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(54) **METHOD AND APPARATUS FOR IDENTIFYING NEW MEDIA CONTENT**

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G06F 15/16 (2006.01)

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See application file for complete search history.

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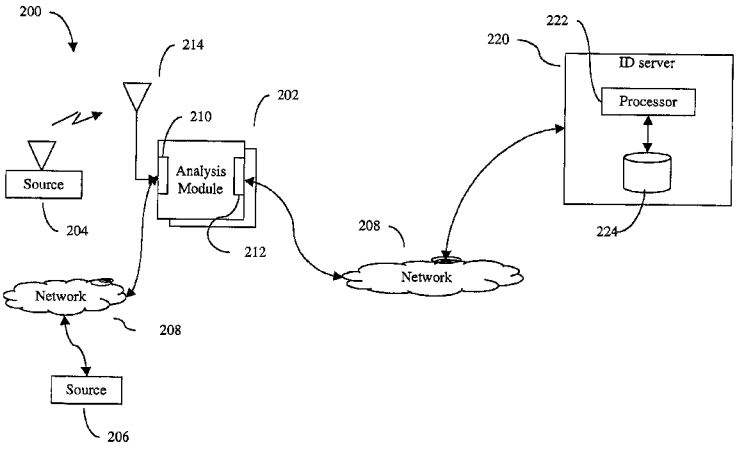
(57) **ABSTRACT**

A new media identification system is disclosed. In one aspect, a system may comprise at least one analysis module for receiving and analyzing an received work and generating a corresponding representation thereof; at least one identification (ID) server for receiving the representation from the at least one analysis module and generating a list of unidentifiable received works. A method for identifying new media is also disclosed. In one aspect, a method may comprise receiving an unidentified segment; determining whether the unidentified segment is similar to previously received unidentified segments; and sequentially arranging similar unidentified segments in a single super segment.

96 Claims, 7 Drawing Sheets



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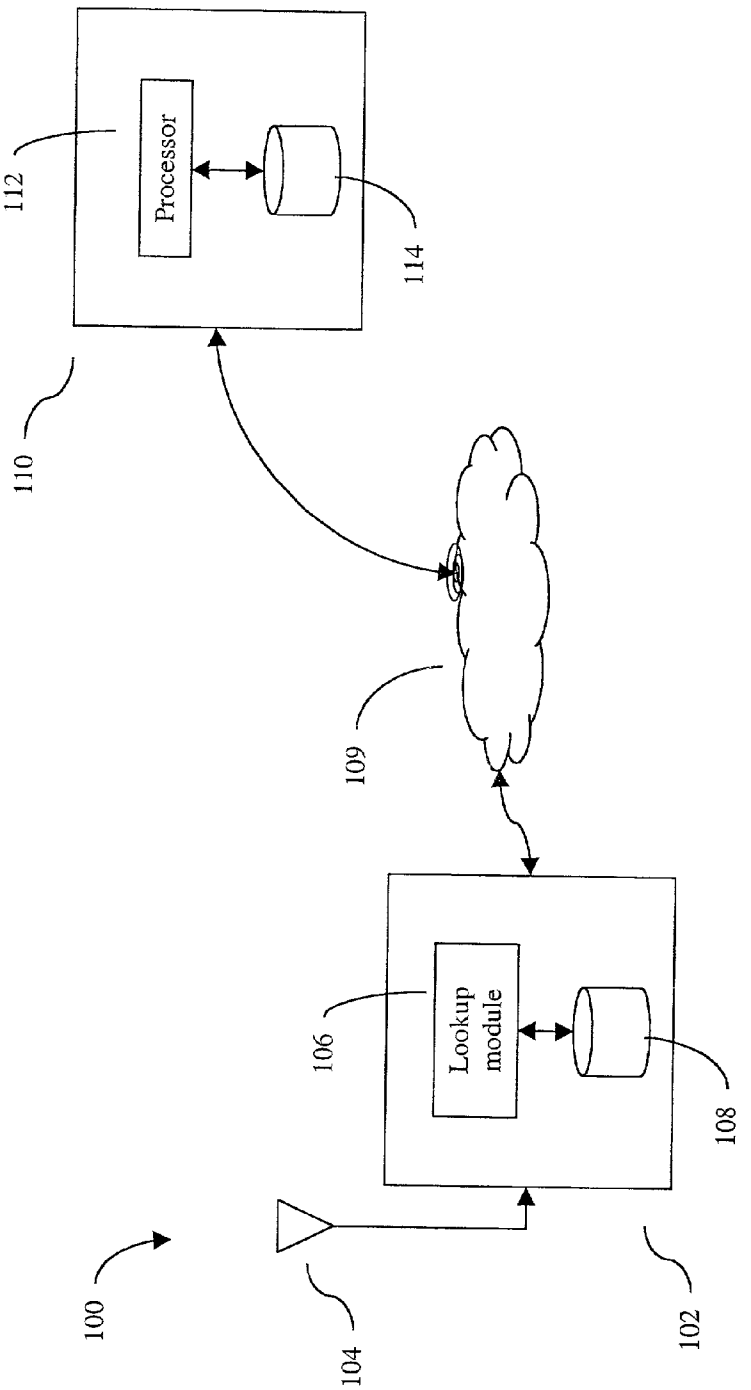

FIG. 1
Prior Art

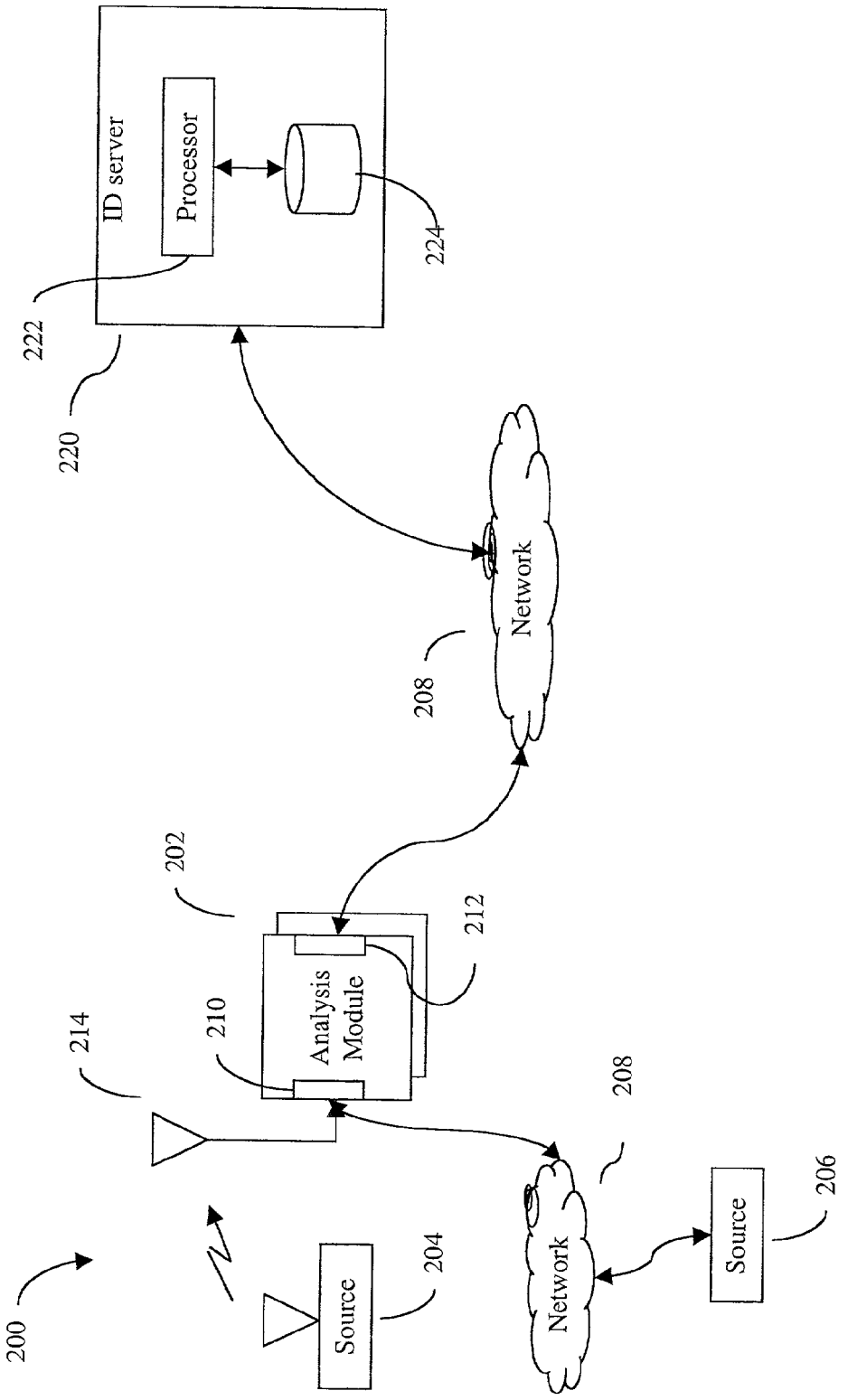
ID server
Processor
224
222
220
Network
208
202
212
Analysis Module
210
214
208
Network
Source
204
Source
206
200

