

EUROPEAN UNIVERSITY OF LEFKE

FACULTY OF ENGINEERING

Graduation Project I

Artificial Intelligence Chatbot

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Short Introduction of your project (1-2 paragraph); In this project I will be designing a chatbot for websites that will greet customers as well as try to guide them and help them with any problems that they have. This project will include everything except the coding these are, what programs will be used what area it can be implemented in. After that we will be talking about the benefits and risks of this project and anything that can be included for this chatbot. This chatbot will respond to simple messages sent by the user. It will also send a message as soon as anybody comes into the website. Also, other AI chatbots will be looked and reviewed to see what have been done in this area. Later there will be comparison between our project and these chatbots

Supervisor

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Publish Date

Table Of Contents

Your Name Surname.....	Error! Bookmark not defined.
Your Student Number	Error! Bookmark not defined.
Your Supervisor Name	Error! Bookmark not defined.
Publish Date	i
1.Introduction.....	1
1.1 Problem definition	1
1.2 Goals	1
2. Literature Survey	2
3. Background Information.....	3
3.1 Required software	3
3.2 Other software.....	4
3.3 Hardware.....	Error! Bookmark not defined.
4. Modules.....	4
4.1 Your First Module Name	Error! Bookmark not defined.
4.2 Your Second Module Name.....	Error! Bookmark not defined.
4.3 Your Third Module Name.....	5
5. Risk Analysis	5
6. Ethics.....	6
7. Conclusion	6
7.1 Benefits	7
a. Benefits to users :.....	7
b. Benefits to me :	7
7.2 Future Works	7
8. References.....	9

1.Introduction

1.1 Problem definition

Artificial intelligence chatbots are made in order to help people deal with problems that would require extra resources or extra time investment to be achieved however, when we start using Artificial intelligence chatbots. We solve some of these issues more efficiently But its easier said then done since some of the AI chatbots can be very complex if they have deep learning built inside of them. Best way to use these AI chatbots are to solve issues that would require a dedicated human being looking after it.

Artificial intelligence is made in order to solve some certain problems These problems include stuff like, when you need a problem solved technically from a website an AI chatbot can help you solve your issues. AI chatbot can help you talk to customers and increase productivity. It can also help you save money as well as time since there is no need for employment or hiring. Saving time can also be a factor thanks to the chatbot being able to work 24/7. Chatbots can also attract new customers by sending a message to the visitors of the website.

Let's list some example problems that can be solved with an AI chatbot or anything that AI chatbot would be able to help with.

Example-Problems :

- AI chatbot can talk to a customer and increase productivity.
- Giving service for 24/7 in a business for technical problems.
- Attracting new customers that visit your website
- Can help with talking to people that have mental issues

1.2Goals

Goal of this project is to make a chatbot that can help customers that visit a website respond to their messages and help them with whatever the customers' needs are.

- One of the goals is helping the business increase their productivity by implementing a robot that can respond to the customers.
- Offer a 24/7 service to help the customer thanks to an artificial intelligence chatbot which will help the business keep running.
- Also it can attract the customer's attention as soon as they enter your website by messaging them and offering help with that

If you want you can share a small diagram which is explain your problem solution (DFD , Use Case,etc...)

2. Literature Survey

There has been many projects like this. Most of the webpages already utilizes this program and tries to attract more customers with it. Anybody can go into a webpage and they will see a chatbot being use there. This also goes for our university. In our university webpage there is a webpage that greets you as soon as you get in. Chatbots are commonly used in the webpages coded recently. In the paper [1], authors made a chatbot and used it inside of webpages in the area of hotels and guesthouses and they have received the data from these chatbots. In the paper [2], chatbot was implemented into a ecommerce webpage in order to help users, entering the webpage, with their inconveniences and minor problems. This service is provided 24/7 which helps the support team deal with bigger issues and problems from users real time. In the paper [3], chatbots were used in social medias in order to help people with their problems. This was implemented since users couldn't get in contact with the support for a long time and this will help solve the issue of not getting a response for a while.

