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System and method for recommending media content based on user mood

Abstract

A method for recommending one or more media content to a user includes transmitting one or more questions to a user device associated with the user and obtaining responses to the questions from the user device. The method further includes determining a user mood score based on the responses and correlating the user mood score with multiple content mood scores associated with a multiple media content. The method additionally includes determining the media content to be recommended to the user based on the correlation, and transmitting information associated with the recommended media content to the user device.

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Background/Summary

CROSS-REFERENCE TO RELATED APPLICATION (1) This application is a continuation-in-part of U.S. nonprovisional application Ser. No. 18/453,047, filed Aug. 21, 2023, which claims priority to and the benefit of U.S. provisional application No. 63/366,720, filed Jun. 21, 2022. The disclosures of both U.S. application Ser. No. 18/453,047 and U.S. application No. 63/366,720 are hereby incorporated by reference herein in their entireties.

BACKGROUND OF THE INVENTION
Field of the Invention
(1) The present invention generally relates to a system and method for recommending media content from a streaming platform, and more particularly to a system and method for recommending media content from online streaming platforms based on viewer's mood.
Description of the Related Art
(2) Due to availability of a large number of TV streaming offers and options, viewers waste much more time looking or searching for programming content to view, rather than watching the programming content that they may really prefer to watch.
(3) Existing media content recommendation systems recommend media content to users based on their historical viewing choices; however, such conventional systems do not factor-in user's current state.
(4) Therefore, a recommendation system is required that recommends media content to users based on viewer's current state.
SUMMARY OF THE INVENTION
(5) The following presents a simplified summary of the present disclosure in a simplified form as a prelude to the more detailed description that is presented herein.
(6) In accordance with embodiments of the invention, there is provided a method for recommending one or more media content to a user. The method includes transmitting, by a processor, one or more questions to a user device associated with the user. The method further includes obtaining, by the processor, one or more responses associated with the questions from the user device, responsive to transmitting the questions. Further, the method includes determining, by the processor, a user mood score based on the responses. Furthermore, the method includes correlating, by the processor, the user mood score with a plurality of content mood scores associated with a plurality of media content. Additionally, the method includes determining, by the processor, the media content to be recommended to the user based on the correlation. The method further includes transmitting, by the processor, information associated with the recommended media content to the user device.
(7) In some aspects, the processor transmits three questions to the user device. Further, the questions are at least one of a picture question, a color palette question, a text question, an audio question and a video question.
(8) In some aspects, the information associated with the recommended media content includes media content metadata and instructions to purchase or rent the media content. Further, the media content is at least one of television series, movies, music, books, and video games.
(9) In some aspects, the method may further include authenticating the user and/or the user device, and transmitting the questions to the user device responsive to authenticating the user and/or the user device.
(10) In accordance with another embodiment of the invention, there is provided a system for recommending one or more media content to a user. The system includes a transceiver configured

to transmit one or more questions to a user device associated with the user, and receive one or more responses associated with the questions from the user device, responsive to transmitting the questions. The system further includes a processor communicatively coupled with the transceiver. The processor is configured to obtain the responses from the transceiver, and determine a user mood score based on the responses. The processor is further configured to correlate the user mood score with a plurality of content mood scores associated with a plurality of media content, and determine the media content to be recommended to the user based on the correlation. Furthermore, the processor is configured to transmit information associated with the media content to the user device.

(11) In some aspects, the processor is further configured to authenticate the user and/or the user device, and cause the transceiver to transmit the questions to the user device responsive to authenticating the user and/or the user device.

(12) The present disclosure discloses a system and method for recommending media content to a user based on user's mood. Conventional media content recommendations are based on purely random selection or choices that may be based on user's past programming or media content choices. Frequently, a user's preferred programming content may vary considerably based upon user's mood at a given viewing instance. The system and method disclosed in the present disclosure recommends media content to the user based on user's mood, thereby enriching and enhancing user's content viewing experience.

(13) These and other features, aspects, and advantages of the present invention will become better understood with reference to the following description and appended claims.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

(1) Illustrative embodiments of the present invention are described herein with reference to the accompanying drawings, in which:

(2) FIG. **1** depicts an example environment in which techniques and structures for providing the systems and methods disclosed herein may be implemented.

(3) FIG. **2** depicts a block diagram of an example content recommendation system in accordance with embodiments of the invention.

(4) FIG. **3** depicts a flow diagram of an example first method for recommending media content to a user in accordance with embodiments of the invention.

