" and "date and time" are as described above.

The "area information" indicates an area where the user has come into contact with the advertisement. In other words, the "area information" indicates an area in which the user stays to be determined to come into contact with the advertisement.

FIG. 9 shows a configuration example of the area information.

As shown in FIG. 9, the area information indicates an area 41. The area 41 is an area in which the user stays to be determined to have come into contact with the

advertisement.

The area 41 is set based on the position of the medium 20 that displays the advertisement. In the example shown in FIG. 9, the area 41 is set as a circular shape having the medium 20 as a center. The radius of the area 41 is based on, for example, a distance at which an advertisement displayed on the medium 20 can be visually recognized. For example, the larger the size of the medium 20 is, the larger the radius of the area 41 is. Further, the radius of the area 41 may be based on the height at which the medium 20 is placed. For example, the higher the medium 20 is placed, the larger the radius of the area 41 is.

FIG. 10 shows another configuration example of the area information.

As shown in FIG. 10, the area information indicates the area 42.

The area 42 is set based on the position and orientation of the medium 20 that displays the advertisement. In the example shown in FIG. 10, the medium 20 displays an advertisement in the direction of the arrow. For example, the medium 20 is composed of, for example, a display or the like facing the direction of the arrow.

As shown in FIG. 10, the area 42 is set as a circular shape with a center that is a position advanced from the medium 20 in the arrow direction. Similar to the radius of the area 41, the radius of the area 42 is based on, for example, a distance at which an advertisement displayed on

the medium 20 can be visually recognized.

The areas 41 and 42 need not be circular. The areas 41 and 42 may be elliptical, rectangular, or polygonal, etc. The shapes and sizes of the areas 41 and 42 are not limited to a specific configuration.

Next, functions realized by the processor 11 will be described. The following functions are realized by the processor 11 executing a program stored in, for example, the NVM 14.

First, the processor 11 has a function of acquiring a travel history from the terminal 30.

For example, the processor 11 acquires a travel history from the terminal 30 through the communication unit 15. The processor 11 may receive a travel history transmitted at a predetermined timing. Further, the processor 11 may transmit a request for acquiring a travel history to the terminal 30, and receive the travel history as a response to the request.

Further, the processor 11 may acquire the travel history from an external device that manages the travel history of the terminal 30.

Further, the processor 11 has a function of acquiring advertisement information corresponding to an advertisement for generating a cluster of users who have come into contact with the advertisement.

The processor 11 sets an advertisement for generating a cluster of users who have come into contact with the

advertisement. For example, the processor 11 receives, through the operation unit 16, an input of an operation to set an advertisement for generating a cluster of users who have come into contact with the advertisement.

After setting an advertisement for generating a cluster of users who have come into contact with the advertisement, the processor 11 acquires advertisement information 23 corresponding to the advertisement from the storage area 14a.

Furthermore, the processor 11 has a function of generating a cluster of users (for example, user IDs) who have had contact (or may have come into contact) with the advertisement, based on the advertisement information for generating a cluster of users who have come into contact with the advertisement and the travel history.

For example, the processor 11 determines whether or not the user has come into contact with the medium 20. That is, the processor 11 determines whether or not the user's position is included in the "location where the user comes into contact with the advertisement" indicated by the advertisement information. If it is determined that the user's position is included in the "location where the user comes into contact with the advertisement" indicated by the advertisement information, the processor 11 determines whether or not the medium 20 was displaying the advertisement at the date and time when the user came into contact with the medium 20. In other words, the processor

11 determines whether or not the date and time when the user came into contact with the medium overlaps the "date and time" of the advertisement information. If it is determined that the date and time when the user came into contact with the medium overlaps the "date and time" of the advertisement information, the processor 11 classifies the user into a cluster of users who have come into contact with the advertisement.

Based on the travel history, the processor 11 determines whether or not the user stayed in the area indicated by the area information of the advertisement information 23. For example, the processor 11 generates the user's route from the travel history, and determines whether or not the route overlaps the area indicated by the area information.

If it is determined that the user stayed in the area indicated by the area information of the advertisement information 23, the processor 11 determines that the "location at which the user comes into contact with the advertisement" indicated by the advertisement information exists on the route traveled by the user.

If it is determined that the "location in which the user comes into contact with the advertisement" indicated by the advertisement information exists on the route traveled by the user, the processor 11 specifies the period during which the user stayed in the area based on the travel history. For example, the processor 11 specifies the

period from the date and time at which the user entered the area to the date and time at which the user left the area as the period during which the user stayed in the area. After specifying the period during which the user stayed in the area, the processor 11 determines whether or not the period overlaps the "date and time" of the advertisement information.