FIG. 2

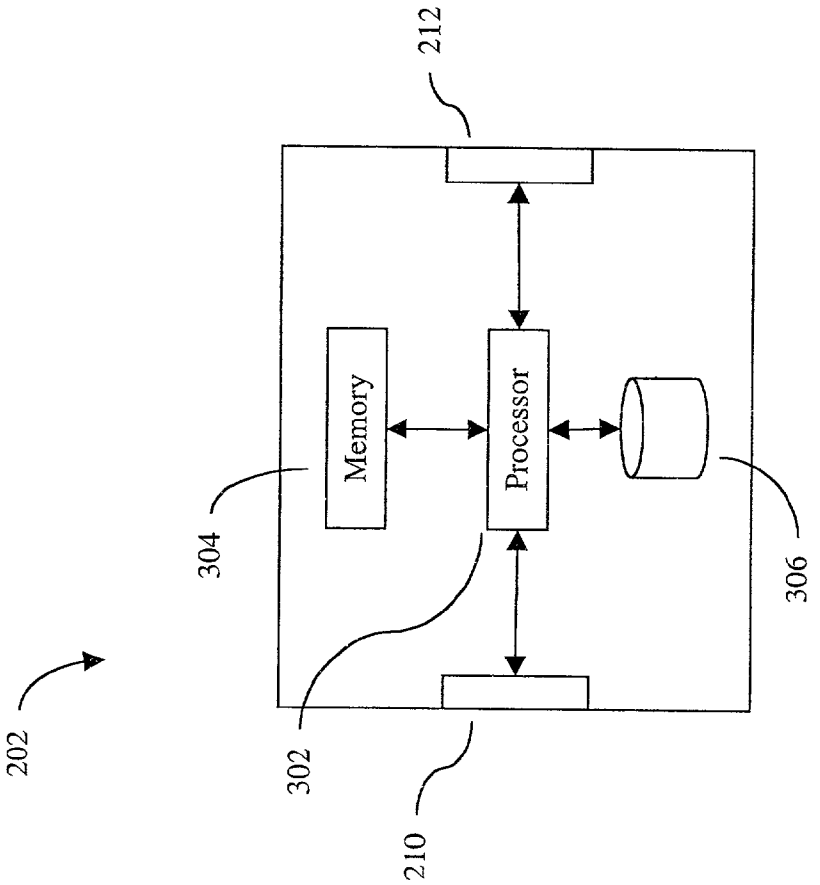

FIG. 3

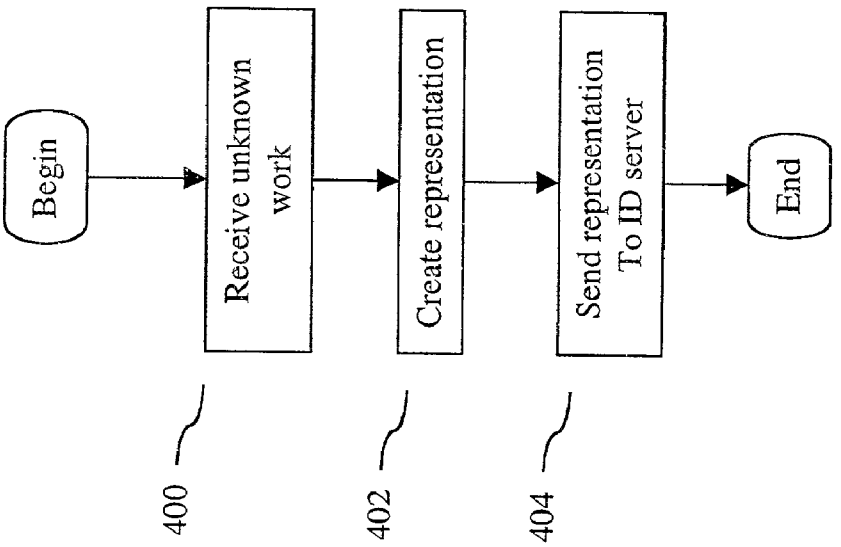
Begin
Receive unknown work
Create representation
Send representation To ID server
End
400
402
404

FIG. 4

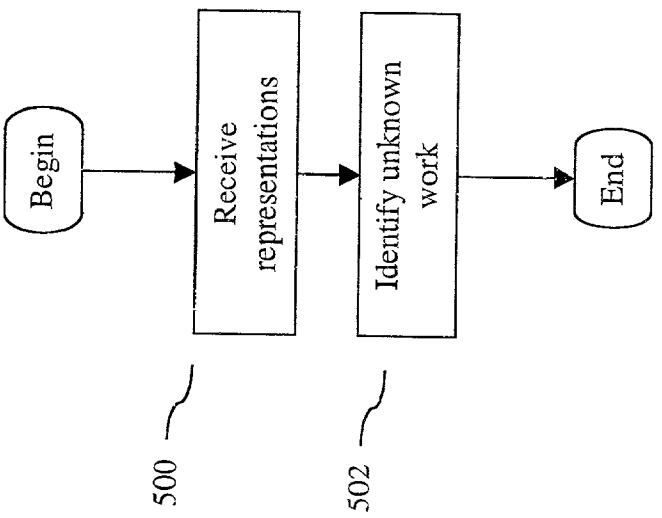
Begin
Receive representations
Identify unknown work
End
500
502

