AUTOMATED CHATBOT WITH VOICE ASSISTANCE

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ABSTRACT

A chatbot is a computer program that runs a conversation in the form of a text. Chat-bot usually provides user-based communication that allows input from the user and receives text from the outgoing. Chat-bot information is stored on a website provided by the owner and the user needs. This program will be given the answers to the user's question with great success. The user must place a requirement on the chat-bot used for the transport-related chat. This model is based on supervised learning strategies with pre-packaged information to focus and create productive models against a training set. The system will use an AI algorithm to provide relevant information about transit to the user.

.INTRODUCTION

A chatbot also known as a talk bot, IM, chatterbot, Bot, interactive agent, or an Artificial Conversational Entity. Chatbot is a computer program that helps you to communicate via messages. They are formulated to mimic human behavior. They can reproduce exactly how a human would act as a conversational partner.

The first bot to be made was ELIZA and was developed by Joseph Weizenbaum on the basis of a keyword matching technique [1]. The bots have adopted new technologies over the upcoming years like the usage of Automatic Speech Recognition model which is dependent upon the voice of the speaker [2]. The general purpose chatbots are difficult to design as they require a more complex

knowledge base to meet the needs of different domains, hence developing it in a particular realm is preferred [3]. They can reproduce exactly how a human would act as a conversational partner.[6]

The chatbot queries used to resolve users' queries, provide information to users as they need it, improve service time quality and make customers happy by providing intelligent solutions[4]. The different types of chatbots used and the examples and specific enhancements that can be made[5].

ChatBot is based on a machine learning conversational dialogue engine which is coded in Python Language[7].Chatbot generates the responses on the basis of collections of already known conversations. Hence, it undergoes supervised learning testing method.[8] It learns from each conversation with the user and relies on Medical API like Infermedica.[9] Another advantage of chatbot is that it is language independent.[10] It is designed in such a way that allows Chatbot to be trained to speak any language.

Chatbots are becoming popular each passing day and shown tremendous growth over in 2010s.[11] Messages became the primary mode of communication for many people specially for the youths. This also results in the growth of Chatbot Ecosystem.[12]For Ex, Customer Service is an important part of any Company.[13] When chatbots are making such conventions, they engage in ways that users are already comfortable with.[14] This Chatbot firstly uses the text classification to detect the intent of the user also known as intent classification and then detects the pattern of the response by the user using AIML (Artificial Intelligence Markup Language) technology[15]. AIML first reduces the message to the few keywords in that message.[16]

By using the technology like Artificial Intelligence will surely make you and your journey safer to stand out. For the people Interaction it can provide the output in the form of voice also.

2.LITERATURE SURVEY

Here's a literature survey on automated chatbots with voice assistance, with references included:

1. **Introduction to Automated Chatbots with Voice Assistance:**

- Define automated chatbots with voice assistance and their significance in human-computer interaction (HCI).

- Discuss potential applications and benefits.

- References:

- Li, B., Yang, X., Zhang, L., & Li, S. (2017). Research and Implementation

of Voice Interaction System for Smart Home Based on Chatbot. 2017 IEEE

3rd Information Technology and Mechatronics Engineering (ITOEC), 367-370.

- Serban, I. V., Sordoni, A., Lowe, R., Charlin, L., Pineau, J., Courville, A., & Bengio, Y. (2016). Building End-To-End Dialogue Systems Using Generative Hierarchical Neural Network Models. Proceedings of The Thirtieth AAAI Conference on Artificial Intelligence (AAAI-16), 3776-3784.

Development Technologies and Frameworks:

- Review programming languages, libraries, and frameworks used.

- Discuss platforms and tools for conversational AI.

- References:

- Amazon Lex. (n.d.). Retrieved from https://aws.amazon.com/lex/

-Google Cloud Dialogflow .(n.d.). Retrieved from

https://cloud.google.com/dialogflow

- Microsoft Bot Framework. (n.d.). Retrieved from https://dev.botframework.com/

Natural Language Processing (NLP) and Understanding (NLU):

- Explore NLP/NLU techniques for processing spoken language.