(5) FIG. **4** depicts a flow diagram of an example second method for recommending media content to a user in accordance with embodiments of the invention.

(6) FIG. **5** depicts a flow diagram of an example third method for recommending media content to a user in accordance with embodiments of the invention.

DETAILED DESCRIPTION OF INVENTION

(7) For a further understanding of the nature and function of the embodiments, reference should be made to the following detailed description. Detailed descriptions of the embodiments are provided herein, as well as, the best mode of carrying out and employing the present invention. It will be readily appreciated that the embodiments are well adapted to carry out and obtain the ends and features mentioned as well as those inherent herein. It is to be understood, however, that the present invention may be embodied in various forms. Therefore, persons of ordinary skill in the art will realize that the following disclosure is illustrative only and not in any way limiting, as the specific details disclosed herein provide a basis for the claims and a representative basis for teaching to employ the present invention in virtually any appropriately detailed system, structure or manner. It should be understood that the devices, materials, methods, procedures, and techniques described herein are presently representative of various embodiments. Other embodiments of the disclosure

will readily suggest themselves to such skilled persons having the benefit of this disclosure.
(8) Reference will now be made in detail to the present preferred embodiments of the invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numerals are used in the drawings and the description to refer to the same or like parts.
(9) FIG. **1** depicts an example environment **10** in which techniques and structures for providing the systems and methods disclosed herein may be implemented. While describing FIG. **1**, references will be made to FIG. **2**, which depicts a block diagram of an example content recommendation system **200** (or system **200**). The system **200** may be hosted on a server (not shown).
(10) The environment **10** may include a user **11**A accessing an application **11**B on a user device **11**C. The application **11**B may be associated with the system **200**, and the user **11**A may be accessing the system **200**/application **11**B via the user device **11**C and a wireless communication network. In some aspects, the user device **11**C may be communicatively connected with the system **200** via the wireless communication network, which may include, for example, the Internet, a private network, public network or other configuration that operates using any one or more known communication protocols such as, for example, transmission control protocol/Internet protocol (TCP/IP), Bluetooth®, BLE, Wi-Fi based on the Institute of Electrical and Electronics Engineers (IEEE) standard 802.11, ultra-wideband (UWB), and cellular technologies such as Time Division Multiple Access (TDMA), Code Division Multiple Access (CDMA), High-Speed Packet Access (HSPDA), Long-Term Evolution (LTE), Global System for Mobile Communications (GSM), Fifth Generation (5G), etc.
(11) In some aspects, the user device **11**C may be, for example, a smart phone, a tablet, a smart television, a smart extended reality (XR) headset, a smart watch, or any other wearable or Internet of Things (IoT) device.
(12) In some aspects, the user **11**A may be accessing the system **200**/application **11**B to seek recommendation of media content to watch, and to select and view/play the recommended media content. The media content may be, for example, television series, movies, music, video games, and/or the like.
(13) The system **200** may be configured to determine user's mood via the application **11**B, and recommend one or more media content to watch to the user **11**A based on the user's mood. In some aspects, as shown in FIG. **2**, the system **200** may include a processor **202**, a memory **204** and a transceiver **206**, which may be communicatively coupled with each other.
(14) The transceiver **206** may be configured to transmit or receive information/data to or from external systems and devices, e.g., the user device **11**C or external databases/servers (not shown). In some aspects, the external databases/servers may be communicatively coupled with the system **200**, and configured to store and provide a plurality of media content and associated metadata (e.g., media content name, duration, artist name, genre, tag, media content mood scores, etc.) to the system **200** via the transceiver **206**.
(15) The processor **202** may be disposed in communication with one or more memory devices disposed in communication with the respective computing systems (e.g., the memory **204** and/or one or more external databases not shown in FIG. **2**). The processor **202** may utilize the memory **204** to store programs in code and/or to store data for performing aspects in accordance with the disclosure. The memory **204** may be a non-transitory computer-readable storage medium or memory storing a program code that enables the processor **202** to perform operations in accordance with the present disclosure. The memory **204** may include any one or a combination of volatile memory elements (e.g., dynamic random-access memory (DRAM), synchronous dynamic random-access memory (SDRAM), etc.) and may include any one or more nonvolatile memory elements (e.g., erasable programmable read-only memory (EPROM), flash memory, electronically erasable programmable read-only memory (EEPROM), programmable read-only memory (PROM), etc.).
(16) In operation, when the user **11**A desires to obtain information associated with recommended media content and/or view/play the media content, the user **11**A may access the application **11**B on

the user device **11**C. In some aspects, to access the application **11**B, the user **11**A may input login or sign in details on the user device **11**C, and/or may access the application **11**B via user's one or more social networking accounts.

