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Matching Entities On Multiple Platforms Using Graph Bijections

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ABSTRACT

Disclosed herein is an improved mechanism for matching entities on multiple platforms using graph bijections. The mechanism can identify two trees (e.g., a first tree and a second tree) within a given directed graph, where each tree has a root node corresponding to a particular entity, such as a reporting entity for advertisement metrics (e.g., impressions, views, etc.) or any other suitable entity. The mechanism can then identify the leaves associated with each tree. For each identified leaf, the mechanism can determine if there is advertising traffic or other suitable activity that connects the leaf with a leaf of another tree. For example, for each identified leaf, the mechanism can determine if there is advertising traffic or other suitable activity that connects a leaf corresponding to a first root node of the first tree with a leaf corresponding to a second root node of the second tree. In response to determining that there is advertising traffic or other suitable activity that connects each of the identified leaves, the mechanism can determine that there is a match in the entities associated with the two root nodes of the two trees and can subsequently perform any suitable actions associated with the matched entities. Alternatively, in response to determining that there is no advertising traffic or other suitable activity that connects each of the identified leaves, the mechanism can determine that there is no match in the entities associated with the two root nodes of the two trees.

BACKGROUND

Advertisers frequently advertise on multiple platforms, for example, on a first platform in which advertisements are inserted within videos, on a second platform in which advertisements are inserted in particular positions of one or more web pages, and/or on any other suitable

platforms. In some cases, each platform may have different entities that are used to generate reporting metrics that indicate how a particular advertisement campaign is performing. For example, the first platform may have entities, such as a customer identifier, a name of a campaign, etc. In continuing this example, the second platform may have entities that are similar, but have different identifiers, such as advertiser, campaign identifier, etc. It may be useful to match entities to be able to correlate and/or validate metrics across different platforms. However, it can be difficult to match entities across different platforms systematically. Thus, there is a need for an improved mechanism for matching entities on multiple platforms using graph bijections.

DESCRIPTION

The systems and techniques described in this disclosure relate to matching entities on multiple platforms using graph bijections. The system can be implemented on a server. FIG. 1 illustrates an example process for matching entities using graph bijections.

