Chat Bot for University Related FAQ's Using Machine Learning

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ABSTRACT

User interfaces for software applications can come in a variety of formats, ranging from command-line, graphical, web application, and even voice. While the most popular user interfaces include graphical and web-based applications, occasionally the need arises for an alternative interface. Whether due to multi-threaded complexity, concurrent connectivity, or details surrounding execution ofthe service, a chat bot based interface may suit the need. Natural language processing (NLP) is a form of artificial intelligence (AI) which is used to process the natural language data such as text, image, video, and audio. NLP act as a tool for computer to understand and analyses the real-time data in human language. The applications of NLP are machine translation, information extraction, text summarization, and question answering. Question answering (QA) is a well-researched problem in NLP. QA system is similar to information retrieval system. In QA system, the user will state a query to the system then the query will be

processed by NLP methods to retrieve the answer. Neural network plays a major role in training the QA system. Neural network is a model consists of series of algorithm to determine the relationship among the dataset by mimic the working of human brain. Tensor flow (TF) is one of the frameworks to train the neural network in an efficient way. It automatically calculates the gradient by expressing numerical computations as a graph. TF is trained with the large dataset to find the similarity between question and answer. Our system answers the factoid questions over paragraphs using neural networks along with tensor flow framework. In order to justify the retrieved answer reasoning is used. Reasoning is the process of analyzing data in a logical way to make decisions. In QA system reasoning plays an important role for extracting the answers with better accuracy.

KEYWORDS Machine Learning, Natural Language Processing, Tensor Flow, Keras, Neural Network, Django Framework.

INTRODUCTION

Chat bots typically provide a text-based user interface, allowing the user to type commands and receive text as well as text to speech response. Chat bots are usually a state full services, remembering previous commands (and perhaps even conversation) in order to provide functionality. When chat bot technology is integrated with popular web services it can be utilized securely by an even larger audience. A Student Information Chat Bot project is built using artificial algorithms that analyzes user's queries and understand user's message. This System is a web application which provides answer to the query of the student very effectively. Students just have to query through the bot which is used for chatting. Students can chat using any format, as there is no specific format that the user has to follow. The System uses built in artificial intelligence to answer the query. The answers are appropriate what the user queries. If the answer found to be invalid, user just need to select the invalid answer button which will notify the admin about the incorrect answer. Admin can view invalid answer through portal via login System allows admin to delete the invalid answer or to add a specific answer of that equivalent question. The user does not have to personally go to the college for enquiry. The system analyzes the question and then answers to the user. The system replies using an effective Graphical user interface which implies that as if a real person is talking to the user. The user can query about the college related activities through online with the help of this web application. This system helps the student to be updated about the college activities.

RELATED WORK

Fuzzy questions which cannot represent information need of users correctly are termed as fuzzy questions. The to get as concise information as possible for natural language questions using computers leads to Question answering (QA). In contrast with traditional queries retrieval systems/search engines, which return ranked lists of potentially relevant queries that users must then manually browse through, question answering systems attempt to directly provide users one or more concise answers in the form of

sentences or phrases to natural language questions. Early QASs were developed for restricted domains and have limited capabilities. Current QASs focus on types of questions generally asked by users, but difficult to analyses the correct result. Time period to analyses very difficult.

PROPOSED METHODALOGY

In this paper, we describe answer extraction method for factoid questions Question answering (QA) systems can be seen as information retrieval systems which aim at responding to natural language queries by returning answers rather than lists of result we analyzed each type of questions and developed answer extraction patterns for these types of questions. For automatic evaluation, we have developed education based evaluation for answers of questions. Education method is originally proposed and we applied education method for question answering evaluation. This very simple approach shows the important role of semantic processing that has characterized Question Answering from its beginning, exploiting information other than facts available in database systems, and distinguished it from information retrieval. QA systems cover a wide scope of different techniques; such as question type ontology. In this work we have developed a interactive Chabot for University related Frequently Asked Questions (FAQs), and the work flow of proposed framework is shown in Fig.1. User discussion as a rule begins with welcome or general questions. User inquiries are first taken care by AIML check piece to check whether entered inquiry is AIML script or not. AI ML is characterized with general inquiries and welcome which is replied by utilizing AIML formats. This operation is divided into three parts:

1. User post the query on Chabot
2. Processing is done on the users query to match the predefined format by the developer
3. Pattern matching is performed between user entered query and knowledge (pattern).

