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ADVERTISING MECHANISM FOR PREDICTIVE CONSUMPTION OF CONTENT AT A VARIABLE ENTRY POINT

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A content item service may provide content items (e.g., videos, songs, audiobooks, etc.) to users. For example, the content items may be streamed or otherwise provided or rendered to the users. Depending on the subject of the content item, the content item may attract more users than other content items. For example, if a celebrity appears in a particular content item, that content item may attract more users. Furthermore, if the subject that attracts viewers occurs at a particular point within the content item, users may begin consuming the content item at that particular point rather than consuming the content item from the beginning. For example, if a celebrity appears at 1:30 in a video clip, a user may begin watching the video clip at 1:30 rather than from the beginning. In such a case, advertisements at the beginning of the content item may not be consumed by the user.

We propose a mechanism that quantifies future traffic associated with respective segments of content items. For example, if a celebrity appears at 1:30 within a video content item, it may be predicted that the particular segment in the video that the celebrity appears will have more viewers than a segment that does not include the celebrity. The future traffic may be determined based on inputs from the provider of the content item. For example, the provider may indicate that a celebrity appears at 1:30 in an uploaded video segment. The future traffic may also be determined by the system using various technologies, such as image and/or sound recognition. For example, the system may recognize that a celebrity appears at 1:30 in the content item using image recognition. In another example, the system may recognize that a particular song is playing in a content item using sound recognition. The system may quantify future traffic for different segments of the content item. For example, if a celebrity appears at one

point in a content item and at another point in the content item a famous song is played, the system may quantify a first future traffic value for the segment including the celebrity and a second future traffic value for the segment that includes the famous song. The future traffic may be quantified based on current trends. For example, it may be determined that one celebrity historically generates more user consumption than another celebrity. In such a case, the quantified future traffic would be greater for the celebrity that generates more user consumption. The different segments of the content item may then be ranked based on the quantified future traffic. For example, a segment that has a higher quantified future traffic value would be ranked more highly than a segment that has a lower quantified future traffic value.

The segments of the content item may also be given classifications based on the type of content for that particular segment. For example, if a segment of a content item contains a car chase, then the content item may be classified under automobiles. In another example, if a segment of a content item contains a famous song, then the segment may be classified under music. The classifications may be used to allow advertisers to select segments that are most likely to be viewed by a desired target audience. For example, an automobile manufacturer may find it desirable to advertise during a segment that is classified under automobiles.

The segments may also be ranked according to user interest based on a combination of existing data from users as well as inferred relevance of the content from the users. The inferred relevance may be determined based on a user's consumption history. For example, if the user's consumption history included content having a particular celebrity in it, then it may be inferred that new content containing the particular celebrity may be relevant to the user. A similar method may be applied to content being provided to larger groups of users. For example, it may be

determined that particular types of content (e.g., funny videos, animal videos, etc.) appeal to a large group of users and segments containing those types of content may be ranked more highly.

In some embodiments, a predictive algorithm may be used to project peak consumption or a highest traffic point for content items and segments of content items. The predictive algorithms may be based on user consumption trends of content items. For example, if user consumption trends show an increase in consumption of content items (e.g., increasing popularity) including a particular celebrity, then the predictive algorithm may project a higher peak consumption for a content item including that celebrity. Similar methods may also be used to predict when future demand for a segment of content items may level off or decline. For example, if user consumption trends show a decrease in consumption of content items including a particular celebrity, then the predictive algorithm may project a lower peak consumption for a content item including that celebrity.

Segments of content items that are highly ranked and/or have high projected peak consumption values may be more valuable to advertisers due to increased exposure of these segments to consumers. In one embodiment, a system for a dynamic, auction-like environment may be provided where advertisers may bid to advertise during segments of a content item. Minimum bids may be set for ranked segments of content items and the system may receive increased bids for particular segments. By providing rankings and projected peak views for the segments, potential advertisers may be more confident that consumers will be exposed to their advertisement during the segment. Upon winning the auction, the advertiser may present an advertisement for consumption by consumers during that segment of the content item. For example, if a car company wins an auction for a segment of a content item that includes a car

chase, then a banner for that car company may be displayed at the bottom of the content item during the segment including the car chase.