(17) Responsive to the user **11**A adding the login or sign in details on the user device **11**C, the user device **11**C may transmit the login or sign in details to the transceiver **206**. The processor **202** may then authenticate the user **11**A and/or the user device **11**C based on the login or sign in details. Specifically, the processor **202** may match the received login or sign in details with user's pre-stored login or authentication details (that may be stored in the memory **204**), and may authenticate the user **11**A and/or the user device **11**C when the details match.

(18) Responsive to authenticating the user **11**A and/or the user device **11**C, the processor **202** may transmit, via the transceiver **206**, one or more questions to the user device **11**C to be displayed/outputted to the user **11**A via the application **11**B. In an exemplary aspect, the processor **202** may transmit three questions. Further, the transmitted questions may include a picture question, a color palette question, a text question, an audio question and/or a video question.

(19) Responsive to viewing/hearing the questions, the user **11**A may respond to the questions. In some aspects, the responses to the questions may be in the form of audio commands and/or typed/written responses on the user device **11**C. The user device **11**C may transmit the responses to the transceiver **206**, which may transmit the responses to the processor **202**.

(20) The processor **202** may obtain the responses to the questions from the transceiver **206**, and determine a user mood score based on the obtained responses. In an exemplary aspect, each potential response to a question may have an associated mood score indicating whether the user **11**A may be sad, happy, excited, bored, adventurous, and/or the like. Responsive to obtaining the responses from the user **11**A, the processor **202** may calculate an average of the mood scores of all the responses to determine the "user mood score" described above.

(21) The processor **202** may then fetch mood scores associated with a plurality of media content (and associated metadata) from the external databases/servers, which may be pre-assigned using Natural Language Processing. The processor **202** may then correlate the user mood score with the fetched mood scores associated with the plurality of media content to determine one or more media content, from the plurality of media content, which may be recommended to the user **11**A based on the correlation. For example, the processor **202** may determine those media content to be recommended to the user **11**A that have their associated mood scores close to (e.g., within a predefined threshold difference of) the user mood score.

(22) Responsive to determining the media content to recommend to the user **11**A, the processor **202** may transmit, via the transceiver **206**, information associated with the media content to the user device **11**C. The information associated with the media content may include the metadata associated with the recommended media content, instructions to purchase or rent the media content, and/or the like.

(23) The user **11**A may view/hear the information associated with the media content, and may accordingly purchase/rent the media content for viewing or playing. In this manner, the system **200** assists in recommending media content to the user **11**A based on the user's mood.

(24) In some aspects, the application **11**B may also be accessible via a smart TV remote, and be compatible with smart TVs, equipped with a surface and touch screen. The application **11**B may also have a mood detector that detects from voice characteristics of the user **11**A, the user's mood and finds the perfect match with movie, TV series, music, and video games.

(25) FIG. **3** depicts a flow diagram of an example first method **20** for recommending media content to the user **11**A in accordance with embodiments of the invention. The method **20** is specifically associated with steps performed by the system **200** for finding suitable entertainment (e.g., movies, television shows, music, books, video games, general consumer goods, etc.) on streaming and e-commerce platforms, and physical retail.

(26) At steps collectively shown as steps **302** in FIG. **3**, the user **11**A may access the application

