Webot

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Contents

Project objective

We have worked on a chatbot whose aim is to assist user in wedding planning,thus coined WEBOT.

We have built a goal oriented chat bot that performs mixed interaction

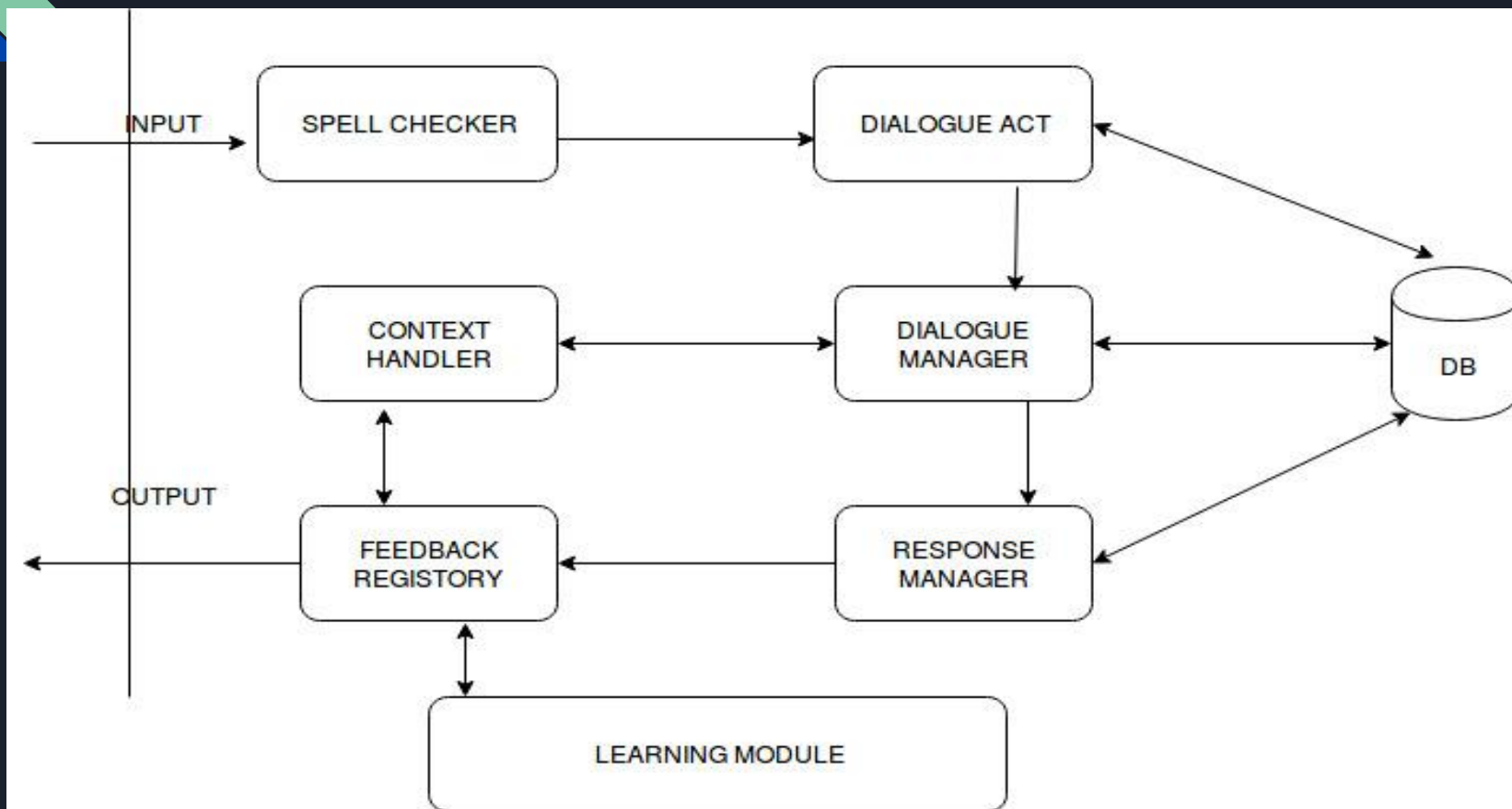# Project objective

Webot that have built acts as :

Assistant

Wedding Planner

Intermediary

Model

Data

We have created the data for possible that user can give.For that we have generated various inputs for every category:

-Suggestion

-information

-Request

-Greeting

-Response

Database creation

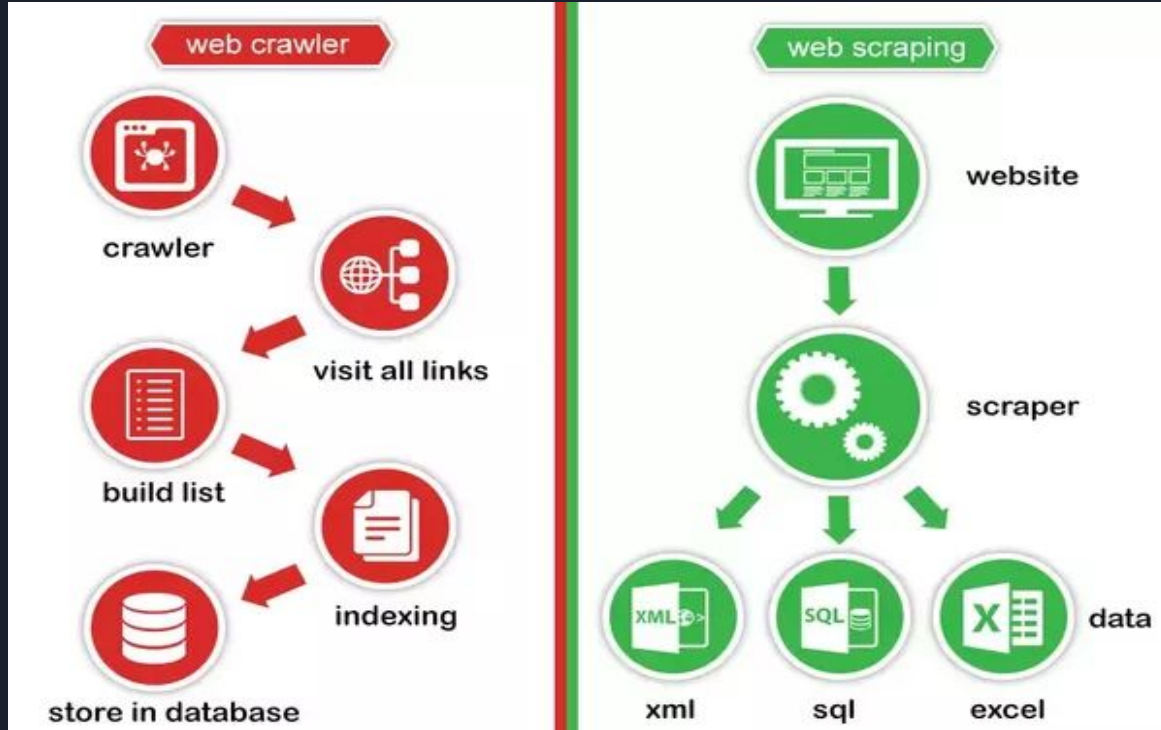Preparing the Database involves 3 phases

I . Crawling : We have crawled the webpage " wedmegood.com "

2. Scraping : Get all required information , extract data from dynamic web pages .

3. DB : MongoDb

Preparing the Data involves 3 steps

      I. Get all services

      ii . Get all vendors

      Iii. Extract details of all vendors and store it in DB

Crawling and Scraping

Dialogue Manager

Once we have the dialogue and its act dialogue manager takes decision according to the dialogue act.Its the central part connecting all the important modules of our architecture .

- Spell checking
- Mixture model

Type of actions :

1. NO information type : Dialogue of the form Greetings , yes or no type , Negative Feedback . Response handler handles these dialogues .

2. Contains information : Dialogue of the form Information , Request , Suggestion , Positive feedback . Extract information from these sentences , update the client frame and take proper action like passing the information to context handler so that current state of client can be updated or call response handler to generate response .

Dialogue Manager

For Information related queries extract information get binding information

What is binding Information of a dialogue ?

Suggest few good chocolate cake suppliers in Hyderabad

- Based on the dialogue act output get the type of dialogue .
- Get most relevant queries from the set based on POS taggings .
- Now check whether binding information matches output the best matched dialogue .
  - Get POS taggings of the dialogue
    - ❖ NN   Noun , singular or mass
    - ❖ CD   Cardinal number
    - ❖ NNS   Noun , plural
    - ❖ NNP   Proper Noun , singular
    - ❖ VBN   Verb , past participle
  - Use Synonyms list to identify the information

Dialogue Manager

Extracted informations include :

- Event : Wedding/Reception/Sangeet/Mehendi/Engagement/Istikhara etc
- Wedding type : Hindu/Muslim/Christian etc
- Location : List of places
- Budget
- Service : All the services provided by the Webot
- Date

Handling the Dialogue

1. Greeting , Yes / No , Negative feedback : Pass it to response handler .
2. Information : Updations in the frame , pass it to context handler .
3. Positive feedback : Get the feedback if any .
4. Suggestion ,Request : Pass all the information to the response handler .

Response Handler

Generating the appropriate responses for the dialogue

- Proper Dialogues
    1. Greeting , Yes / No , Negative feedback : Generate randomly from the list of responses.
    2. Information : Feedback message to the client .
    3. Positive feedback : Confirmation message to the client .
    4. Suggestion : Suggest based on client's interest
    5. Request : Based on the information provided by the client gets the best suitable vendors to suggest .
- Backlog Responses
    1. If any of the required field is missing : Post the appropriate question to get the information
    2. If irrelevant or inappropriate request : Since it is a closed domain planner generates some random negative response

Classifying dialogue acts

Deep neural network to classify queries into respective categories

7 Categories ---> request (req) , positive feedback (pfb) , negative feedback (nfb), information (info), suggestion (sug), yes-no type (yn) , greeting (greetings)

Preprocessing --->Padding input queries to max length

Keras Embedding Layer ---> 100 dimensional pre trained GloVe model

Training parameters --->

      Activation function - softmax

      Loss function - categorical cross entropy

      Dropout - 20%

      No. of epochs = 50

Context Handler

It maintains the information about events(e.g. Reception , haldi, sangeet etc) and its services(e.g catering, clothing,djs etc) and also maintains budget and location of services.