Finally pattern based answer is presented to the user to answer their query. This paper presents the Chabot for educational sec-tor, where user (a student or parents) can ask query regarding college admission, about college information and other things related to academics. As discussed earlier, user can post their query on Chabot and response is generated based on pattern matching techniques presented in this paper.
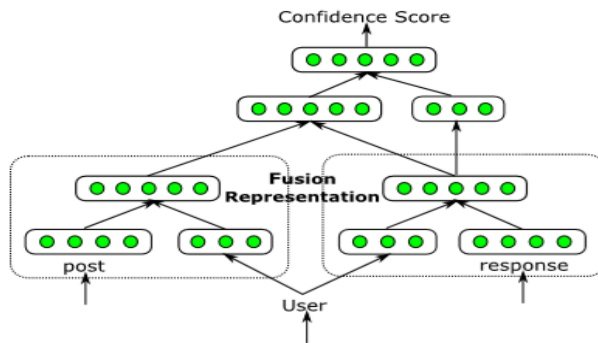
Improving Confidence Score of Machine

EXPIREMENT MODULES

1)Pre-processing

Each sentence extracted from a given article is parsed using the LTP software. Specifically, in this step our system performs word segmentation, part of speech tagging, named entity recognition and dependency parsing and semantic role label parsing. This information is essential for sentence simplification and question generation, described next.

2)Sentence Simplification

In our approach, a set of transformation operations derive a simpler form of the source sentence by removing parentheses (The elements in a sentence which function as the explanatory or qualifying remarks and have no clear dependent relations with the other constituents of a sentence.), adverbial modifiers between commas and phrase types such as sentence-level modifying phrases (e.g. manner adverb). But, in some cases, we keep some adverbial modifiers if they contain information about a person name, place, number, and time because this information can generate potential questions.

3)Question Transformation

In this stage, the simplified declarative sentences derived in stage 1 are transformed into a set of questions based on predefined question generation rules s. A key subtask of question generation is target content selection, i.e. what is the target content the question is asking about. In our case, we identify answer phrases in the input declarative sentence as potential targets for generating questions about. In English, a question is generated by using an interrogative pronoun to replace the target answer phrase in the declarative sentence. Unlike question generation in English, it does not require subject-auxiliary inversion and verb decomposition. In this
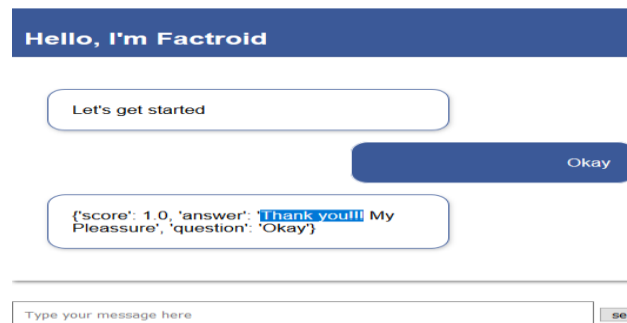
respect, the question generation process in English is simpler.

4)QUESTION RANKING

The previous stages generate questions that vary in their quality with respect to syntax, semantics or importance. This is unavoidable and happens for different reasons, such as errors in sentence parsing, named entity recognition, and sentence simplification. To address this problem, ranking the large pool of questions according to their quality is needed. Stage 3 in our method implements a learning to rank algorithm to meet this challenge.

RESULTS

Hello, I'm Factroid

Let's get started

Okay

{'score': 1.0, 'answer': 'Thank youlll My Pleassure', 'question': 'Okay'}

Type your message here   sen

Output Screenshot with Score

CONCLUSION

Artificial Intelligence conversational agents are

becoming popular for web services and systems like scientific, entertainment and commercial systems, and academia. But more effective human-computer interaction will take place by querying missing data by the user to provide satisfactory answer. In this paper we have proposed and implemented an interactive chat bot for University Environment as a future work we can make a Chabot which is blend of Dynamic reply. This will enable a client to interact with Chabot in a more natural fashion. We can enhance the discussion by including and changing patterns and templates for general client queries using AIML.

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