11B by following the walkthrough instructions provided by the system **200** and signing-in using user's social networking account (connected to a social networking API), email address and/or password.
(27) Responsive to the user **11**A accessing the application **11**B, the system **200** may store user's data, including user's login details, password, etc. in the memory **204**, as shown by a step **304** in FIG. **3**. The memory **204** is also used to store user's media content viewing history, user's ratings to one or more viewed media content, mood affinity score, and/or the like. The memory **204** may further be connected with streaming, catalogue, e-commerce platforms' APIs, and configured to receive media content and/or associated metadata and mood scores from the APIs, as shown in section **306** of FIG. **3**.
(28) The system **200** may then commence the mood test of the user **11**A, where the system **200** transmits three questions to the user device **11**C, as shown by steps **308** in FIG. **3**. In an exemplary aspect, the questions may be from picture emotions catalogue, colors emotions catalogue and/or voice emotion catalogue.
(29) The system **200** may then calculate the user's mood score (or the mood score average), as described above in conjunction with FIG. **2** and as shown in FIG. **3**. The system **200** may then search for the plurality of media content, fetch their entertainment product/consumer good's mood score, and match the fetched score with the user's mood score, as shown by steps **310** in FIG. **3** and as described above in conjunction with FIG. **2**. In an exemplary aspect, the mathematical expression associated with the mood score matching is: Mm(Ue, Fe.sup.n, R.sup.n)= (e=m)V(s=m+l), where Ue is user's mood or emotion score and Fe is film's mood or emotion score.
(30) Thereafter, the system **200** may determine and recommend one or more media content/entertainment products to the user **11**A based on the mood score matching, as shown in steps **312** of FIG. **3** and as described above in conjunction with FIG. **2**. In some aspects, those media content may be recommended that the user **11**A may not have already seen. If the user **11**A may not be satisfied with the recommended results/media content, the system **200** may recommend more results in the same manner as described above.
(31) On the other hand, if the user **11**A may be satisfied with the results, the user **11**A may rent or purchase the media content/entertainment product. Further, the memory **204** may store the mood affinity score of the media content/entertainment product selected/purchased/rented by the user **11**A and/or the rating provided by the user **11**A to the content.
(32) FIG. **4** depicts a flow diagram of an example second method **30** for recommending media content to the user **11**A in accordance with embodiments of the invention. At step **402**, the system **200** may obtain the object or media content mood scores “OM” and user's mood score “UM”. At step **404**, the system **200** may calculate or determine mid of the list of the plurality of media content.
(33) At step **406**, the system **200** may determine whether UM is less than or equal to the mid of OM “OM.sub.mid”. If UM is less than or equal to the mid of OM, then at step **408**, the method **30** ends and the list of media content to the right of the mid is removed, and remaining results are output to the user **11**A at step **416**.
(34) On the other hand, if UM is greater than or equal to the mid of OM, as determined at step **410**, then at step **412**, the method **30** ends and the list of media content to the left of the mid is removed, and remaining results are output to the user **11**A at step **416**.
(35) At step **414**, if it is determined that a difference between UM and OM.sub.mid is less than or equal to a difference between UM and OM.sub.mid+k, then the method **30** moves to the step **408**; otherwise, the method **30** moves to the step **412**.
(36) FIG. **5** depicts a flow diagram of an example third method **500** for recommending media content to the user **11**A in accordance with embodiments of the invention. FIG. **5** may be described with continued reference to prior figures. The following process is exemplary and not confined to the steps described hereafter. Moreover, alternative embodiments may include more or less steps

than are shown or described herein and may include these steps in a different order than the order described in the following example embodiments.
(37) The method **500** starts at step **502**. At step **504**, the method **500** may include transmitting, by the processor **202**, the questions to the user device **11**C. At step **506**, the method **500** may include obtaining, by the processor **202**, the responses to the questions from the user **11**A via the user device **11**C. At step **508**, the method **500** may include determining, by the processor **202**, the user mood score based on the responses. At step **510**, the method **500** may include correlating, by the processor **202**, the user mood score with the plurality of mood scores associated with the plurality of media content.
(38) At step **512**, the method **500** may include determining, by the processor **202**, one or more media content to be recommended to the user **11**A based on the correlation. At step **514**, the method **500** may include transmitting, by the processor **202**, information associated with the recommended media content to the user device **11**C.
(39) At step **516**, the method **500** ends.
(40) Except as may be expressly otherwise indicated, the article “a” or “an” if and as used herein is not intended to limit, and should not be construed as limiting, the description or a claim to a single element to which the article refers. Rather, the article “a” or “an” if and as used herein is intended to cover one or more such elements, unless the text expressly indicates otherwise.
(41) This invention is susceptible to considerable variation within the spirit and scope of the appended claims.
(42) Further, where appropriate, the functions described herein can be performed in one or more of hardware, software, firmware, digital components, or analog components. For example, one or more application specific integrated circuits (ASICs) can be programmed to carry out one or more of the systems and procedures described herein. Certain terms are used throughout the description and claims refer to particular system components. As one skilled in the art will appreciate, components may be referred to by different names. This document does not intend to distinguish between components that differ in name, but not function.
(43) A computer-readable medium (also referred to as a processor-readable medium) includes any non-transitory (e.g., tangible) medium that participates in providing data (e.g., instructions) that may be read by a computer (e.g., by a processor of a computer). Such a medium may take many forms, including, but not limited to, non-volatile media and volatile media. Computing devices may include computer-executable instructions, where the instructions may be executable by one or more computing devices such as those listed above and stored on a computer-readable medium.