FIG. 5

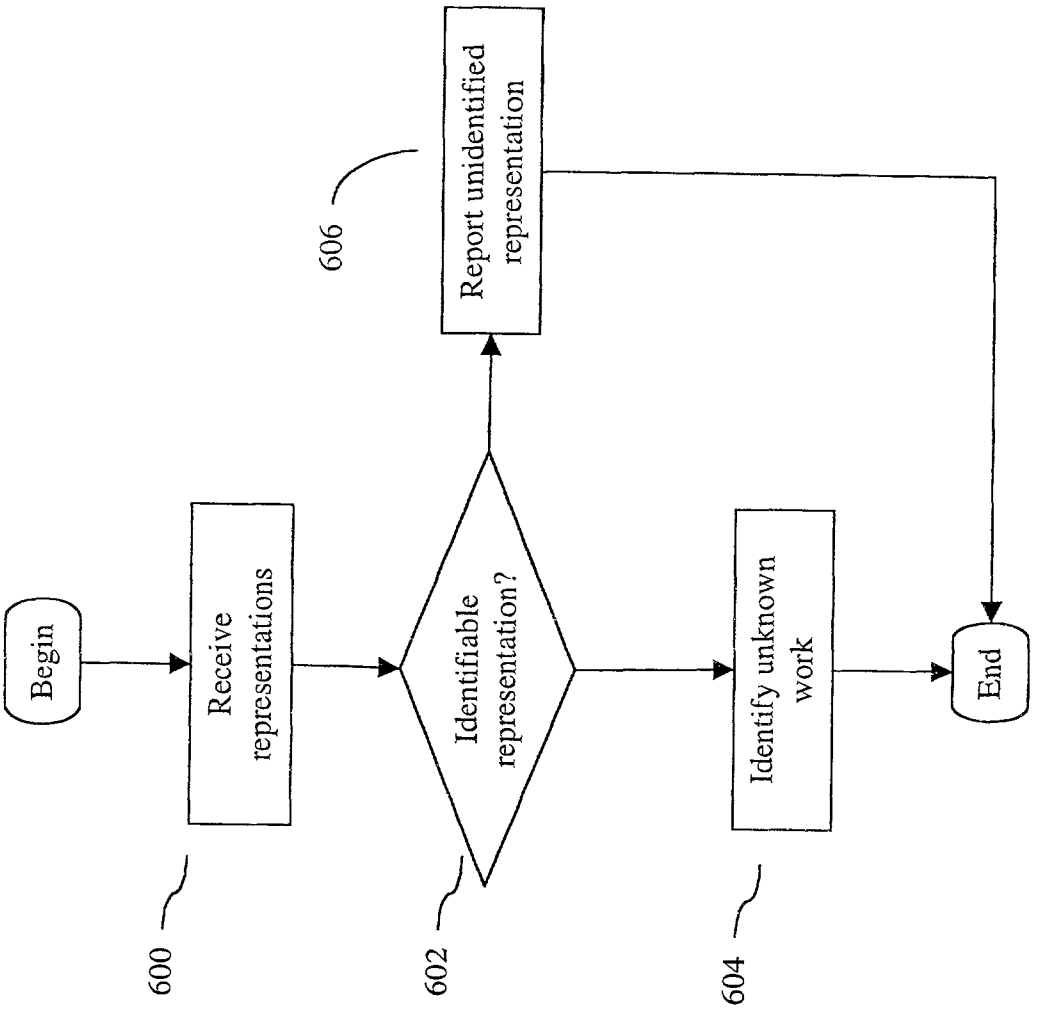
Begin
Receive representations
Identifiable representation?
Report unidentified representation
Identify unknown work
End
600
602
604
606

FIG. 6

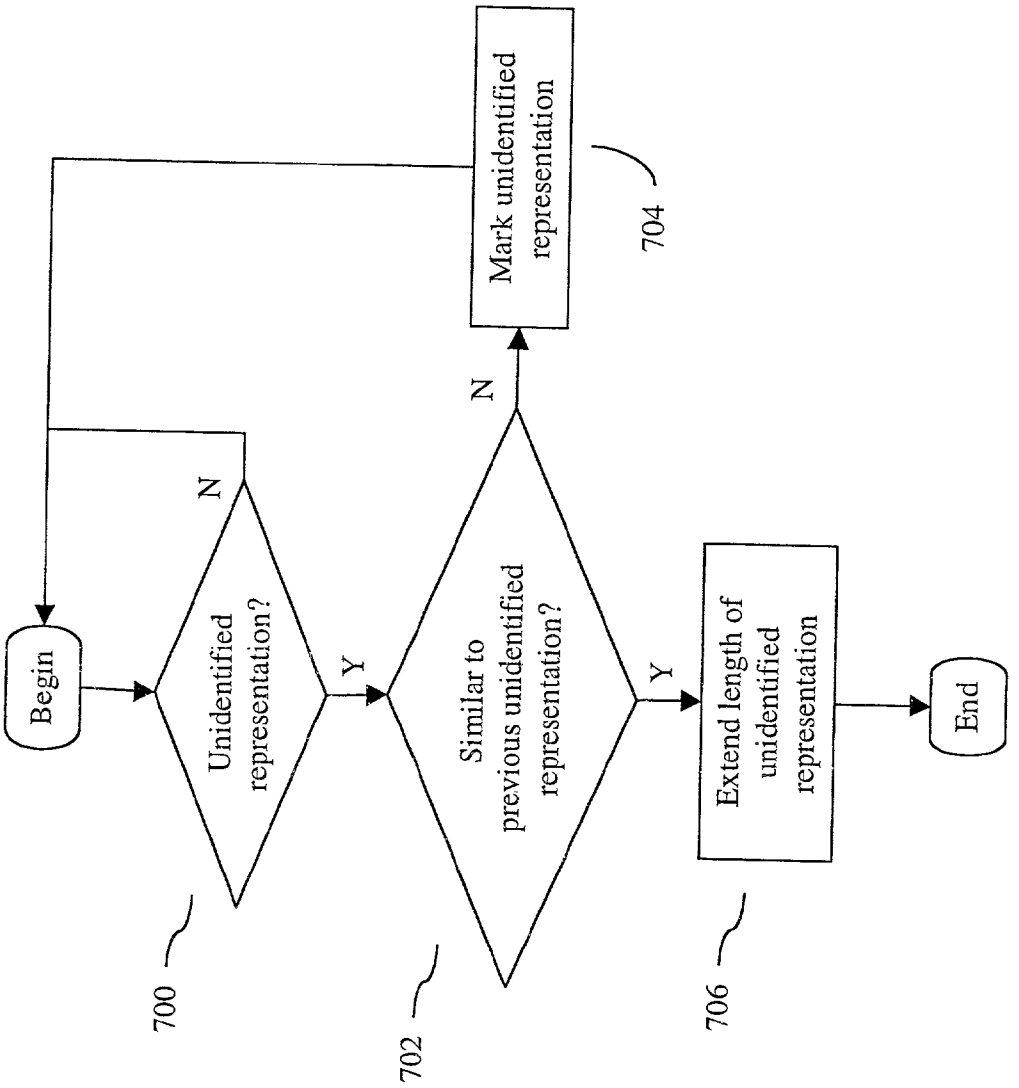
Begin
Unidentified representation?
N
Y
Similar to previous unidentified representation?
N
Y
Mark unidentified representation
Extend length of unidentified representation
End
700
702
704
706

FIG. 7

METHOD AND APPARATUS FOR IDENTIFYING NEW MEDIA CONTENT

RELATED APPLICATION

This application is a continuation-in-part of U.S. application Ser. No. 09/910,680, filed Jul. 20, 2001.

BACKGROUND

1. Field of the Disclosure

The present disclosure relates to data communications, and, in particular, to a novel system and apparatus for the automatic identification of new media.