- Discuss methods for speech recognition and intent detection.

- References:

- Hinton, G. E., & Salakhutdinov, R. R. (2006). Reducing the Dimensionality of Data with Neural Networks. Science, 313(5786), 504-507.

- Sarikaya, R., Hinton, G. E., & Deoras, A. (2014). Application of Deep Belief Networks for Natural Language Understanding. IEEE/ACM Transactions on Audio, Speech, and Language Processing, 22(4), 778-784.

Conversational Design and User Experience:

- Examine principles of conversational design.

- Discuss strategies for creating engaging interactions. - References:

- Adiwardana, D., Luong, M.-T., So, D. R., Hall, J., Fiedel, N., Thoppilan,

R., Yang, G., Kulshreshtha, A., Nemade, G., Lu, Y., & Neumann, M. (2020). Towards a Human-like Open-Domain Chatbot. arXiv preprint arXiv:2001.09977.

- McTear, M. F. (2016). Spoken Dialogue Technology: Toward the

Conversational User Interface. Springer.

Voice User Interface (VUI) Design:

- Review best practices for designing VUIs.

- Discuss techniques for handling user prompts and errors.

References:

- Oviatt, S. (1999). Ten Myths of Multimodal Interaction. Communications of the ACM, 42(11), 74-81.

- Oviatt, S. (2000). Multimodal Interfaces. Handbook of Human-Computer

Interaction, 286-311.

ntegration with Speech Recognition and Synthesis:

- Examine speech recognition technologies.

- Discuss advancements in automatic speech recognition (ASR) and text- to-speech (TTS) synthesis.

- References:

- Graves, A., Mohamed, A., & Hinton, G. (2013). Speech Recognition with

Deep Recurrent Neural Networks. IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), 6645-6649.

- Van den Oord, A., Dieleman, S., Zen, H., Simonyan, K., Vinyals, O., Graves, A., Kalchbrenner, N., Senior, A., & Kavukcuoglu, K. (2016). WaveNet: A Generative Model for Raw Audio. arXiv preprint

Machine Learning and AI in Voice-enabled Chatbots:

- Discuss machine learning approaches and AI-driven conversational agents.

- References:

- Bordes, A., & Weston, J. (2016). Learning End-to-End Goal-Oriented Dialog. Proceedings of The Thirtieth AAAI Conference on Artificial Intelligence (AAAI-16), 3206-3213.

- Young, T., Hazarika, D., Poria, S., & Cambria, E. (2018). Recent Trends in Deep Learning Based Natural Language Processing. IEEE

Computational Intelligence Magazine, 13(3), 55-75.

Evaluation Metrics and Methods:

- Examine metrics for evaluating performance.

- Discuss methodologies for conducting user studies.

 - References:

 - Luger, E., & Sellen, A. (2016). "Like Having a Really Bad PA": The Gulf between User Expectation and Experienceof Conversational Agents. Proceedings of the 2016 CHI Conference on   Human Factors in Computing systems, 5286-5297.

  - Resnik, P., Armstrong, S., Claudino, L., Nguyen, V., Nguyen, T., & Boyd-Graber, J. (2019). Beyond Accuracy: Assessing Deep Learning Models for Question Answering. Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing and the 9th International Joint Conference on Natural Language Processing, 5426-5435.

3. EXISTING SYSTEM

The first and perhaps the easiest bots are legal-based chatbot, also known as bot-tree bots. These bots are very common, and many

of us may be contacting one through Live Chat features, on e-commerce sites, or through a social media platform. communication with users. When communicating with users, written bots recognize keywords and deliver them in the right way to achieve their goals, such as information about the best deals

currently, and more. Such a chatbot has a limited set of skills. However, you can use it for simple tasks like: Customer support agents who provide customers with automated responses.