Maintains current context like event and its service.

Structures and frames

Events (Class objects)--------->

(Reception,sangeet etc)

      Services (Frames)-------->

      (Catering - S1, clothing - S2   etc)

            S1 ==> [location , Budget]

            S2 ==> [location , Budget]

            Etc

Input to Context Handler

Current query details (from dialogue manager)

Output to dialogue manager

 Local event

 Local service and its details (location , budget)

Events dictionary

Maintaining completed , current , and not required services

Maintained with flags

Flag -1 ⇒ initial value

Flag 0 ⇒ not required service

Flag 1⇒ current service

Flag 2 ⇒ completed service

If user started some service but forget to mention about its location or budget , then we are asking the user.

We displayed the whole chat status using the stored information .

Flow Sample Conversation

```
HI Webot
                            Welcome to Webot !!!
i want to plan a hindu wedding
                            Thanks for the information.
iam planning for reception in hyderabad
                            Thanks for the information.
suggest good venues
                            Below are the most suitable vendors for  venue


suggest good venues in hderabad
                            Below are the most suitable vendors for  venue

 Vendor: jrc-conventions-24971 Ratings :5.0
 Vendor: princeton-convention-center-21119 Ratings :5.0
 Vendor: novotel-hyderabad-23206 Ratings :4.5
 Vendor: fort-grand-31093 Ratings :4.8
 Vendor: marigold-hotel-15653 Ratings :4.0
 Vendor: katriya-hotel-17825 Ratings :5.0
 Vendor: siddh-convention-17978 Ratings :4.5
 Vendor: the-park-37864 Ratings :5.0

i like princeton
 Vendor: princeton-convention-center-21119 Ratings :5.0
are the ratings good
                            Yes,this is the best available option.

okay
```

```
suggest food centers in mumbai
                              Below are the most suitable vendors for  catering

Vendor: mini-punjab-catering-22051 Ratings :5.0
Vendor: little-food-co-788 Ratings :5.0
Vendor: eat-drink-design-37980 Ratings :5.0
Vendor: le-kitchen-23622 Ratings :5.0
Vendor: crumbs-to-gourmet-16645 Ratings :5.0
Vendor: m-talwar-catering-services-16682 Ratings :5.0

is the service reliable
                                   Yes,this is the best available option.
i like crumbs
Vendor: crumbs-to-gourmet-16645 Ratings :5.0
i want to plan engagement
iam planning for engagement
                              Thanks for the information.
suggest cake shops in mumbai
                              Below are the most suitable vendors for  cake

Vendor: deliciae-patisserie-115 Ratings :5.0
Vendor: lil-white-oven-20454 Ratings :5.0
Vendor: mishmash-30226 Ratings :5.0
Vendor: haagen-dazs-14581 Ratings :5.0
Vendor: happy-16829 Ratings :5.0
Vendor: wedding-cake-by-celestial-37952 Ratings :5.0
Vendor: the-cake-lady-by-neeta-gurbaxani-37938 Ratings :5.0

is the service reliable
                                   Yes,this is the best available option.

i like deliciae
```

```
iam planning for hindu wedding
                                    Thanks for the information.
iam planning for reception n delhi
                                    Thanks for the information.
                                    Hi which service you want to avail !!!

suggest venues in hyderabad
                                    Below are the most suitable vendors for  venue


 Vendor: jrc-conventions-24971 Ratings :5.0
 Vendor: princeton-convention-center-21119 Ratings :5.0
 Vendor: novotel-hyderabad-23206 Ratings :4.5
 Vendor: fort-grand-31093 Ratings :4.8
 Vendor: marigold-hotel-15653 Ratings :4.0
 Vendor: katriya-hotel-17825 Ratings :5.0
 Vendor: siddh-convention-17978 Ratings :4.5
 Vendor: the-park-37864 Ratings :5.0


                                    Hi are you busy

i like princeton

                                     princeton-convention-center-21119   : Selected vendor
                                    Hi are you busy
```

End of conversation


```
                              Your final Plan
reception
venue
mumbai
catering
wedding
reception->venue-> princeton-convention-center-21119
reception->catering-> m-talwar-catering-services-16682
```

Challenges

Data collection (collection of questions)

Named-Entity recognition

Handling transition of states(frame architecture)

Handling wrong spellings for more than 2 distance

Future work

Creating more sample question set

NER training

Handling chat abbreviations

Mixed languages

Thank You!