Claims

1. A method for recommending one or more media content to a user, the method comprising: transmitting, by a processor, one or more questions to a user device associated with the user; obtaining, by the processor, one or more responses associated with the one or more questions from the user device, responsive to transmitting the one or more questions; detecting, by the processor, emotion from a voice characteristic of the user; determining, by the processor, a user mood score based on the one or more responses and the detected emotion of the voice characteristic of the user; correlating, by the processor, the user mood score with a plurality of content mood scores associated with a plurality of media content; determining, by the processor, the one or more media content to be recommended to the user based on the correlation; and transmitting, by the processor, information associated with the one or more media content to the user device; wherein correlating the user mood score with the plurality of content mood scores comprises applying a mathematical expression Mm(Ue,Fe.sup.n,R.sup.n)=(e=m)v(s=m+l), where Mm is mood matching, Ue is the user mood score, Fe is a content mood score, n is a number of entries, R is a refined mood score list, s is a start index, m is a midpoint, e is an end index, and V is a logical OR operator.

2. The method of claim 1, wherein transmitting the one or more questions comprises transmitting three questions.
3. The method of claim 1, wherein the one or more questions comprises at least one of a picture question, a color palette question, a text question, an audio question and a video question.
4. The method of claim 1, wherein the information associated with the one or more media content comprises instructions to purchase or rent the one or more media content.
5. The method of claim 1, wherein the one or more media content is at least one of television series, movies, music and video games.
6. The method of claim 1 further comprising: authenticating at least one of the user and the user device; and transmitting the one or more questions to the user device responsive to authenticating the at least one of the user and the user device.
7. The method of claim 1, further comprising storing user data including login details and password in a memory upon user authentication, wherein the user data is accessed during subsequent user sessions.
8. The method of claim 1, further comprising storing, in a memory, a media content viewing history for the user, user ratings of previously viewed media content, and mood affinity scores.
9. The method of claim 1, further comprising connecting with external streaming, catalogue, and e-commerce platforms via application programming interfaces (APIs), and receiving media content metadata and mood scores from the APIs, wherein the mood scores are pre-assigned using Natural Language Processing.
10. The method of claim 1, wherein determining the user mood score comprises calculating an average of individual mood scores associated with each of the one or more responses, and wherein the individual mood scores are operative to indicate an emotional state of the user.
11. The method of claim 1, further comprising determining whether the user is satisfied with the recommended media content, and when the user is not satisfied with the recommended media content, recommending additional media content.
12. The method of claim 1, further comprising storing, in a memory, a mood affinity score of media content selected, purchased, or rented by the user and/or a rating provided by the user to the selected, purchased, or rented media content.
13. The method of claim 1, wherein the one or more questions are selected from a picture emotions catalogue, a colors emotions catalogue, and/or a voice emotion catalogue.
14. The method of claim 1, further comprising enabling user access via a social networking application programming interface (API), wherein the user signs-in using the social networking account connected to the social networking API, email address, and/or password.
15. A system for recommending one or more media content to a user, the system comprising: a transceiver configured to: transmit one or more questions to a user device associated with the user; and receive one or more responses associated with the one or more questions from the user device, responsive to transmitting the one or more questions; and a processor communicatively coupled with the transceiver, wherein the processor is configured to: obtain the one or more responses from the transceiver; detect emotion from a voice characteristic of the user; determine a user mood score based on the one or more responses and the detected emotion of the voice characteristic of the user; correlate the user mood score with a plurality of content mood scores associated with a plurality of media content; determine the one or more media content to be recommended to the user based on the correlation; and transmit information associated with the one or more media content to the user device; wherein correlating the user mood score with the plurality of content mood scores comprises applying a mathematical expression Mm(Ue,Fe.sup.n,R.sup.n)=(e=m)v(s=m+l), where Mm is mood matching, Ue is the user mood score, Fe is a content mood score, n is a number of entries, R is a refined mood score list, s is a start index, m is a midpoint, e is an end index, and V is a logical OR operator.
16. The system of claim 15, wherein the one or more questions comprises at least one of a picture

question, a color palette question, a text question, an audio question and a video question.

17. The system of claim 15, wherein the one or more media content is at least one of television series, movies, music and video games.

18. The system of claim 15, wherein the processor is further configured to: authenticate at least one of the user and the user device; and cause the transceiver to transmit the one or more questions to the user device responsive to authenticating the at least one of the user and the user device.