Information Technology

PROJECT

Title - Chatbot Education : A means of Enhancing Smart Education in Universities.

Supervisor : Ms P.Hemalatha

Team Members :

18951A1217 – B.Bhargavi Reddy
18951A1224 – K.Dinesh Reddy
18951A1215 – M.Bharath Kumar

Outline :

- Introduction
  - ✔ What are chatbots ?
  - ✔ History
  - ✔ Types
  - ✔ Applications
- Existing solution
- Drawbacks
- Proposed work
- Design
- Requirements
- Architecture
- Working
- References

Abstract :

With the increase in advancements of chatbot technology , various sectors are seeing tremendous positive responses. Already AI driven chatbots are being used in educational sectors .Universities worldwide are using chatbots for college admissions, providing support, live assistance, and much more. We have seen online classes, virtual graduations, and online exams in Covid-19 times. With everything slowly moving online, the student expectations are evolving too. Students are more digitally active than ever and universities are adapting to this change. Teachers are emphasizing on imparting knowledge through digital platforms. This paper explores the possibility of implementing a chatbot that helps in providing constructive learning environment and self-service campus suggestions. This constructive leaning environment includes : helping students to engage virtually , providing a smarter feedback , interactive medium of learning , assisting as a teacher , providing instant help through NLP.

Keywords : Artificial Intelligence(AI) , Machine Learning(ML) , Natural Language Processing(NLP) , Chatbot , Datasets(corpus).

Introduction :

- **What are Chatbots ?**
  - simulations which can understand human language , process it and interact back with humans while performing specific tasks.
  - First chatbot – Joseph Wiesenbaum in 1966 , named Eliza.

- **Histrory :**
  - Eliza – 1966
  - Parry – 1972
  - A.L.I.C.E – 1995
  - Smarter child – 2001
  - SIRI – 2010
  - Google now – 2012
  - Alexa – 2015

- **Types of chatbots :-**
  - Textbased chatbots :
  - Voicebased chatbots

Introduction(cont.) :

- **Applications :** Number of applications.
  - Helpdesk assistant.
  - Email distributor.(spam filter)
  - Home assistant. (robot vacuum cleaner)
  - Operations assistant.
  - Phone assistant.
  - Entertainment assistant.(match prediction)

- Classroom learning .
- Emergence of Online learning (COVID).
- Technology intervention in Education - Pros & cons.
- More advancements through AI chatbots.
- Features of chatbot in field of education.
  - intelligent tutoring system , engaging learners more effectively , providing smarter feedbacks , completing repetitive tasks , provision of instant assistance , easy scoring .

Existing System :

- Well proposed information providers
  - Courses suggestion
  - Administrative support
- General interaction
- User –[question]—chatbot[answers]

Drawbacks :

- As this is a field under developing , no drawbacks are seen except
  - Provides feedback iff user asks questions.
  - User involvement is necessary.
- There is no chatbot that is completely dedicated to educational institution.

Proposed Work :

- Continuous assistance regarding deadlines.
- Smarter attendance linked through biometry.
- Schedules and appointments.
- Easy Library accessing.
- All updates related to placements , events , academics , exams , status of classes.
- Day to Day uploading of live recorded classes.

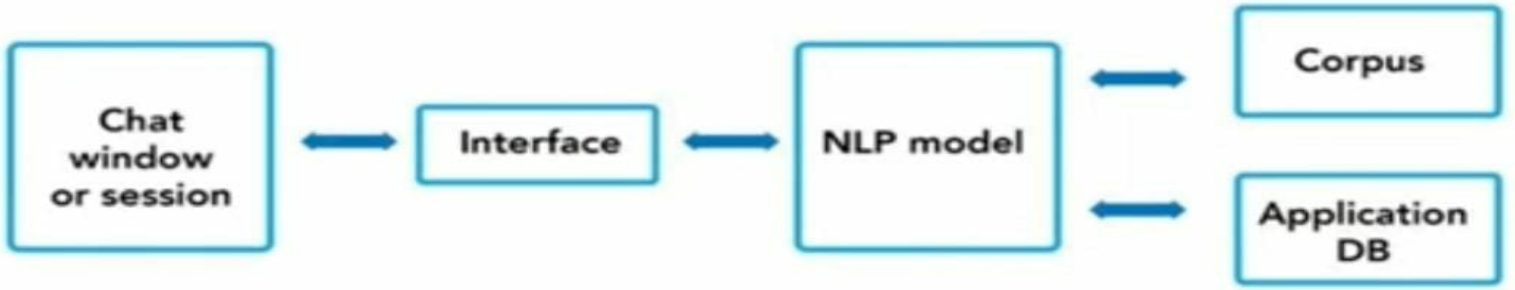
Design:

- Chatbots are designed using these approaches :-
  - **Rule-based chatbot** – Bot answers questions based on some rules on which it is trained on. The rules defined can be very simple to very complex.
  - **Self learning chatbot** – Bot that learns how to communicate using the results of a ML model to learn and assess current situation.

Requirements:

- **Hardware Requirements :**
  - A computer with –
    1. Core i3 processor
    2. 2GB RAM
    3. 250GB harddisk
- **Software Requirements :**
  - Front end :
    Python programming language
  - Backend :
    SQL server

Architecture :



- **Chat window or session :** [front end] Creates a active session (User Interface) .
- **Interface :** It is not the user interface it acts as the bridge between NLP model and chat window.
- **NLP model** : heart .
- **Corpus :** It is just the training data. In the world of chatbots we usually call data as corpus[dictionary] . Basically a repository of information .
- **Application DB :** DB that holds applications & details how to bridge and send information to NLP model & to send the answer as text or other forms.

Working :

Import corpus → Process the data - text case handling → Tokenization →Stemming → Bag of words →One hot encoding.

- **Corpus :** It is the training data needed for chatbot to learn.Without this it is impossible for chatbot to learn and give output .[similar to attending to exam which you are prepared]
- **Data preprocessing – text case handling :** Converts all data coming as an input to either uppercase or lower case. This avoids misrepresentation or misinterpretation of words if spelt under lowercase or uppercase.
- **Tokenization :** It is the structured process of converting a sentence into individual collection of words. Ex : This is a blog → this – is – a – blog
- **Stemming :** It is a process of finding similarities between words with the same root words.

Original word	Root word	Similar words
Jump	Jump	Word with similar root word i.e. JUMP
Jumped	Jump	
Jumps	Jump	
Jumping	Jump	

Working(cont.) :

- **Generating bag of words (BOW)** : Converting words into numbers by generating vector embeddings from tokens generated.

Original word	BOW Vector			
This	1	0	0	0
is	0	1	0	0
a	0	0	1	0
blog	0	0	0	1

- **One hot encoding :** Process by which categorical variables are converted into a form that ML algorithms use.

Tag	One Hot encoded vector [11X11]										
This	1	0	0	0	0	0	0	0	0	0	0
is	0	1	0	0	0	0	0	0	0	0	0
a	0	0	1	0	0	0	0	0	0	0	0
blog	0	0	0	1	0	0	0	0	0	0	0
name	0	0	0	1	0	0	0	0	0	0	1

References :

[1] https://datafloq.com/read/educational-apps-benefit-chatbots/6885
[2]. Implementing conversational AI in libraries : A practical approach (research paper)
https://www.academia.edu/48901473/Implementing_Conversational_AI_in_Libraries_A_Practical_Approach
[3]. AI in education : https://botsify.com/blog/education-industry-chatbot/

Thankyou
&
Queries ?