2. The Prior Art

Background

Once an audio or video work has been recorded it may be both downloaded by users for play, or broadcast ("streamed") over the Internet or conventional radio or television broadcast or satellite broadcast media. When works are streamed, they may be listened to or viewed by Internet users in a manner much like traditional radio and television stations. Media streams often contain both performances of pre-recorded work and extemporaneous work, such announcements or other narrative material. Furthermore, media streams may contain no information about the work being performed, or the information provided may be imprecise.

Given the widespread use of streamed media, audio works, or video works may need to be identified. The need for identification of works may arise in a variety of situations. For example, an artist may wish to verify royalty payments or generate their own Arbitron®-like ratings by identifying how often their works are being performed. Thus, playlists of media may need to be generated. Additionally, for competitive analysis a business may wish to know when and where a competitor is placing advertising in the media. Furthermore, a broadcast source may want to know when and how often a competitive broadcast source is using pre-recorded material.

Further complicating the identification are improvements in technology allowing a tremendous number of new works to be produced, such as new song recordings, new advertisements, news worthy audio clips, and station promotions. A comprehensive playlist preferably would include these new works, which may be performed over a wide variety of media streams.

FIG. **1** shows a playlist generation system **100** of the prior art. The system **100** may include one or more remote detection modules **102** deployed at various locations throughout a broadcast area. Each detection module **102** may include an antenna **104** for receiving broadcast signals and providing the signals to an analysis and lookup module **106**. The module **106** is typically configured to identify the content of the received signal by comparing its audio content against a database **108** of reference representations of known works.

If a match is made, typically the module **102** will keep a record of all matches made during a predetermined period of time. For example, the module **102** may keep a record of song titles detected during a 24-hour period.

The system **100** may further include a playlist server **110** having a processor **112** and database **114**. The server **110** is typically configured to receive information such as the titles of identified songs from the one or more detection modules **102** through a network such as the Internet **109** and generate a playlist which may be stored on database **114**.

However, the system **100** is typically unable to identify works for which a corresponding reference representation does not exist in the reference database.

SUMMARY

A new media identification system is disclosed. In one aspect, a system may comprise at least one analysis module for receiving and analyzing streamed work and generating a corresponding representation thereof; at least one identification (ID) server for receiving the representation from the at least one analysis module and generating a collection of unidentifiable segments in the received work.

A method for identifying new works is also disclosed. In one aspect, a method may comprise receiving an unidentified segment; determining whether the unidentified segment is similar to previously received unidentified segments; and sequentially extending similar unidentified segments into a single super segment.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

FIG. **1** is a prior art diagram of a system.

FIG. **2** is a block diagram of one aspect of a disclosed system including one or more analysis modules and ID servers.

FIG. **3** is a block diagram of one aspect of an analysis module.

FIG. **4** is a flowchart of one aspect of a disclosed system.

FIG. **5** is a flowchart of one aspect of a disclosed system.

FIG. **6** is a flowchart of a further aspect of a disclosed system.

FIG. **7** is a flowchart of yet a further aspect of a disclosed system.

DETAILED DESCRIPTION

Persons of ordinary skill in the art will realize that the following description is illustrative only and not in any way limiting. Other modifications and improvements will readily suggest themselves to such skilled persons having the benefit of this disclosure.

This disclosure may relate to data communications. Various disclosed aspects may be embodied in various computer and machine readable data structures. Furthermore, it is contemplated that data structures embodying the teachings of the disclosure may be transmitted across computer and machine readable media, and through communications systems by use of standard protocols such as those used to enable the Internet and other computer networking standards.

The disclosure may relate to machine readable media on which are stored various aspects of the disclosure. It is contemplated that any media suitable for retrieving instructions is within the scope of the present disclosure. By way of example, such media may take the form of magnetic, optical, or semiconductor media.

Various aspects of the disclosure may be described through the use of flowcharts. Often, a single instance of an aspect of the present disclosure may be shown. As is appreciated by those of ordinary skill in the art, however, the protocols, processes, and procedures described herein may be repeated continuously or as often as necessary to satisfy the needs described herein. Accordingly, the representation of various aspects of the present disclosure through the use of flowcharts should not be used to limit the scope of the present disclosure.

Exemplary Structure

FIG. **2** is a schematic diagram of one aspect of a disclosed playlist generation system **200**. The system **200** may include at least one analysis module **202** for receiving a media stream from a broadcast source **204** as is known in the art. The

analysis module may include one or more conventional antennae **214** coupled to the analysis module **202** through an input port **210**. The input port **210** may include a conventional receiver for the reception of desired broadcast signals. The input port **210** may also be configured to provide remote control functionality for allowing the remote control and configuration of the receiver, such as providing for remote tuning. The input port **210** may be further configured to digitize received signals in digital formats using protocols known in the art, such as PCM.

The analysis module **202** may also be configured to receive a media stream from one or more networked sources **206**. In one aspect of a disclosed system, the input port **210** of the analysis module **202** may be configured to monitor sources providing content in standard formats such as Real®, QuickTime®, Windows Media®, MP3®, and similar formats, using hardware and software as is known in the art.

In another aspect of a disclosed system, the input port **210** may be configured to directly receive audio or video through any of the various means know in the art, such as a microphone, video acquisition system, VHS tape, or audio cassette tape. These media streams may also be provided in standard formats such as MP3, Windows Media, and similar formats. Thus, the analysis module **202** may be configured to receive a work prior to the work being presented to the broadcast system or network source. It is envisioned that this presentation could occur almost simultaneously.

The input port **210** may be operatively coupled to a network **208** through which the source **206** may be accessed. The network **208** may comprise any packet- or frame-based network known in the art, such as the Internet. The input port **210** may also be configured to access the network **208** through any means known in the art, such as through traditional copper connections. Furthermore, the input port **210** may also be configured to access the network **208** using wireless connectivity methods as known in the art, including low-power broadband methods such as Bluetooth®, or cellular-based access methods such as those used to provide wireless connectivity to cellular phones and personal digital assistants (PDAs).

The analysis module **202** may also include an output port **212** for providing connectivity to the network **208**. The output port **212** may comprise a separate unit within the analysis module **202** and may include hardware and software to provide the same functionality as the input port **210**. Additionally, it is contemplated that the output port **212** may comprise substantially the same circuitry as the input port **210** in order to save space and cost.

Referring now to FIG. **3**, a conceptual block diagram of one aspect of a disclosed analysis module **202** is shown. The analysis module **202** may include a processor **302** for operating various aspects of the present disclosure. The processor **302** may be operatively disposed between the input port **210** and output port **212**.

It is contemplated that any processor known in the art may be employed in the module **202**, and the choice of a processor may depend on the application. For example, if the module **202** is embodied in a personal computer, the processor **202** may comprise a microprocessor capable of running conventional operating systems such as Microsoft Windows®, while if the module **202** is deployed in a mobile unit such as a PDA, the processor **202** may need only be capable of running an operating system such as Palm OS®, or other embedded systems such as may be present in a cell phone or other consumer device.

The module **202** may include ancillary hardware and software, such as conventional memory **304** and a conventional database **306** for the storage and retrieval of various aspects of the disclosed system and data.

The module **202** may be configured to generate a representation of received work which may then be used by the system to identify performed works contained in the received work. It is contemplated that a wide variety of methods may be used by the analysis module **202** to generate the representation. The analysis module may be configured to generate a representation of the received work using the psychoacoustic properties of the audio content of the received work. Such methods are known in the art. For example, the analysis module may generate feature vectors as disclosed in U.S. Pat. No. 5,918,223 to Blum, et al., which is assigned to the same assignee of the present disclosure and incorporated by reference as though fully set forth herein.