In some embodiments, the predictive algorithm may also be used to assign a price to advertise during segments of a content item based on the projected peak views determined by the algorithm, as previous discussed. These prices may be dynamically adjusted over time in accordance with the projected peak views determined by the predictive algorithm. For example, if a segment of a content item has a high projected peak view, then the predictive algorithm may assign a higher price to advertise during that segment. In a further embodiment, advertisers may be able to filter segments available for advertising based on the number of predicted views (e.g., 1k views, 10k views, 100k views, 1M views). For example, an advertiser may desire to place an advertisement in a segment of a content item that is predicted to have 10k views. Accordingly, the segments available for advertising may be filtered so that the user is presented with all segments that are predicted to have approximately 10k views.

Figure 1 depicts a flow diagram of a method to quantify future traffic associated with respective segments of content items and rank the segments accordingly. First, at step 101, a content item may be received from a content provider. For example, the content item may be a video provided by a content provider.

Next, at step 102, segments of the received content item may be identified. The segments of the received content item may be those segments that are likely to have higher viewership. The segments of the content item may be identified by the provider of the content item. For example, the content provider may indicate that a celebrity appears during a particular segment of the content item. Alternatively, the system may identify the segments of the received content item using image recognition, sound recognition, or the like. For example, upon receiving the

content item, the system may use image recognition to identify that a celebrity appears during a particular segment of the content item. In another example, upon receiving the content item, the system may use sound recognition to identify a song that is played during a particular segment of the content item.

Subsequently, at step 103, the system may classify the identified segments of the content item. For example, if a segment of the content item is identified as containing a car chase, then that segment may be classified under automobiles. In another example, if a segment of the content item contains a song, the segment may be classified under music. At step 104, the system may predict future consumption of the segments of the content item. The future consumption of the segments may be determined based on consumer preferences and consumption history. For example, if consumers have historically watched video clips containing a particular celebrity, then segments containing this celebrity may have a higher predicted future consumption. In some embodiments, the future consumption of the segments may be determined using a predictive algorithm, as previously discussed.

Furthermore, at step 105, the segments may be ranked and priced based on the predicted future consumption from step 104. For example, a segment that is predicted to have a high future consumption may be more highly ranked than a segment that is predicted to have a low future consumption value. Similarly, a segment that is predicted to have a high future consumption may have a price assigned to it that is higher than a segment that is predicted to have a lower future consumption. In one embodiment, the price may be assigned to the segment by the predictive algorithm. In another embodiment, the system may include an auction-like environment where advertisers may bid against one another to advertise during particular segments.

At step 106, the system may present the content item that includes advertisements during segments of the content item. For example, if a car company paid to advertise during a segment of a content item containing a car chase, then a banner containing the car company may be displayed during the segment of the content item that includes the car chase.

ABSTRACT

A mechanism that quantifies future traffic associated with respective segments of content items. A content item may be received from a content provider and segments of the received content item may be identified. Subsequently, the identified segments may be classified based on the type of content present in the content item during the segments. The future consumption of the segments of the content item may be predicted based on the type of content present and the segments may be ranked and priced accordingly. The content item may then be presented including advertisements during the segments of the content item.