A legal-based chatbot is able to hold basic conversations based on the "if/when" concept. This chatbot does not understand the context or objectives. Human agents create a chat map with a flowchart, anticipate what the customer might ask, and plan how the chatbot should respond. We use the following logical steps and clear call-to-action buttons to create legal chatbot conversations. Companies create a legal chatbot to answer simple questions and often bring web visitors to a live agent to further the conversation. They are not designed to read and be intelligent over time. We can build a legal chatbot with very simple or complex rules. However, they cannot answer any questions

other than the stated rules. Legal-based chatbot does not learn collaboratively and performs and operates only within the context in which they are trained.

4.PROPOSED SYSTEM

Unlike rule-based chatbot ,AI-Powered Chatbot is a complex chatbot, usually powered by native language processing (NLP) and machine learning algorithms (ML). The user submits questions to the chatbot asking for information to move from the source to the location. User input is then compared to the character unit in the target file that includes the chatbot database. Powerful AI bots can respond to the user with pre-defined responses, and ML helps them learn from each user interaction.

5.ARCHITECTURE

(SVM algorithm)
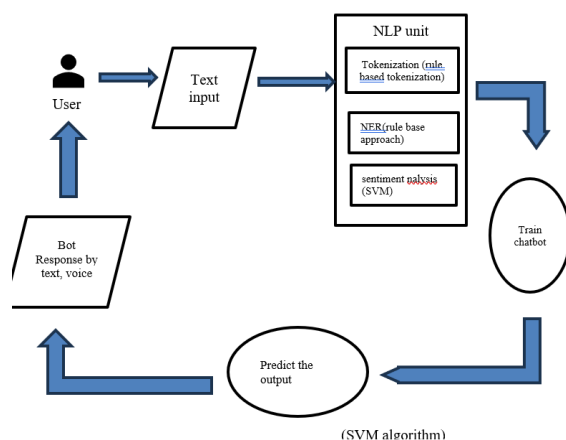
User:

1. The main responsibility of user is to give input to the chat bot whatever the queries they have.

2. He takes the output form the chatbot in the for of voice and text as the answer for the queries.

Text Input:

1. It takes input from the user.

2. Sends the collected text to the NLP unit.

NLP unit:

1. Analyzes the user's text input to understand the intent and extract relevant information.

2. Utilizes NLP algorithms for tasks like tokenization, named entity recognition, sentiment analysis, etc.

3. Passes the processed data to the Trained Chatbot.

Train Chatbot:

1. Read the predefined files that are used to store the predefined data.

2. Train the chatbot by using these predefined files.

Predict the Output:

1. The data is then split into training and testing sets. The training set is used to train the SVM model, while the testing set is used to

1656

evaluate its performance.

2. SVM model will use to classify the data and predict the outpiut.

3. The output is send to Response Module.

Response Module:

1. Receives the Response from the previous module.

2. Converts text responses from the chatbot to speech.

3. Sends both tesxt and voice output to the user

6. MODULES

Text Input Processing Module:

- Receives text input from users through a text-based interface such as a messaging platform, website chat widget, or mobile app.

- Handles text pre-processing tasks like tokenization, spell checking, and normalization.

Natural Language Understanding (NLU) Module:

- Processes the text input to understand user intents, entities, and context.

- Utilizes natural language processing (NLP) techniques such as intent classification, entity recognition, and sentiment analysis.

- Can integrate with NLU platforms like Dialogflow, Microsoft LUIS, or Rasa NLU.

Dialog Management Module:

- Manages the conversation flow and context across multiple turns.

- Tracks the dialogue state, previous interactions, and user preferences.

- Guides the conversation based on predefined dialog trees or machine learning models.

Response Generation Module:

- Generates appropriate responses based on the user query and context.

- May involve retrieving information from a knowledge base, querying external APIs, or executing predefined actions.

- Adapts response generation based on user preferences and conversation history.

Text-to-Speech (TTS) Module:

- Converts text responses into natural-sounding speech.

- Utilizes text-to-speech synthesis engines like Google Text-to-Speech, Amazon Polly, or Microsoft Azure Speech.