Additionally, the module **202** may use audio or video spectral or wavelet representation techniques as are known in the art. For example, other representation forms may comprise the text output of a speech recognition system, text output of a close captioned transmission, or a musical score produced by a music transcription system. In another embodiment, the representation may comprise a bit calculated key using any of the techniques as are known in the art such as MD5 hash and CRC.

The representation may also make note of significant changes in the content of a media signal. Changes in the media stream may also be indicated by a transition from one characteristic set of features to another. By way of example only, such changes may be indicated by a relatively quiet audio section, a change from heavy bass to heavy treble, a blank video frame, or a change in the relative amounts of color in successive segments.

It is contemplated that a wide variety of analysis methods may be employed singly or in combination advantageously in the present disclosure.

Referring back to FIG. **2**, the system **200** may further include at least one identification (ID) server **220** for identifying an received work. The ID server **220** may identify received work using a representation received from the analysis module **202** through network **208**. Though FIG. **2** shows the ID server **220** coupled to the same network **208** as the analysis module **202**, it is to be understood that the various components of the present disclosure may be coupled to different networks at different times.

The ID server **220** may comprise a computer suitable for running an operating system such as Microsoft Windows®, UNIX®, LINUX®, MAC OS®, and the like. The ID server **220** may include a conventional processor **222** for operation of the server. The ID server may further include associated hardware and software known in the art such as a conventional database **224** for storing embodiments of the disclosure or data.

It is contemplated that the ID server **220** may be configured to identify received work using a variety of methods known in the art. The method for identification may correspond to the method(s) used to generate the representation within the analysis module. For example, the ID server **220** may be configured to perform identification using the methods disclosed in U.S. Pat. No. 5,918,223 to Blum, et al, if the representation were generated using corresponding methods.

Another example would be the pure spectral representations as are known in the art. It is envisioned that other representations such as wavelets may be used. The invention could also identify the received work from the speech recognized text compared against a database of song lyrics using any of a variety of methods known to those skilled in the art.

Yet another example would be any of a number of search techniques as are known in the art when the representation is a bit calculated key.

The system may also identify the received work by searching a collection of musical works for musical note sequences that correspond to the musical score in the representation.

In another configuration the system may use a combination of identification techniques, each of which correspond to a representation of the received work. By using several identification techniques, the chance of a misidentification or missed identification may be greatly reduced.

Though the analysis module and ID server are shown as being located separately, it is contemplated that they also may be co-located in a single server. For example, it is contemplated that the analysis module and ID server may each be embodied in a single board computer wherein the analysis module and ID server are housed in a single unit and operatively coupled through a common backplane.

Exemplary Operation

FIG. **4** is a flowchart of one aspect of a disclosed method for automatically generating a playlist. The process begins in act **400**, where at least one media stream is received by an analysis module. The analysis module may comprise hardware and software substantially as shown and described above.

Additionally, one or more of the analysis modules may be configured to receive a plurality of stream sources simultaneously for analysis. It is contemplated that the analysis modules may be located and configured to receive and analyze a wide variety of content, including analog radio or video, digital streaming audio or video, VHS tape, audio cassette tape or any other media.

In act **402**, the analysis module then creates a representation of the received work as shown and described above. The representation may be created by the analysis module by extracting psychoacoustic properties from the received work as described above.

In act **404**, the representations created by the one or more analysis modules may be provided to an ID server. The ID server may comprise hardware and software as described above. It is contemplated that the ID server may comprise a single server, multiple servers networked at a single location, or multiple servers located at different locations.

It is contemplated that the various analysis modules may provide representations to one or more ID servers in a wide variety of manners. For example, all of the analysis modules present in a system may provide representations in real-time. Or, different analysis modules may be configured to provide representations at different intervals depending on the needs of the end user. The analysis modules may transmit representations every sixty seconds, hourly, or as often as is needed.

In some cases where network connectivity is challenging, the representations may be batched up and sent to the ID server(s) once a day or less. In particularly harsh or secretive conditions, the representations may be stored within the analysis modules until the modules could be physically retrieved and operatively coupled to an ID server at another physical location.

It is contemplated that an out-of-band event may be used to trigger the transmission of representations. For example, such a trigger may comprise the initialization of a connection to a network, or the activation of media playing software or hardware.

FIG. **5** is a flowchart of a further disclosed aspect of a disclosed method. The process begins with act **500**, where an ID server receives at least one representation of received work. The representations may be received from analysis modules as described above.

In act **502**, the ID server identifies portions of the received work based upon the representation. This identification may be performed using the methods as described above. The identification may include such information as the song title, artist, label, or any other information as is known in the art that may be associated with the work. The identification information might contain information such as the name of the advertiser or a descriptive notation of an FCC broadcaster identification segment. The identification information might contain a narrative description of a news segment.

Once an identification of a received work is made, it is contemplated that a wide variety of further acts maybe performed. For example, the identifications made by the ID server may be used to construct or maintain a playlist database. Such a playlist may be stored on the ID server, or on a distant server. As will be appreciated by those skilled in the art, if representations are provided to the ID server in real-time (or near real-time depending on the equipment or network used), a playlist may be generated in corresponding real-time. Thus, a playlist may be generated in real-time from inputs provided from distant geographic locations or multiple sources that contains a comprehensive playlist of every identified media segment.

Additionally, the identification may be transmitted back to the analysis module which generated the representation. This may be advantageous where it is desired to generate a playlist for the particular analysis module's location or user. Thus, the ID server may be configured to provide an identification back to the source analysis module.

The identity of the received work may also be used for the maintenance of the system. Typically, copies of received works are stored on local drives for audit purposes. Since the intermediate representation files may be larger in size than the identities, it may be desirable to configure the analysis module to purge intermediate representations for identified works to recover drive space. It is contemplated that the ID server may be configured to transmit the identity of received works back to the generating analysis module, and the corresponding part of the representation may then be deleted from local drives by the analysis module, thereby recovering valuable capacity.

Furthermore, it is contemplated that the ID server or analysis module may be configured to send information regarding identified works to third parties, such as third-party servers. Additionally, the ID server or analysis module may be configured to provide an electronic notification to third parties of identifications made by the ID server. Examples of electronic notifications may include email, HTTP POST transactions, or other electronic communication as is known in the art. As is known by those skilled in the art, these electronic notifications may be used to initiate an action based on their content. For example, such notifications may allow the playlist to be accessed in real-time or as desired.

It is contemplated that the ID server may be configured to provide customized playlists containing information tailored to a customer's individual needs. For example, a customer may wish to be notified whenever a certain work is broadcast, or whether a particular work is broadcast on a particular media outlet. Customers may wish to have complete playlists provided to them periodically at desired intervals that may include statistics known in the art. By using the system as disclosed herein, such requests may be satisfied automatically in real-time, or at whatever interval may be desired. It is to be understood that any of the aspects of the present disclosure may be performed in real time or as often as desired.

Unidentified Segments

During the process described above, the received work presented to the system may contain segments which may not be identified. In an aspect of a disclosed system, such unidentified segments may be examined to provide useful information. For example, if a particular unidentified segment is repeated often it may contain a new song or commercial or other pre-recorded work that warrants further action.

In one aspect of a disclosed system, the ID server may examine the representations of unidentified segments, and determine that some sub-segments were actually repeat performances of a single work. Furthermore, this examination may extract a plurality of other characteristics of the original broadcast such as the amount of musical content, amount of speech content, a transcription based on speech recognition, the beat of any music present, etc. These characteristics of the unidentified segments may then be used to classify the unidentified received representations.

