

SYSTEMS AND METHODS FOR EXTERNAL SYSTEM INTEGRATION

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. Provisional Patent Application No. 62/860,518, entitled “Systems and Methods for External System Integration,” filed June 12, 2019, which is hereby incorporated by reference in its entirety.

FIELD

[0002] The present disclosure relates generally to facilitating routing of communications. More specifically, techniques are provided to dynamically route issue messages, such as tracking tickets, to disparate endpoints using artificial intelligence (AI).

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SUMMARY

[0004] The term embodiment and like terms are intended to refer broadly to all of the subject matter of this disclosure and the claims below. Statements containing these terms should be understood not to limit the subject matter described herein or to limit the meaning or scope of the claims below. Embodiments of the present disclosure covered herein are defined by the claims below, not this summary. This summary is a high-level overview of various aspects of the disclosure and introduces some of the concepts that are further described in the Detailed Description section below. This summary is not intended to identify key or essential features of the claimed subject matter, nor is it intended to be used in isolation to determine the scope of the claimed subject matter. The subject matter should be understood by reference to appropriate portions of the entire specification of this disclosure, any or all drawings and each claim.

[0004a] According to a first aspect of the present disclosure, there is provided a computer-implemented method including: receiving a message associated with a user, wherein the message represents an issue that the user wants resolved; generating a routing determination by dynamically evaluating the message in real-time, wherein the routing determination facilitates a live communication session between the user and a bot; dynamically detecting ongoing messages exchanged in real-time during the live communication session between the user and the bot;

training a machine learning model using the ongoing messages and historical data, wherein the historical data includes one or more previously received messages and one or more previously performed actions associated with issues similar to the issue the user wants resolved; applying the machine learning model to the ongoing messages to automatically determine one or more current actions associated with the issue; monitoring performance of the one or more current actions, wherein monitoring includes real-time analysis of textual or non-textual attributes of the ongoing messages; and dynamically updating the machine learning model based on the ongoing messages, the one or more current actions, and the textual or non-textual attributes of the ongoing messages.

[0004b] According to a second aspect of the present disclosure, there is provided a computer-program product tangibly embodied in a non-transitory machine-readable storage medium, including instructions that, when executed by one or more processors, cause the one or more processors to perform operations including: receiving a message associated with a user, wherein the message represents an issue that the user wants resolved; generating a routing determination by dynamically evaluating the message in real-time, wherein the routing determination facilitates a live communication session between the user and a bot; dynamically detecting ongoing messages exchanged in real-time during the live communication session between the user and the bot; training a machine learning model using the ongoing messages and historical data, wherein the historical data includes one or more previously received messages and one or more previously performed actions associated with issues similar to the issue the user wants resolved; applying the trained machine learning model to the ongoing messages to automatically determine one or more current actions associated with the issue; monitoring performance of the one or more current actions, wherein monitoring includes real-time analysis of textual or non-textual attributes of the ongoing messages; and dynamically updating the machine learning model based on the ongoing messages, the one or more current actions, and the textual or non-textual attributes of the messages.

[0004c] According to a third aspect of the present disclosure, there is provided a system including: one or more processors; and one or more non-transitory machine-readable storage media containing instructions that, when executed on the one or more processors, cause the one or more processors to perform operations including: receiving a message associated with a user, wherein the message represents an issue that the user wants resolved; generating a routing determination by dynamically evaluating the message in real-time, wherein the routing determination facilitates

a live communication session between the user and a bot; dynamically detecting ongoing messages exchanged in real-time during the live communication session between the user and the bot; training a machine learning model using the ongoing messages and historical data, wherein the historical data includes one or more previously received messages and one or more previously performed actions associated with issues similar to the issue the user wants resolved; applying the trained machine learning model to the ongoing messages to automatically determine one or more current actions associated with the issue; monitoring performance of the one or more current actions, wherein monitoring includes real-time analysis of textual or non-textual attributes of the ongoing messages; and dynamically updating the machine learning model based on the ongoing messages, the one or more current actions, and the textual or non-textual attributes of the messages.

[0005] Certain embodiments of the present disclosure include a computer-implemented method. The method may include receiving a message from a messaging system. The message is associated

CLAIMS

1. A computer-implemented method comprising:
 - receiving a message associated with a user, wherein the message represents an issue that the user wants resolved;
 - generating a routing determination by dynamically evaluating the message in real-time, wherein the routing determination facilitates a live communication session between the user and a bot;
 - dynamically detecting ongoing messages exchanged in real-time during the live communication session between the user and the bot;
 - training a machine learning model using the ongoing messages and historical data, wherein the historical data includes one or more previously received messages and one or more previously performed actions associated with issues similar to the issue the user wants resolved;
 - applying the machine learning model to the ongoing messages to automatically determine one or more current actions associated with the issue;
 - monitoring performance of the one or more current actions, wherein monitoring includes real-time analysis of textual or non-textual attributes of the ongoing messages; and
 - dynamically updating the machine learning model based on the ongoing messages, the one or more current actions, and the textual or non-textual attributes of the ongoing messages.
2. The computer-implemented method of claim 1, wherein a plug-in is used to apply the trained machine learning model to the ongoing messages to automatically determine the one or more current actions.
3. The computer-implemented method of claim 1, wherein the one or more current actions are performed within a messaging system.
4. The computer-implemented method of claim 1, further comprising:
 - storing information corresponding to the one or more current actions; and
 - using the information and the machine learning model to determine a future action.