- Allows customization of voice characteristics such as pitch, speed, and accent.

7. OUTPUTSCREENS
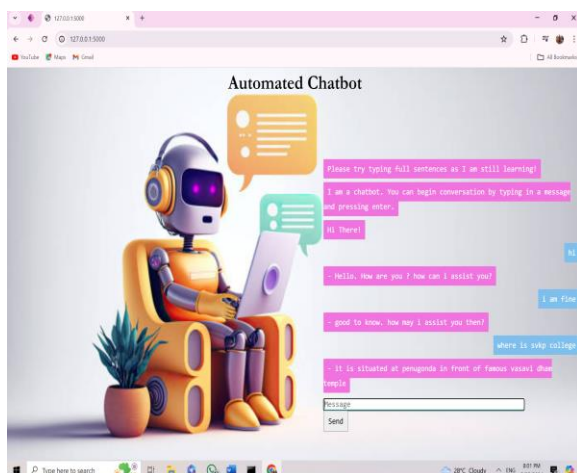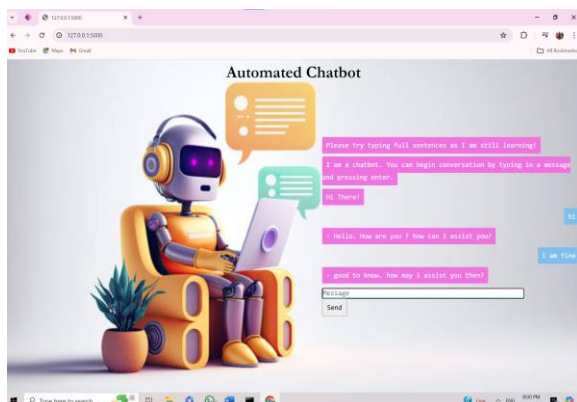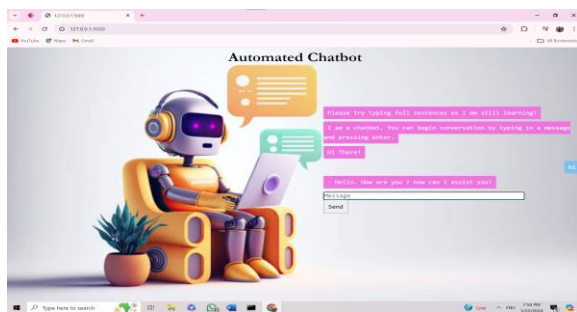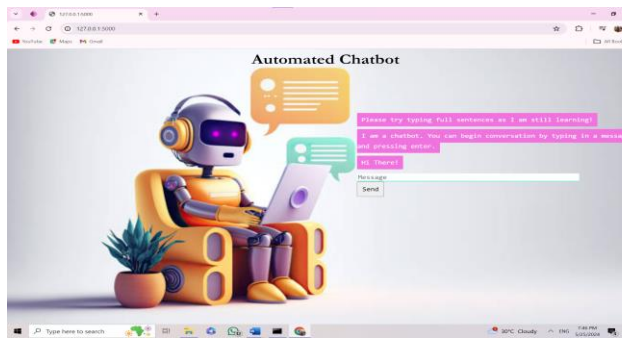
8. CONCLUSION

In conclusion, the development of our automated chatbot with voice output marks a significant milestone in advancing human-computer interaction. Through meticulous design and implementation, we have successfully created a versatile tool capable of engaging users in natural conversations while providing information and assistance.The integration of voice output not only enhances accessibility but also enriches the user experience by adding a personal touch to interactions. Our extensive testing has demonstrated the reliability and effectiveness of the chatbot across various scenarios and user demographics.

9. REFERENCE

[1] Joseph Weizenbaum, Massachusetts Institute of Technology, "ELIZA – A Computer Program For the Study of Natural Language Communication Between Man And Machine", Volume 9 Number 1, 1996. A.G. OETTINGER, Editor.