For example, a sub-segment that has been performed more than once may be correlated with a high amount of musical content and a certain minimum length of play time to indicate that a new song has been detected. Correlating other values and characteristics could indicate that a new advertisement has been detected. In some cases a corresponding segment of the original broadcast signal could be retrieved and played for a human to perform an identification.

FIG. **6** is a flow diagram of a method for identifying new media content. The process of FIG. **6** may be performed by any of the structure disclosed in this disclosure.

The process of FIG. **6** begins in act **600**, where a media stream is received. The received media content may be delivered over any transmission medium as disclosed above. The process of FIG. **6** may receive content from one or more media streams. It is contemplated that the received work may comprise representations provided by an analysis module to an ID server as described above. In the discussion that follows, the terms segments and representations may be used interchangeably. Furthermore, when the following discussion discloses operations on a segment, that same operation may be performed on any part of the segment, or a sub segment, where the sub segment may overlap other sub segments.

In query **602**, the system determines whether the received work can be identified. If the work can be identified, the work may be identified in act **604**. The determination and identification acts may be performed as disclosed above.

If the received work cannot be identified, then the unidentified segment may be reported to the system in act **606**. It is contemplated that the unidentified segment may be indexed and cataloged. Additionally, a list of unidentified segments may be generated.

FIG. **7** is a flow diagram of a further aspect of identifying new media content. The process of FIG. **7** begins in query **700**, where the system waits to receive an unidentified segment.

In query **702**, it is determined whether the received unidentified segment is similar to any part of any previously received unidentified segment. In one embodiment, the analysis performed in query **702** may comprise decomposing each unidentified segment into a series of overlapping 5-second sub segments and comparing each unidentified sub segment against other unidentified sub segments. It is contemplated that a wide variety of similarity measurement techniques may be used, such as those used to identify segments as disclosed above. For example, a threshold for similarity may comprise the vector distance between unidentified segments computed as disclosed above. The choice of similarity measurement may dictate the length of the matching sub segments discovered.

If the unidentified segment is not determined to be similar to a previously received unidentified segment, then the segment may be indexed and cataloged in act **704**. Such a segment may then serve as a reference against which future unidentified segments may be compared.

If an unidentified segment is determined to be similar to a previously received unidentified segment, the system may conclude that similar unidentified segments may be performances of the same work, e.g., from the same master recording. When the similarity comparison process indicates that the unidentified sub segment is from the same work as another unidentified sub segment, then the system may attempt to extend the length of the similar unidentified segments by 'stitching' together contiguous unidentified sub segments which also meet the criteria of being performances of the same work. These extended segments consisting of similar earlier and later unidentified segments is referred to herein as "super segments".

Groups of super segments may be created which consist of contiguous runs of unidentified segments collected from one or more media streams that may all be performances of the same work. It is contemplated that super segments may comprise any length, and may preferably have a length corresponding to standard media lengths such as 15 seconds, 30 seconds, 60 seconds, 13 minutes, or even an hour. Of course, other lengths may be used.

In a further exemplary embodiment, once a super segment has been created, it will be included in the process of FIG. **7**. Thus, newly received unidentified segments may be continuously added to a particular super segment if it is determined to be similar to any of the unidentified segments which are contiguous with another super segment in the same group of super segments. This action may extend the length of each super segment in the particular group of super segments. Thus, through the analysis of the present disclosure, a listing may be produced which includes the largest possible repeating segments across all time and across all the monitored media streams.

These repeating segments may contain valuable information and may be reported on. In one embodiment, super segments may be reported on by length. For example, any repeating segments less than 63 seconds in length may represent advertisements, news segments or station promotions. In another embodiment, any repeating segments between 2 and 15 minutes may indicate a song. Additionally, longer repeating segments may indicate an entire broadcast is being repeated, such as a radio talk show or TV show.

It is contemplated that the ID server as disclosed herein may perform the process of FIG. **7**. Once super segments are found, it is contemplated that a wide variety of further acts maybe performed. For example, the unidentified repeating segments found by the ID server may be used to construct or maintain a new works playlist database. Such a new works playlist may be stored on the ID server, or on a distant server. These repeating segments may be merged into a playlist report of identified media, thus making the playlist comprehensive of all master recordings. As will be appreciated by those skilled in the art, if representations are provided to the ID server in real-time (or near real-time depending on the equipment or network used), a new works playlist may be generated in corresponding real-time. Thus, a new works playlist may be generated in real-time from inputs provided from distant geographic locations or multiple sources that

contains a comprehensive playlist of every unidentified media segment or super segment.

Often a substantial time interval will pass between performances of a work over a given media stream. However, the same work is often performed on several different media streams. The time between performances of the same work on different media streams may be far less than the time between performances of the work on any one media stream. Furthermore, advertisements may often play concurrently over several different media streams as the advertiser tries to achieve great consumer impact. Thus, the system described herein will preferably recognize a new work as soon as it is performed a second time on any monitored media stream.

In a further aspect, the unidentified segments and super segments may be transmitted back to the analysis module which generated the representation. This may be advantageous where it is desired to generate a new work playlist for the particular analysis module's location or user. Thus, the ID server may be configured to provide unidentified segments or super segments back to the source analysis module. In this case, the source analysis module may decide to hold the original source audio corresponding to the new work super segment for future identification through more traditional, human based, methods.

Furthermore, it is contemplated that the ID server or analysis module may be configured to send information regarding detected new works to third parties, such as third-party servers. Additionally, the ID server or analysis module may be configured to provide an electronic notification to third parties of new work detection made by the ID server. Examples of electronic notifications may include email, HTTP POST transactions, or other electronic communication as is known in the art. As is known by those skilled in the art, these electronic notifications may be used to initiate an action based on their content. For example, such notifications may allow the new works playlist to be accessed in real-time or as desired. The identification of a new work may be used to raise an alert that a new advertisement, song, or news clip has just been released to media casters.

It is contemplated that the ID server may be configured to provide customized new work playlists containing information tailored to a customer's individual needs. For example, a customer may wish to be notified whenever a new work with certain characteristics, as described above, is detected, or whenever a particular type of new work is detected on a particular media outlet. For example, new works reports may be generated which classify super segments based on length. Customers may wish to have complete new work playlists provided to them periodically at desired intervals that may include statistics known in the art. By using the system as disclosed herein, such requests may be satisfied automatically in real-time, or at whatever interval may be desired. It is to be understood that any of the aspects of the present disclosure may be performed in real time or as often as desired.

While embodiments and applications have been shown and described, it would be apparent to those skilled in the art that many more modifications and improvements than mentioned above are possible without departing from the inventive concepts herein. The disclosure, therefore, is not to be restricted except in the spirit of the appended claims.

What is claimed is:

1. A new media identification system comprising:

at least one analysis module, including a first processor and a first memory, for receiving transmission of signals from at least one source, the signals including data from a portion of a master recording, dividing said data into a plurality of segments, generating a segment representation of each of the plurality of segments, and transmitting said segment representation to an identification server; and

at least one identification server, including a second processor and a second memory, for receiving said segment representation from said at least one analysis module, comparing said segment representation to a plurality of reference segment representations, determining that said segment representation is not identified, and adding said segment representation to a list for holding a plurality of unidentified segment representations;

wherein one of said at least one analysis module and said identification server is configured to compare segment representations of unidentified segments to segment representations of other unidentified segments, wherein the comparison comprises:

dividing a first unidentified segment representation into first sub-segments and a second unidentified segment representation into second sub-segments;

comparing the first sub-segments to the second sub-segments;

identifying a first subset of the first sub-segments that matches a second subset of the second sub-segments, wherein the first subset is a sequential run of the first sub-segments and the second subset is a sequential run of the second sub-segments; and

determining that the first subset and the second subset are associated with a performance of the same master recording;

wherein one of said at least one analysis module and said identification server is configured to create a representation of a super segment by combining the sequential run of sub-segments of at least one of the first subset or the second subset.