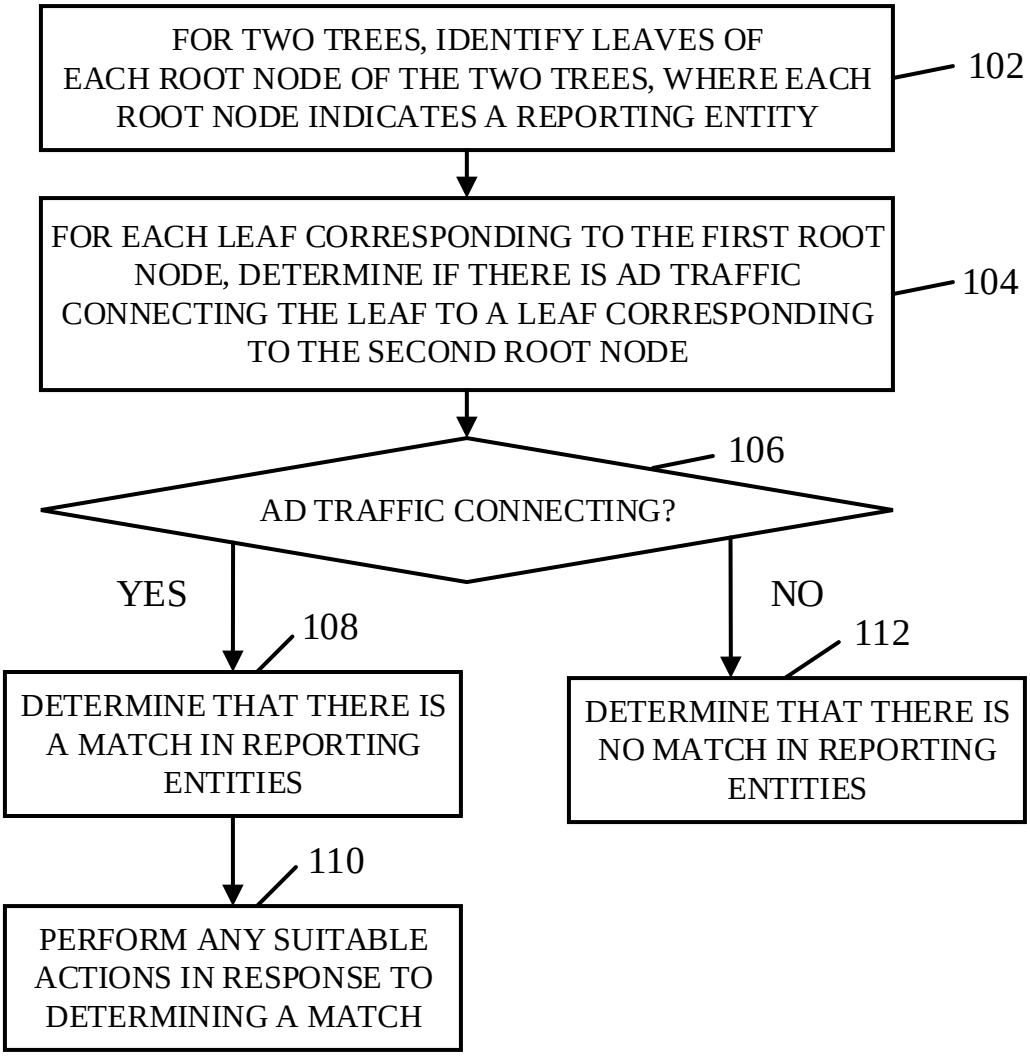

FIG. 1

At 102, the system can, for two trees, identify leaves of each root node of each of the two trees. FIG. 2 illustrates an example of two trees, with a first root node "u" 202 of a first tree and a second root node "v" 204 of a second tree. In some cases, each root node can correspond to a reporting entity of a particular advertising platform. Examples of reporting entities can include an advertising network name, a name of a particular advertiser, a name of a customer, a name of a campaign, a name of a group of campaigns, a name of a group of advertisements within a particular campaign, a type of media plan, a type of creative associated with an advertisement, a

placement of a particular advertisement, a site at which an advertisement is to be inserted, an insertion order of advertisements in a group of advertisements, and/or any other suitable entities.

