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Techie.ai

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ABSTRACT: A Chatbot is a computer program that converses via audio or textual methods. These intelligent computer programs are capable of simulating a conversational partner with a human-like behaviour, thereby clearing the Turing test. It can then be successfully integrated with websites and mobile applications thereby providing assistance round the clock without human intervention. This project will describe current efforts in the development of an intelligent Career Guidance Bot, Techie.ai. This Career Guidance Bot is built based on artificial intelligence algorithms. It provides some valid result to the user by analysing user query and understanding user's message. The user can put forth any career related query through Techie.ai's user interface that is built for interacting with the bot. The user queries are analysed and then answered as if it is given by the career counsellor. This system guides the user to make the right career choice by giving opinions based on their skill set. Techie.ai helps the user to choose the right career that best fits their interests and capabilities.

KEYWORDS: Chatbot, Artificial intelligence, Turing test

1. INTRODUCTION

A Chatbot sometimes called conversation interfaces or virtual assistants is a computer program that can carry on a conversation with a person. They generally live in any major messaging application and are usually powered by rules of Artificial intelligence (AI). The proposed system Techie.ai is such a Chatbot that aims to provide guidance to the job seekers. It has its basis in AI to provide mechanisms to perform a search for responses to the user queries. Natural Intelligence (NI) is the intelligence showcased by humans and other animals, whereas Artificial intelligence (also Machine Intelligence, MI) is the intelligence showcased by machines. In Computer Science, AI is the simulation of human intelligence processes by machines, especially computer systems. The development and creation of new applications have been possible because of the design and production of interactive Chatbots that help in a better way for the progress of the people. The purpose of Chatbot system is to simulate a human conversation; the Chatbot architecture emulates communication in natural language between a human user and a system by integrating a computational algorithm and language model. Chatbots have become more practical in day to day applications used at help desk, for information retrieval, automating telephonic systems, for advertising, in tools that aid business, education, and E-commerce with the growth of data-mining and machine-learning techniques.

Every Chatbot has typically three parts. The first part is the user input in natural language that can be either typed or spoken words; second is the typed or spoken output from the Chatbot; then the third is the process of passing the input through the program so that an understandable output is produced. Until the end of the conversation, the entire process is repeated. The Chatbot usually engages in a casual conversation with the end user.

II. LITERATURE SURVEY

It is observed that Techie.ai a career guidance bot can be built on the basis of user's skill set and user preferences that will help refine the job search. The bot can be deployed in windows and android version of an existing third-party application like Telegram to eliminate the need for a separate application to be created and installed. It is also seen that the Dialogflow.com (api.ai) platform can be effectively used for bot development that can be made use of to successfully identify intents and entities to handle sub-intent goals of the user's input texts and also be capable of

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engaging in small talks with the users. Chatbots like Techie.ai can not only engage in casual conversation with the user but also be able to render accurate results.

III. EXISTING SYSTEM

The existing counselling bot carries out a conversation between both human and machine. Some knowledge has been embedded into the machine so that it identifies the sentences and makes a decision by itself as a response to answer the question. The response principle is to extract the tokens from the sentence, process on it to find the goal of the sentence by matching the input sentence from the user. This system can be used by any user who is confused about choosing the future career or anyone who wants to know what career they should choose that would be beneficial for them in future [1]. The bot will help the users who have passed SSC and HSC to select their field of interest or a field that would be best for them in order to build up their future [1].

IV. PROPOSED SYSTEM

The aim of Techie.ai is to carry out a conversation with the human for career guidance based on skill set. It is a Career Guidance Bot built using Artificial Intelligence algorithm that is used for analyzing user's job search requests and queries. It provides appropriate results to the query of the user. The user does not have to personally go to a career counsellor for the same. The system analyses the question and provides answers to the query as if it is answered by the counsellor. This system helps the user to choose the right career that best matches their skill set. It has a user interface through which user can communicate with it to pose any queries related to career.