2. The system of claim **1**, wherein said at least one analysis module further includes an input port configured to receive said transmission of signals from at least one networked source.

3. The system of claim **1**, wherein said at least one analysis module further includes an input port configured to receive said transmission of signals from at least one broadcast source.

4. The system of claim **1**, wherein said at least one analysis module further includes an input port configured to receive said transmission of signals in the form of a pre-broadcast digital form.

5. The system of claim **1**, wherein said at least one analysis module and said at least one identification server may be coupled over a network.

6. The system of claim **5**, wherein said network comprises the Internet.

7. The system of claim **1**, wherein said segment representation comprises feature vectors.

8. The system of claim **1**, wherein said segment representation comprises a spectral representation of said received master recording.

9. The system of claim **1**, wherein said segment representation comprises the text output of a speech recognition system.

10. The system of claim **1**, wherein said segment representation comprises the musical score output of a music transcription system.

11. The system of claim **1**, wherein said segment representation comprises a bit calculated key.

12. The system of claim **1**, wherein said segment representation includes an indication of significance of changes in media signal content.

13. The system of claim 1, wherein said at least one analysis modules are further configured to receive transmissions of signals from a plurality of streaming sources for analysis at a single location.

14. The system of claim 1, wherein said at least one analysis modules are further configured to receive transmissions of signals from a plurality of streaming sources for analysis at a plurality of different access points of the network.

15. The system of claim 1, wherein said at least one analysis module is configured to provide said segment representations to said at least one identification server at a predetermined time interval.

16. The system of claim 15, wherein said predetermined time interval comprises at least once a day.

17. The system of claim 15, wherein said predetermined time interval comprises approximately once an hour.

18. The system of claim 15, wherein said at least one analysis module is configured to provide said segment representations to said at least one identification server responsive to receiving said transmission.

19. The system of claim 15, wherein said at least one analysis module is configured to provide said segment representations to said at least one identification server when a predetermined threshold of resource utilization is crossed.

20. The system of claim 15, wherein said at least one analysis module is configured to provide said segment representations to said at least one identification server based on an out-of-band event.

21. The system of claim 1, wherein said identification server is further configured to generate a playlist of identified master recordings.

22. The system of claim 1, wherein said identification server is further configured to generate a playlist of identified master recordings received from different access points of the network responsive to receiving said transmission.

23. The system of claim 1, wherein said system is further configured to create groups of representations of super segments comprising repeat performances of the same master recording.

24. The system of claim 1, wherein said data is collected from a plurality of media streams.

25. The system of claim 1, wherein said system is further configured to report representations of super segments based on length.

26. The system of claim 25, wherein any repeating super segments less than 63 seconds in length are reported as advertisements.

27. The system of claim 25, wherein any repeating super segments between 2 and 15 minutes are reported as a song.

28. The system of claim 25, wherein any repeating super segments exceeding 5 seconds are reported as a repeated broadcast.

29. The system of claim 28, wherein said repeated broadcast comprises a radio talk show.

30. The system of claim 28, wherein said repeated broadcast comprises a TV show.

31. The system of claim 25, wherein any repeating super segments between 5 and 15 seconds are reported as station identification.

32. The system of claim 1, wherein said representation of the super segment represents an unidentifiable master recording, and is used to construct a new media playlist database.

33. The system of claim 32 wherein said new media playlist is stored on said identification server.

34. The system of claim 32, wherein said new media playlist is stored on a distant server.

35. The system of claim 32, wherein repeating segment representations are merged into a playlist report of identified media.

36. The system of claim 32, wherein said representation of the super segment is provided to the identification server responsive to receiving said transmission, and said new media playlist is generated responsive to receiving said representation of the super segment.

37. The system of claim 1, further configured to implement a Least Recently Used (LRU) algorithm to remove reference samples from a reference database that have not been identified in a predetermined amount of time.

38. The system of claim 1, further configured to provide an electronic notification to third parties of new media detections made by said system.

39. A method for identifying new media, implemented by a computing system programmed to perform the following, comprising:

receiving a media stream;

dividing said media stream into a plurality of segments;

determining that at least one of said plurality of segments is an unidentified segment by an identification server;

dividing the unidentified segment into first sub-segments and a previously received unidentified segment into second sub-segments;

comparing the first sub-segments to the second sub-segments;

identifying a first subset of the first sub-segments that matches a second subset of the second sub-segments, wherein the first subset is a sequential run of the first sub-segments and the second subset is a sequential run of the second sub-segments;

determining that the first subset and the second subset are associated with a performance of a single master recording; and

arranging the sequential run of sub-segments in at least one of the first subset or the second subset into a single super segment.

40. The method of claim 39, further comprising:

decomposing said super segment into overlapping sub-segments;

comparing each of the overlapping sub-segments to additional overlapping sub-segments of additional super segments; and

identifying a repeat performance of a master recording if at least one of the overlapping sub-segments matches one of the additional overlapping sub-segments.

41. The method of claim 40, where the overlapping sub-segments are approximately 5 seconds in length.

42. The method of claim 40, further including the act of adding a newly received segment to said super segment if said newly received segment is determined to be similar to any of said segments which constitute said super segment.

43. The method of claim 39, further including the act of reporting super segments by length.

44. The method of claim 43 wherein a super segment of less than 63 seconds is reported as an advertisement.

45. The method of claim 43, wherein a super segment of less than approximately 63 seconds in length is reported as a news segment.

46. The method of claim 43, wherein a super segment of less than 63 seconds is reported as a station promotion.

47. The method of claim 43, wherein a super segment between approximately 2 and 15 minutes in length is reported as a song.

48. The method of claim 43, wherein a super segment between approximately 5 and 15 seconds is reported as a station identification.

49. The method of claim 43, wherein a super segment longer than approximately 23 minutes in length is reported as an entire broadcast.

50. The method of claim 39 wherein super segments that are repeat performances of the same master recording are grouped together.

51. The method of claim 50, wherein said super segments are further reported on based on their length.

52. A method for processing media where segments of unknown content are presented for analysis comprising:

receiving a transmission;

dividing said transmission into a plurality of segments;

determining whether each of said plurality of segments is an unidentified segment by an identification server;

dividing each of the unidentified segments into a plurality of sub-segments;

comparing each of a first plurality of sub-segments from a first unidentified segment to a second plurality of sub-segments from a second unidentified segment;

identifying a first subset of the first plurality of sub-segments that matches a second subset of the second plurality of sub-segments, wherein the first subset is a sequential run of the first plurality of sub-segments and the second subset is a sequential run of the second plurality of sub-segments;

recognizing that the first subset and the second subset are both associated with a performance of a single master recording;

creating a super segment by combining the sequential run of sub-segments in at least one of the first subset and the second subset; and

analyzing said super segment, wherein said analysis comprises an identification of the super segment.