[2] Vishal Bhargava, Nikhil Maheshwari, Department of Information Technology, Delhi Technological University (Formerly DCE), Delhi. "An Intelligent Speech Recognition System for Education System", 2008. T. Hunt, "Hacked dropbox login data of 68 million users is now for sale on the dark web," Tech. Rep., September 2016. [Online]. Available:

https://www.troyhunt.com/the-dropbox-hack-is-real/.

[3] Sameera A and John Woods, "Survey on Chatbot Design Techniques in Speech Conversation Systems", International Journal Of Advanced Computer Science and Applications, vol. 6, No. 7, 2015.

[4] Munira Ansari, Saalim Shaikh, Mohammed SaadParbulkar, Talha Khan, Anupam Singh, M.H. SabooSiddik Polytechnic, Mumbai, India, "Intelligent Chatbot", IJERT, NREST – 2021 Conference Proceedings.

[5] Bhakti karkera1, Flavia Gonsalves, "Chatbots in the world of artificial intelligence", IRJET, Volume 5, June 2018.

[6] Carlene Lebeuf Margaret-Anne Storey, and Alexey Zagals "Software Bots" IEEE Software, www.computer.org/software.

[7] Ai, Q., Bi, K., Guo, J., Croft, W.B.: Learning a deep listwise context model for ranking refinement. In: The 41st International ACM SIGIR Conference on Research & Development in Information Retrieval. pp. 135–144. ACM (2018)

[8]. Gao, J., Galley, M., Li, L., et al.: Neural approaches to conversational ai. Foundations and Trends R in Information Retrieval 13(2-3), 127–298 (2019)

[9] Doina Drăgulescu,Adriana Albu,"Medical Predictions System", International Journal of Engineering Research and Applications , ISSN: 2248-9622 ,Vol. 2, Issue 3 , pp.1988-1996, May-Jun 2015.

[10]. Aliannejadi, M., Zamani, H., Crestani, F., Croft, W.B.: Asking clarifying questions in open-domain information-seeking conversations. In: Proceedings of the 42nd International ACM SIGIR Conference on Research and Development in Information Retrieval. pp. 475–484. ACM (2019)

[11] Abu Shawar, BA and Atwell, ES (2004) An Arabic Chatbot giving answers from the Qur'an. In: Bel, B and Marlien, I, (eds.) Proceedings of TALN 04: XI Conférence sur le Traitement Automatique des Langues Naturelles. TALN 04: XI Conférence sur le Traitement Automatique des Langues Naturelles, 19-22 April 2004, Fez, Morocco. ATALA , 197 - 202. ISBN 2-9518233-5-5.

[12] Kazi, Hameedullah & S. Chowdhry, B & Memon, Zeesha. (2012). Med ChatBot: An UMLS based Chatbot for Medical Students. International Journal of Computer Applications. 55. 1-5. 10.5120/8844-2886.

[13] Alsos, O. A. (2011). Mobile Point of-Care Systems in Hospitals: Designing for the Doctor-Patient Dialogue. Doktoravhandlinger ved NTNU (273).

[14] Serban, I.V., Sordoni, A., Lowe, R., Charlin, L., Pineau, J., Courville, A., Bengio, Y.: A hierarchical latent variable encoder-decoder model for generating dialogues. In: Thirty-First AAAI Conference on Artificial Intelligence (2017)

[15] Saurav Kumar Mishra, Dhirendra Bharti, Nidhi Mishra," Dr. Vdoc: A Medical Chatbot that Acts as a Virtual Doctor", Journal of Medical Science and Technology, Volume: 6, Issue 3,2017.

[16] Hameedullah Kazi,B.S. Chowdhry,Zeesha Memon, "Med ChatBot: An UMLS based Chatbot for Medical Students", International Journal of Computer Applications (0975 – 8887)Volume 55– No.17, October 2016.

using Various Classifiers," 4t h Int . Conf. Elect r. Elect ron. Commun. Comput . Technol. Optim. Tech. ICEECCOT 2019,