Advantages

Aids in the search for IT Skills related information Answers
Career related queries
Lists domain specific Career opportunities based on identified skill set

V. METHODOLOGY

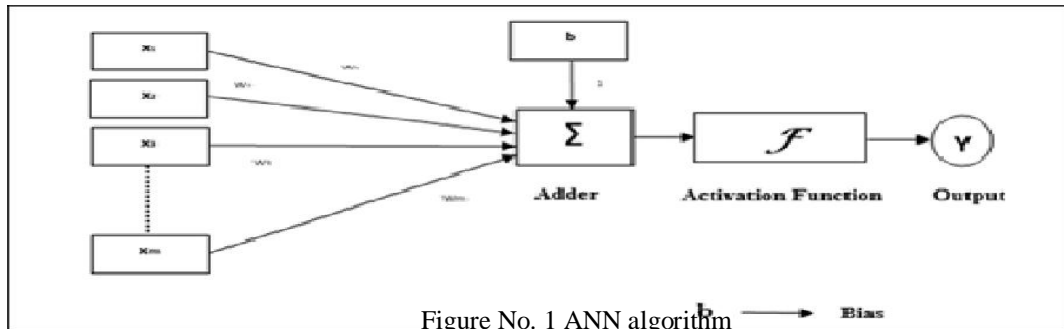
5.1 Algorithm

Techie.ai uses the Artificial Neural Network (ANN) Algorithm that is inspired by the human brain. As in Figure No.1, the ANN algorithm states that communication occurs between the interconnected artificial neurons. Weights are assigned to each connection based on previous learning events and more learning takes place with each new input. Techie.ai does supervised learning on ANN. Training the ANN under supervised learning requires the input vector to be presented to the network. Resultant output vector produced is compared with the desired/target output vector. If the actual output and the desired/target output vector vary then the error signal is generated. The weights would be adjusted on the basis of this error signal until the actual output matches the desired output.

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Artificial Neural Network Algorithm:

Step 1 – Initialize the following to start the training –

- Weights W
- Bias b
- Learning rate α

For easy calculation and simplicity, set weights and bias to 0 and the learning rate to 1. Step 2 – Perform step 3-8 until the stopping condition is reached.

Step 3 – For every training vector X perform step 4-6. Step 4 – Activate each input unit as follows –

$$X_i = S_i \quad (i=1 \text{ to } n)$$

Step 5 – Now obtain the net input with the following relation – $Y_{in} = b + \sum X_i \cdot W_i$
Here ‘ n ’ is the total number of input neurons.

Step 6 – The final output can be obtained by applying the following activation function. $F(Y_{in}) = \begin{cases} 1 & \text{if } Y_{in} > \theta \\ 0 & \text{if } -\theta \leq Y_{in} < \theta \\ -1 & \text{if } Y_{in} < -\theta \end{cases}$

$$\begin{cases} 0 & \text{if } -\theta \leq Y_{in} < \theta \\ 1 & \text{if } Y_{in} > \theta \\ -1 & \text{if } Y_{in} < -\theta \end{cases}$$

Step 7 – Adjust the weight and bias as follows – Case 1 – if $Y \neq t$ then,

$$W_i(\text{new}) = W_i(\text{old}) + \alpha t X_i$$

$b(\text{new}) = b(\text{old}) + \alpha t$ Case 2 – if $Y = t$ then,

$$\begin{aligned} W_i(\text{new}) &= W_i(\text{old}) \\ b(\text{new}) &= b(\text{old}) \end{aligned}$$

Here ‘ Y ’ is the actual output and ‘ t ’ is the desired/target output.

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Step 8 – Test for the stopping condition, which would happen when there is no change in weight.