53. The method of claim 52, wherein said analysis comprises a statistical analysis of the super segment.

54. The method of claim 52, wherein said analysis provides input to the generation of a playlist.

55. The method of claim 52, wherein said analysis is performed by an automated system.

56. The method of claim 52, wherein said analysis is performed by a human.

57. The method of claim 52, where the analysis provides identification of the single master recording.

58. The method of claim 52, where the analysis is correlated back to an original media stream.

59. A system for identifying new media comprising:

a memory, to store instructions for identifying the new media; and

a processor, connected with the memory, to execute the instructions, wherein the instructions cause the processor to:

receive a media stream;

divide said media stream into a plurality of segments;

determine that at least one of said plurality of segments is an unidentified segment;

divide the unidentified segment into first sub-segments and a previously received unidentified segment into second sub-segments;

compare the first sub-segments to the second sub-segments;

identify a first subset of the first sub-segments that matches a second subset of the second sub-segments, wherein the first subset is a sequential run of the first sub-segments and the second subset is a sequential run of the second sub-segments;

determine that the first subset and the second subset are associated with a performance of a single master recording; and

arrange the sequential run of sub-segments of at least one of the first subset or the second subset into a single super segment.

60. The system of claim 59, wherein the instructions further to cause the processor to:

decompose said super segment into overlapping sub-segments;

compare each of the overlapping sub-segments to additional overlapping sub-segments of additional super segments; and

identify a repeat performance of a master recording if at least one of the overlapping sub-segments matches one of the additional overlapping sub-segments.

61. The system of claim 60, wherein the instructions further to cause the processor to add newly received segments to said super segment if said newly received segments are determined to be similar to any of said segments which constitute said super segment.

62. The system of claim 59, wherein the instructions further to cause the processor to report super segments by length.

63. The system of claim 62 wherein a super segment of less than 63 seconds are reported as an advertisement.

64. The system of claim 62, wherein a super segment of less than approximately 63 seconds in length are reported as a news segment.

65. The system of claim 62, wherein a super segment of less than 63 seconds are reported as a station promotion.

66. The system of claim 62, wherein a super segment between approximately 2 and 15 minutes in length are reported as a song.

67. The system of claim 62, wherein a super segment longer than approximately 23 minutes in length is reported as an entire broadcast.

68. The system of claim 59, wherein the instructions further to cause the processor to group super segments together that are repeat performances of the same master recording.

69. The system of claim 68, wherein said super segments are further reported on based on their length.

70. A system of processing media where segments of unknown content are presented for analysis comprising:

a memory, to store instructions for processing the media; and

a processor, connected with the memory, to execute the instructions, wherein the instructions cause the processor to:

receive a transmission;

divide said transmission into a plurality of segments;

determine whether each of said plurality of segments is an unidentified segment;

divide each of the unidentified segments into a plurality of sub-segments;

compare each of a first plurality of sub-segments from a first unidentified segment to a second plurality of sub-segments from a second unidentified segment;

identify a first subset of the first plurality of sub-segments that matches a second subset of the second plurality of sub-segments, wherein the first subset is a sequential run of the first plurality of sub-segments and the second subset is a sequential run of the second plurality of sub-segments;

recognize that the first subset and the second subset are both associated with a performance of a single master recording;

create a super segment by combining the sequential run of sub-segments in at least one of the first subset and the second subset; and

analyze said super segment, wherein said analysis comprises an identification of the super segment.

71. The system of claim **70**, wherein said analysis comprises a statistical analysis of the super segment.

72. The system of claim **70**, wherein said analysis provides input to the generation of a playlist.

73. The system of claim **70**, wherein said analysis is performed by an automated system.

74. The system of claim **70**, wherein said analysis is performed by a human.

75. The system of claim **70**, where said analysis provides identification of new master recordings.

76. The system of claim **70**, where said analysis includes correlating analysis results back to an original media stream.

77. A non-transitory program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for identifying new media, said method comprising:

receiving a media stream;

dividing said media stream into a plurality of segments;

determining that at least one of said plurality of segments is an unidentified segment by an identification server;

dividing the unidentified segment into first sub-segments and a previously received unidentified segment into second sub-segments;

comparing the first sub-segments to the second sub-segments;

identifying a first subset of the first sub-segments that matches a second subset of the second sub-segments, wherein the first subset is a sequential run of the first sub-segments and the second subset is a sequential run of the second sub-segments;

determining that the first subset and the second subset are associated with a performance of a single master recording; and

arranging the sequential run of sub-segments of at least one of the first subset or the second subset into a single super segment.

78. The non-transitory program storage device of claim **71**, the method further comprising:

decomposing said super segment into overlapping sub-segments;

comparing each of the overlapping sub-segments to additional overlapping sub-segments of additional super segments; and

identifying a repeat performance of a master recording if at least one of the overlapping sub-segments matches one of the additional overlapping sub-segments.

79. The non-transitory program storage device of claim **78**, where the overlapping sub-segments are approximately 5 seconds in length.

80. The non-transitory program storage device of claim **77**, further including the act of adding newly received segments to said super segment if said newly received segments are determined to be similar to any of said segments which constitute said super segment.

81. The non-transitory program storage device of claim **77**, further including the act of reporting super segments by length.

82. The non-transitory program storage device of claim **81** wherein a super segment of less than 63 seconds are reported as an advertisement.

83. The non-transitory program storage device of claim **81**, wherein a super segment of less than approximately 63 seconds in length are reported as a news segment.

84. The non-transitory program storage device of claim **81**, wherein a super segment of less than 63 seconds are reported as a station promotion.

85. The non-transitory program storage device of claim **81**, wherein a super segment between approximately 2 and 15 minutes in length are reported as a song.

86. The non-transitory program storage device of claim **81**, wherein a super segment between approximately 5 and 15 seconds in length are reported as a station identification.

87. The non-transitory program storage device of claim **81**, wherein a super segment longer than approximately 23 minutes in length is reported as an entire broadcast.

88. The non-transitory program storage device of claim **77** wherein super segments that are repeat performances of the same master recording are grouped together.

89. The non-transitory program storage device of claim **77**, wherein said super segments are further reported on based on their length.

90. A non-transitory program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for processing media where repeated segments of unknown content are presented for analysis comprising:

receiving a transmission;

dividing said transmission into a plurality of segments;

determining whether each of said plurality of segments is an unidentified segment by an identification server;

dividing each of the unidentified segments into a plurality of sub-segments;

comparing each of a first plurality of sub-segments from a first unidentified segment to a second plurality of sub-segments from a second unidentified segment;

identifying a first subset of the first plurality of sub-segments that matches a second subset of the second plurality of sub-segments, wherein the first subset is a sequential run of the first plurality of sub-segments and the second subset is a sequential run of the second plurality of sub-segments;

recognizing that the first subset and the second subset are both associated with a performance of a single master recording;

creating a super segment by combining the sequential run of sub-segments in at least one of the first subset and the second subset; and

analyzing said super segment, wherein said analysis comprises an identification of the super segment.

91. The non-transitory program storage device of claim **90**, wherein said analysis comprises a statistical analysis of the super segment.

92. The non-transitory program storage device of claim **90**, wherein said analysis provides input to the generation of a playlist.

93. The non-transitory program storage device of claim **90**, wherein said analysis is performed by an automated system.

94. The non-transitory program storage device of claim 90, wherein said analysis is performed by a human.

95. The non-transitory program storage device of claim 90, where the analysis provides identification of new master recordings.

96. The non-transitory program storage device of claim 90, where the analysis is correlated back to an original media stream.

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