If it is determined that the period overlaps the "date and time" of the advertisement information, the processor 11 determines that the date and time when the user came into contact with the medium overlaps the "date and time" of the advertisement information. If it is determined that the date and time at which the user came into contact with the medium overlaps the "date and time" of the advertisement information, the processor 11 classifies the user into a cluster of users who have come into contact with the advertisement.

The processor 11 determines whether or not each user is classified into a cluster with reference to the travel history, and generates a cluster of users who have come into contact with the advertisement.

Since the operation example of the server apparatus 10 is the same as that of the first embodiment, description thereof is omitted.

The present invention is not limited to the above embodiments, and can be modified in various manners in practice when implementing the invention without departing

from the gist of the invention. Further, the embodiments may be implemented in combination as appropriate, and in that case, the combined effect can be obtained. Furthermore, the above embodiments include various inventions, and various inventions can be extracted by combinations selected from a plurality of disclosed constituent elements. For example, if the problem can be solved and the advantages of the invention are attained even after some of the structural elements are deleted from all of the structural elements indicated in the embodiments, the structure made up of the resultant structural elements can be extracted as an invention.

CLAIMS

1. An information processing apparatus comprising:

a storage unit configured to store advertisement information indicating a location in which to come into contact with the advertisement and a period during which the advertisement is displayed;

an acquisition unit configured to acquire a travel history of a user;

a determination unit configured to determine whether or not the user has come into contact with the advertisement based on the travel history and the advertisement information;

a cluster generation unit configured to generate a cluster of users who are determined, by the determination unit, to have come into contact with the advertisement; and

wherein the travel history indicates coordinates of the user in time series, and

wherein the determination unit specifies a period during which the user stayed from the date and time at which the user entered the location to the date and time at which the user left the location based on the travel history, and if the period during which the user stayed overlaps the period during which the advertisement is displayed, the determination unit determines that the user has come into contact with the advertisement.

2. The information processing apparatus according to claim 1, wherein the travel history indicates the coordinates acquired by a GPS.

3. The information processing apparatus according to claim 1 or 2, wherein the advertisement information indicates an area in which the user comes into contact with the

advertisement, and

if at least a part of a route traveled by the user overlaps the area, the determination unit determines that the user has come into contact with the advertisement.

4. An information processing apparatus comprising:

a storage unit configured to store advertisement information indicating a location in which to come into contact with the advertisement and a period during which the advertisement is displayed;

an acquisition unit configured to acquire a travel history of a user;

a determination unit configured to determine whether or not the user has come into contact with the advertisement based on the travel history and the advertisement information;

a cluster generation unit configured to generate a cluster of users who are determined, by the determination unit, to have come into contact with the advertisement;

a measuring unit configured to measure an effect of the advertisement on the users in the cluster; and

wherein the travel history indicates coordinates of the user in time series, and

wherein the determination unit specifies a period during which the user stayed from the date and time at which the user entered the location to the date and time at which the user left the location based on the travel history, and if the period during which the user stayed overlaps the period during which the advertisement is displayed, the determination unit determines that the user has come into contact with the advertisement.

5. The information processing apparatus according to claim 4, wherein the storage unit stores registration

information indicating user attributes,

the information processing apparatus further comprises a sub-cluster generation unit configured to generate a sub-cluster of users who have a predetermined attribute from the cluster, and

the measurement unit measures an effect of the advertisement on the users in the sub-cluster.

6. The information processing apparatus according to claim 4 or 5, wherein the measurement unit measures the effect of the advertisement based on access logs of terminals possessed by the users in the cluster.

7. An information processing method performed by a processor comprising:

acquiring a travel history of a user; and

determining whether or not the user has come into contact with an advertisement based on the travel history and advertisement information indicating a location in which to come into contact with the advertisement and a period during which the advertisement is displayed;

generating a cluster of users who are determined, by the determining, to have come into contact with the advertisement; and

wherein the travel history indicates coordinates of the user in time series, and

wherein the determining specifies a period during which the user stayed from the date and time at which the user entered the location to the date and time at which the user left the location based on the travel history, and if the period during which the user stayed overlaps the period during which the advertisement is displayed, the determining determines that the user has come into contact with the advertisement.

8. A program configured to cause a processor to:

acquire a travel history of a user;

determine whether or not the user has come into contact with an advertisement based on the travel history and advertisement information indicating a location in which to come into contact with the advertisement and a period during which the advertisement is displayed;

generate a cluster of users who are determined, by the determination, to have come into contact with the advertisement; and

wherein the travel history indicates coordinates of the user in time series, and

wherein the determination specifies a period during which the user stayed from the date and time at which the user entered the location to the date and time at which the user left the location based on the travel history, and if the period during which the user stayed overlaps the period during which the advertisement is displayed, the determination determines that the user has come into contact with the advertisement.