5.2 Modules

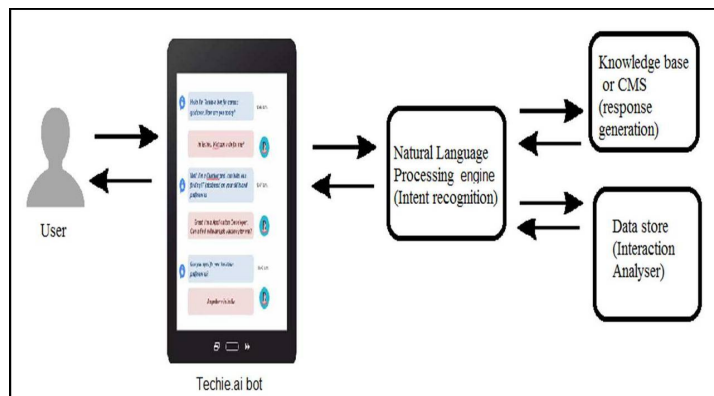


Figure No. 2 Modules of Techie.ai

5.2.1 Natural Language Processing (NLP) Engine

As in the Figure No.2, the Natural Language Processing (NLP) Engine is the preceding module that analyzes the structure of a user’s command which helps the Chatbot correctly interpret and understand obvious and non-obvious synonyms for these common “action” words by identifying meaning, position, conjugation, capitalization, plurality, and other factors of each word. It takes in the user query, finds the intents and entities in it. Intents and entities are specific keywords necessary to generate the response. For intent recognition, NLP engine breaks Chatbot tasks usually into a verb and a noun that describes what a user intends to do. While for entities extraction it identifies the fields, data, or words the developer designates necessary to complete a task. Through NLP engine, the bot ensures all available fields match the task at hand or collects additional data by identifying words from a user’s utterance. Artificial Neural Network (ANN) algorithm is used in NLP engine, wherein communication takes place between the interconnected artificial neurons. The ANN algorithm employed in NLP engine parses the user task or query to identify the intents and does supervised learning to find the corresponding entities, which is then passed over to the Knowledge-base to fetch the appropriate response.

5.2.2 Knowledge-base

The Knowledge-base is a special kind of database for knowledge management. It provides a means for computerized collection, organization, and retrieval of structured and unstructured data. It holds intents, entities and corresponding results. The response is generated after the intent, entity matching and presented to the user through the chat interface.

5.2.3 Data store

A Data store is a repository wherein collections of data are stored and managed. This includes not just repositories like databases, but also simpler types such as simple files, emails etc for storage and retrieval. The queries for which Techie.ai finds no answer is stored in the Data store for training the bot so that it would have a response next time the query is put forth.

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5.3 Flowchart

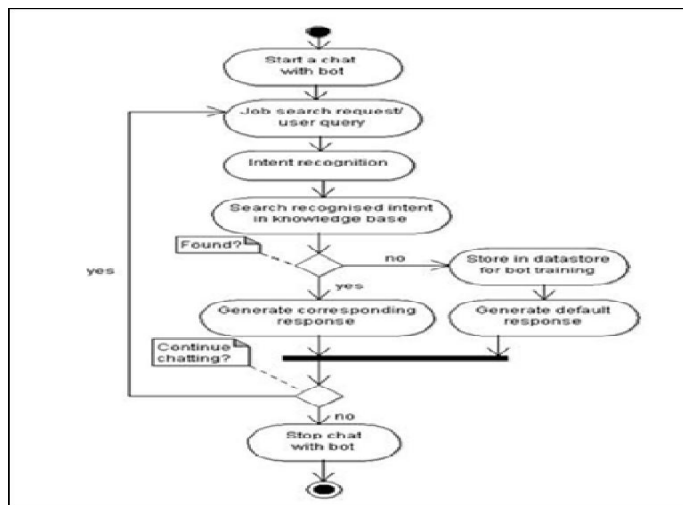


Figure No. 3 Flowchart of Techie.ai

The working of Techie.ai is explained in the Figure No. 3, the user has to start a chat with the bot and put forth a job search request or query. The intents in the user request or query are identified. The recognized intent is used as a keyword for search in the knowledge-base. If the intent is found then its corresponding response will be forwarded else the intent will be stored in a data store for bot training and the default response is returned. The user can either continue chatting or stop by closing the chat. Therefore Techie.ai uses the ANN algorithm to work on the user data and scan the knowledge-base of the Chatbot so that an appropriate output is given to the user as the user needs it.

VI. CONCLUSION

Tchie.ai converses with the user in an effective manner providing the appropriate information to the user's career-related query or job search request, and stores it in the data store to keep track of user interactions.

This system proposes an intelligent Chatbot system for career guidance based on Skill Set which will help the user in choosing the right career by giving an appropriate response. Due to an accurate knowledge base, quick answers will be given to the user.

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REFERENCES

- [1] Archana Parab, Siddhesh Palkar, Satish Maurya, Sonal Balpande (2017), "An Intelligent Career Counselling Bot -A System for counselling."
- [2] Debasatwa Dutta(2017), "Developing an Intelligent Chat-bot Tool to assist high school students for learning general knowledge subjects",
- [3] Sarthak V. Doshi, Suprabha B. Pawar, Akshay G. Shelar, Shraddha S. Kulkarni(2017), "Artificial Intelligence Chatbot in Android System using Open Source Program-O"