GUJARAT TECHNOLOGICAL UNIVERSITY

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INNOVATION COUNCIL (GIC)

Patent Search & Analysis Report

(PSAR)

Date of Submission : 15/10/2020

Dear **Aghera Kishan Amrutlal,**

Studied Patent Number for generation of PSAR	:	**20BE7_170170107003_4**

PART 1: PATENT SEARCH DATABASE USED

1. Patent Search Database used	:	Indian Patent Office database
Web link of database	:	http://ipindiaservices.gov.in/publicsearch/
2. Keywords Used for Search	:	chatbot,output,user state
3. Search String Used	:	chatbot output userstate
4. Number of Results/Hits getting	:	9004

PART 2: BASIC DATA OF PATENTED INVENTION /BIBLIOGRAPHIC DATA

5. Category/ Field of Invention	:	
6. Invention is Related to/Class of Invention	:	Communication
6 (a) : IPC class of the studied patent	:	H04N 21/4227
7. Title of Invention	:	FORMING CHATBOT OUTPUT BASED ON USER STATE
8. Patent No.	:	
9. Application Number	:	201847011305
9 (a) : Web link of the studied patent	:	http://ipindiaservices.gov.in/PublicSearch/PublicationSearch/PatentDetails
10. Date of Filing/Application (DD/MM/YYYY)	:	03/27/2018
11. Priority Date (DD/MM/YYYY)	:	
12. Publication/Journal Number	:	14/2018
13. Publication Date (DD/MM/YYYY)	:	04/06/2018
14. First Filled Country : Albania	:	284

15. Also Published as

Sr.No	Country Where Filled	Application No./Patent No.
1		

16. Inventor/s Details.

Sr.No	Name of Inventor	Address/City/Country of Inventor
1	HORLING Bryan	USA
2	KOGAN David	USA
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8	CHEN Wei	USA
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17. Applicant/Assignee Details.

Sr.No	Name of Applicant/Assignee	Address/City/Country of Applicant
1	GOOGLE LLC	USA

18. Applicant for Patent is : Company

PART 3: TECHNICAL PART OF PATENTED INVENTION

19. Limitation of Prior Technology / Art

No limitation found as of now.

20. Specific Problem Solved / Objective of Invention

Chatbots also referred to as "interactive assistant modules," "virtual assistants," and/or "mobile assistants," may be designed to mimic human conversation. For example, a chatbot may greet a user with conversational statements such as "hello" and "how are you today?" Some chatbots may even be configured to identify a state associated with a user statement and respond accordingly. These responses are sometimes difficult for a user to fully understand and/or find meaningful. For example, the language and phrasing of the response may not resonate with the user in question and may as such lead to a more protracted and/ineffective interaction between the chatbot and the user. Chatbots may thus tend to come off as unnatural or awkward.

21. Brief about Invention

Chatbots also referred to as "interactive assistant modules," "virtual assistants," and/or "mobile assistants," may be designed to mimic human conversation. For example, a chatbot may greet a user with conversational statements such as "hello" and "how are you today?" Some chatbots may even be configured to identify a state associated with a user statement and respond accordingly. These responses are sometimes difficult for a user to fully understand and/or find meaningful. For example, the language and phrasing of the response may not resonate with the user in question and may as such lead to a more protracted and/ineffective interaction between the chatbot and the user. Chatbots may thus tend to come off as unnatural or awkward.

22. Key learning Points

NLP, Artificial Intelligence

23. Summary of Invention

This specification is directed generally to various techniques for tailoring chatbot output to a user's state in order to achieve a more understandable, natural dialog for the user and thereby facilitate more effective communication with the user. For example, the techniques described herein may allow a chatbot to convey meaning to a particular user using language and phrasing which resonates with the user. This may make the overall duration of an interaction shorter than it would otherwise need to be, thereby saving computational load in the computing system hosting the chatbot. As used herein, a user's "state" may refer to a particular condition of the user (at that time or at a previous time) or of another being (e.g., the user's friend/family member/pet), such as an emotional and/or physical condition (e.g., a sentiment of the user). In various implementations, a client device such as a smartphone, smartwatch, standalone voice-activated apparatus, or a vehicle computing system (e.g., vehicle navigation or media management system) that operates a chatbot may receive input from the user. The input may arrive during a first "session" between the user and the chatbot in various forms, including but not limited to spoken or voice input, typed input, gesture input, eye movement input, facial expression input, and so forth. The chatbot may semantically process the input to determine a state of the user (e.g., sentiment) expressed by the user, and may store an indication of the state of the user for later use. For example, suppose during a first session a user indicates a negative state, e.g., by saying, "I feel lousy," or by making a facial expression associated with negativity (e.g., frowning, grimacing, etc.). The chatbot may detect and retain in memory an indication of the user's negative state, such as the user's actual statement and/or a sentiment measure. During a subsequent session with the user, the chatbot may form, e.g., from one or more candidate words, phrases, or statements, one or more statements (e.g., empathetic statements such as "I hope you're feeling better," "I hope your dog is feeling better," or inquiries such as "are you feeling better?" etc.) to output to the user based on the stored user state indication. In this manner, the chatbot is able to retain the knowledge of the user's state over time and is able to engage the user in a more understandable manner and effective manner.

24. Number of Claims : 22

25. Patent Status : Published Application

26. How much this invention is related with your IDP/UDP?

71 to 90%

27. Do you have any idea to do anything around the said invention to improve it? (Give short note in not more than 500 words)

No, as of now.