Keywords: consumption, video, content, streaming, advertisement, predictive
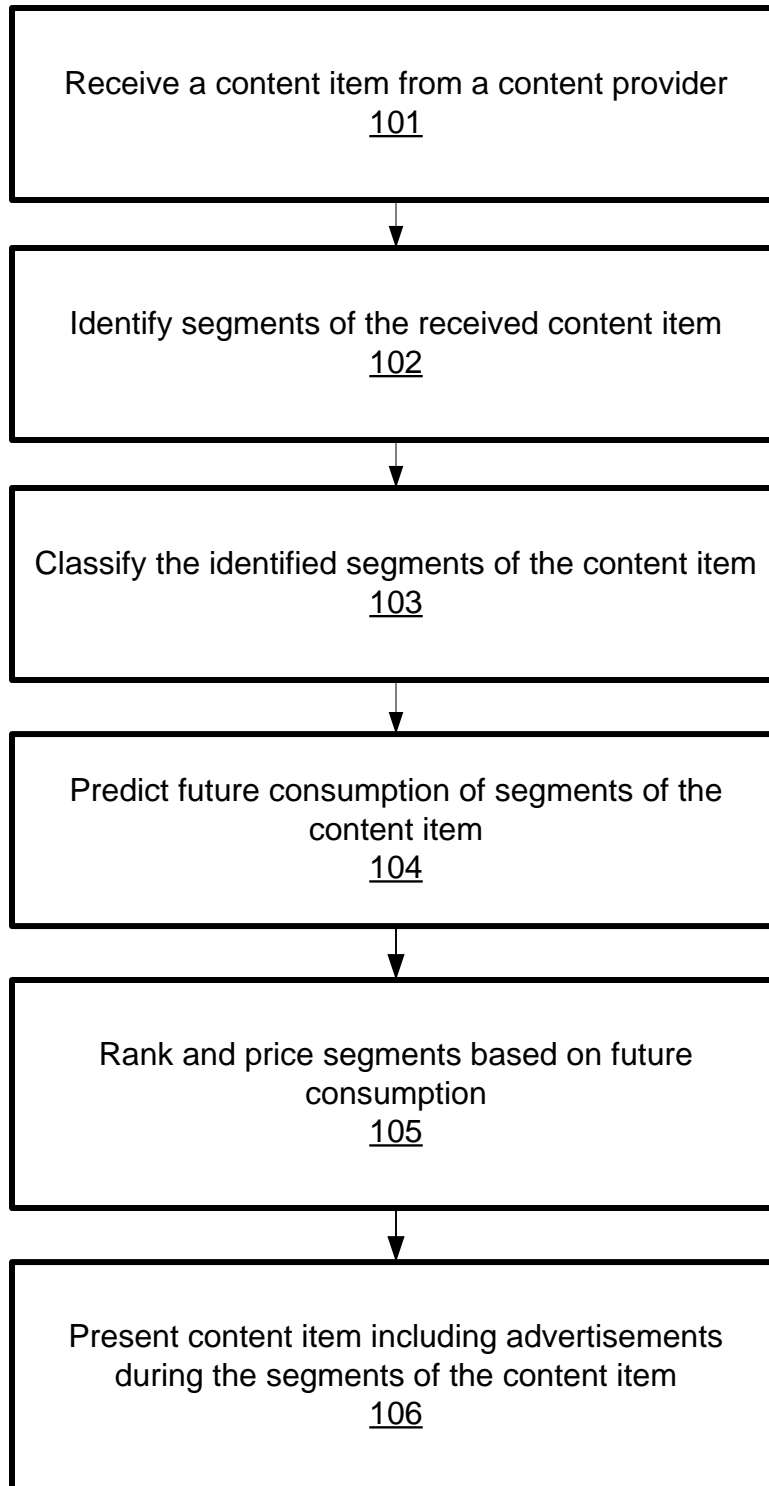
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┌─────────────────────────────────────────┐
│  Receive a content item from a content   │
│  provider                                │
│                  101                     │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│   Identify segments of the received      │
│   content item                           │
│                  102                     │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│  Classify the identified segments of     │
│  the content item                        │
│                  103                     │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│  Predict future consumption of           │
│  segments of the content item            │
│                  104                     │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│  Rank and price segments based on        │
│  future consumption                      │
│                  105                     │
└─────────────────────────────────────────┘
                    │
                    ▼
┌─────────────────────────────────────────┐
│  Present content item including          │
│  advertisements during the segments      │
│  of the content item                     │
│                  106                     │
└─────────────────────────────────────────┘
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FIG. 1