5. The computer-implemented method of claim 1, wherein applying the machine learning model includes analyzing conversation tone from the ongoing messages.
6. The computer-implemented method of claim 1, wherein the one or more current actions include routing the ongoing messages to an agent.
7. The computer-implemented method of claim 1, wherein the ongoing messages include two or more messages.
8. The computer-implemented method of claim 1, wherein analyzing the textual or the non-textual attributes of the ongoing messages includes determining a sentiment of the user based on the ongoing messages.
9. A computer-program product tangibly embodied in a non-transitory machine-readable storage medium, including instructions that, when executed by one or more processors, cause the one or more processors to perform operations including:
 - receiving a message associated with a user, wherein the message represents an issue that the user wants resolved;
 - generating a routing determination by dynamically evaluating the message in real-time, wherein the routing determination facilitates a live communication session between the user and a bot;
 - dynamically detecting ongoing messages exchanged in real-time during the live communication session between the user and the bot;
 - training a machine learning model using the ongoing messages and historical data, wherein the historical data includes one or more previously received messages and one or more previously performed actions associated with issues similar to the issue the user wants resolved;
 - applying the trained machine learning model to the ongoing messages to automatically determine one or more current actions associated with the issue;
 - monitoring performance of the one or more current actions, wherein monitoring includes real-time analysis of textual or non-textual attributes of the ongoing messages; and
 - dynamically updating the machine learning model based on the ongoing messages, the one or more current actions, and the textual or non-textual attributes of the messages.

10. The computer-program product of claim 9, wherein a plug-in is used to apply the trained machine learning model to the ongoing messages to automatically determine the one or more current actions.
11. The computer-program product of claim 9, wherein the one or more current actions are performed within a messaging system.
12. The computer-program product of claim 9, wherein the operations further include:
storing information corresponding to the one or more current actions; and
using the information and the machine learning model to determine a future action.
13. The computer-program product of claim 9, wherein applying the machine learning model includes analyzing conversation tone from the ongoing messages.
14. The computer-program product of claim 9, wherein the one or more current actions include routing the ongoing messages to an agent.
15. The computer-program product of claim 9, wherein the ongoing messages include two or more messages.
16. The computer-program product of claim 9, wherein analyzing the textual or the non-textual attributes of the ongoing messages includes determining a sentiment of the user based on the ongoing messages.
17. A system comprising:
one or more processors; and
one or more non-transitory machine-readable storage media containing instructions that, when executed on the one or more processors, cause the one or more processors to perform operations including:
receiving a message associated with a user, wherein the message represents an issue that the user wants resolved;

generating a routing determination by dynamically evaluating the message in real-time, wherein the routing determination facilitates a live communication session between the user and a bot;
dynamically detecting ongoing messages exchanged in real-time during the live communication session between the user and the bot;
training a machine learning model using the ongoing messages and historical data, wherein the historical data includes one or more previously received messages and one or more previously performed actions associated with issues similar to the issue the user wants resolved;
applying the trained machine learning model to the ongoing messages to automatically determine one or more current actions associated with the issue;
monitoring performance of the one or more current actions, wherein monitoring includes real-time analysis of textual or non-textual attributes of the ongoing messages; and
dynamically updating the machine learning model based on the ongoing messages, the one or more current actions, and the textual or non-textual attributes of the messages.

18. The system of claim 17, wherein a plug-in is used to apply the trained machine learning model to the ongoing messages to automatically determine the one or more current actions.

19. The system of claim 17, wherein the one or more current actions are performed within a messaging system.

20. The system of claim 17, wherein the operations further include:
storing information corresponding to the one or more current actions; and
using the information and the machine learning model to determine a future action.

21. The system of claim 17, wherein applying the machine learning model includes analyzing conversation tone from the ongoing messages.

22. The system of claim 17, wherein the ongoing messages include two or more messages.

23. The system of claim 17, wherein the one or more current actions include routing the ongoing messages to an agent.

24. The system of claim 17, wherein analyzing the textual or the non-textual attributes of the ongoing messages includes determining a sentiment of the user based on the ongoing messages.