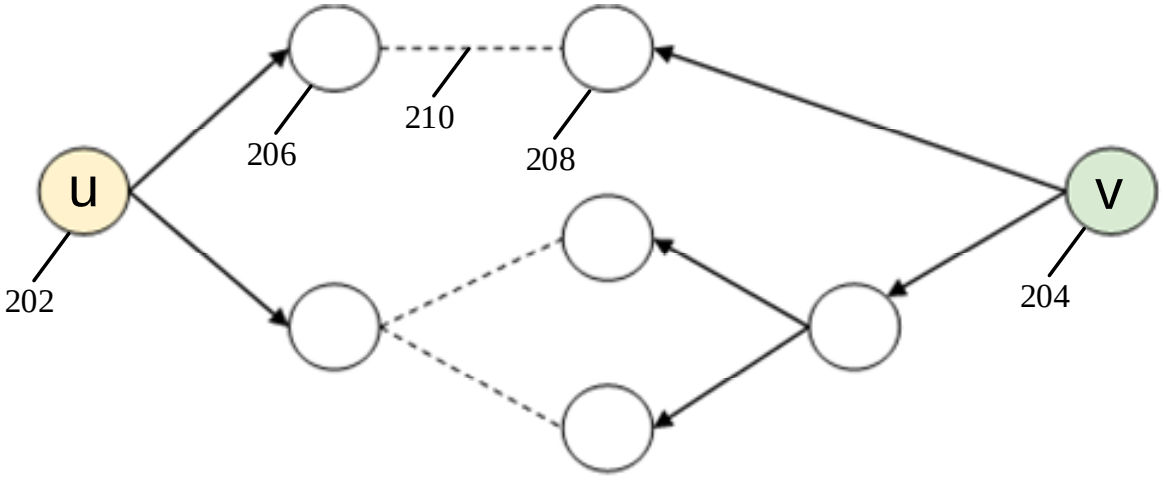

FIG. 2

Note that, in some instances, a tree can indicate a hierarchical mapping of entities stemming from each root node or a sub-tree of interest. For example, in an instance where a root node corresponds to a group of campaigns, successive child nodes can indicate individual campaigns, particular advertisements corresponding to particular campaigns, types of creatives associated with each particular advertisement, etc. In some such instances, a leaf can be a terminating node for which there is no child entity. Referring to FIG. 2, leaf 206 can be a leaf node of the first tree with root node 202, and leaf 208 can be a leaf node of the second tree with root node 204.

At 104, the system can determine, for each leaf corresponding to the first root node, if there is advertising traffic or other suitable activity that connects the leaf to a leaf corresponding to the second root node. For example, referring to FIG. 2, a leaf corresponding to the first root node can be found to have advertising traffic other suitable activity that connects the leaf to a leaf corresponding to the second root node if there is a dashed line 210 connecting the two

leaves, as shown between leaves 206 and 208. In some instances, the system can identify advertising traffic other suitable activity between two leaves in any suitable manner, for example, by querying databases associated with each platform corresponding to each root node, and/or in any other suitable manner.

At 106, the system can determine whether there is advertising traffic connecting each leaf node corresponding to the first root node to another leaf node corresponding to the second root node. For example, in some instances, as shown in FIG. 2, the system can determine whether there is a dashed line connecting each leaf node corresponding to the first tree with first root node 202 to another leaf node corresponding to the second tree with second root node 204. In some instances, the system can determine that, if there is advertising traffic connecting each leaf node corresponding to the first root node to another leaf node corresponding to the second root node, that graphs corresponding to each tree satisfy criteria for a graph bijection.

If, at 106, the system determines that there is advertising traffic other suitable activity that connects each leaf node corresponding to the first root node to another leaf node corresponding to the second root node ("yes" at 106), the system can determine that there is a match in a first reporting entity corresponding to the first root node with a second reporting entity corresponding to the second root node. For example, referring to FIG. 2, in an instance where first root node 202 corresponds to a reporting entity such as "advertiser name," and second root node 204 corresponds to a reporting entity such as "customer name," the system can determine that there is a match between "advertiser name," and "customer name."

The system can then proceed to 110, and can perform any suitable actions in response to determining that there is a match between the two reporting entities. For example, in some instances, the system can correlate or align any suitable advertising metrics (e.g., impressions,

views, etc.) corresponding to entities hierarchically related to each of the two reporting entities. As a more particular example, in some instances, in a case where the matched entities correspond to a particular advertising campaign, the system can correlate or align metrics, such as a click-through rate, a viewing rate, and/or any other suitable metrics associated with advertisements under the advertising campaign. In some instances, the system can correlate or align metrics across two different advertising platforms, for example, in an instance where the first root node corresponds to a first platform and the second root node corresponds to a second platform.

Conversely, if, at 106, the system determines that there is no advertising traffic connecting at least one leaf node corresponding to the first root node to another leaf corresponding to the second root node ("no" at 106), the system can determine that there is no match in between a first reporting entity corresponding to the first root node and a second reporting entity corresponding to the second root node at 112.

It should be noted that, in determining matching or comparable reporting entities, monitoring alignment can be obtained in which reports having various metrics can be aligned.

Accordingly, a mechanism for matching entities on multiple platforms using graph bijections is provided.