Comparison 1 : Comparing this project to the [1] study, we can see that the only areas this chatbot was used and observed was in the hotel and guest room area which in return doesn't really give us the same results

Comparison 2: In the [2] study, authors have implemented their chatbot into an ecommerce website and track the results obtained by the chatbot. This is very close to the experiment we are trying to the with our chatbot. The chatbots might be different however the idea of the usage will be pretty similar.

Comparison 3: The chatbot in the [3] paper, has been made in order to help the people who has problems in social media and doesn't receive a response for a while. This chatbot is made only for social medias and no other place. This help will increase the productivity and solve the small inconveniences. This chatbot is very different from the one that im making however, there are some similarities such as helping with small problems.

3. Background Information

In this part we will be talking about the programming languages, IDEs, database softwares and everything else that was used to make this chatbot. However, all of these can be swapped for another software but this is what I used. This also includes other software that are not really needed to make it but used regardless to make the developers life easier.

3.1 Required software

These are the essentials when writing this chatbot, however some can be changed depending on preference such as IDE and etc. Even the language can be changed however this is what is going to be used. So meaning of required software is the software that will be es

- **Python:**

Python is a very good programming language to help you build any types of program. This will be used when creating our chatbot. This will serve as a back end and a front end since it includes flask which has javascript already installed inside of it. Python will be interacting with the Database as well as the front-end.

- **Javascript:**

Javascript will make everything interactable and will add animations into the page

- **HTML:**

HTML will display everything onto the page such as javascript and CSS

- **CSS:**

CSS will help us style the program we are making.

- **Visual Studio Code:**

Good Code editor. It can have many addons to improve your programming.

- **MYSQL:**

MYSQL for any database. It helps when you want to build a website with a database

3.2 Other software

Other software programs that helped and had supplementary effects when making the chatbot. These are used

- **AdobePhotoshop:**

For design icons.

- **Github:**

Used for repository.

- **Fork:**

We use fork so we can push the progress onto Github.

- **SQL server management tool:**

Server management tool in order to check what is inside of your project

4. Modules

In this part of the project, We will be talking about modules which can be front-end and backend as well as the server side. This part is very important to the project because it will make the backbone of the project. The front-end to help the user interact with the user back and to interact with front-end to call for any methods which will talk with the database. The server side for the database and the backend to interact with each other. Everything in this process is important for the project since they are all needed to be inside of the project

4.1 First module – Front End

This module is utilized by the user to interact with the chatbot. This is where everything is laid in front of the user. However this usually means that it just requests data from backend and ends up displaying to the user. Even though it usually just ends up doing requests from the backend to fetch data This is where the designer will shine and show how important a front end developer is since it makes everything look pretty. However, this doesn't mean that front end cant directly interact with the back end

4.2 Second Module Name is- Back End

In this module we do everything that interact with the database this includes stuff like fetching data restoring data or changing data. This is the part where usually backend developers spend their times trying to optimize and get rid of bugs for the user. This is one of the hardest part of the project because you will have to assume what comes from the front end such as inputs and use those to do transactions with the database. Since, user doesn't see this part they don't really know what is going on the back end.

4.3 Third Module – Server Side

This is where usually everything comes together. User sends a request to the web page which is ran on a server and this will make the project a whole. It is hard because this is where people deploy their project to run and there are special devops teams dedicated to making these websites and running them. When there has to be a change depending on the software that is being used IT has to take the server down to upload and deploy the new version of the project. Databases are usually stored in the servers which decides if a website will be fast or not. This can earn money or lose it depending on the situation.

5. Risk Analysis

In this part of the project, we will be taking a look at the risks that will or might be caused by chatbots. However, since it is hard to do a risk analysis on a chatbot. Risks given here might be wrong or not calculated properly.

- One of the risks of this project is in case the conversations with the chatbots are leaked it can cause an immense amount of problem. This information leak might include people's addresses that was given to the chatbot in the conversation or any personal information. However this information can still be protected with good security and not letting the chatbots store the credentials given by the users.
- Second risk that might happen is Chatbots not behaving properly and maybe showing a security breach by showing a flaw when interacting. However, this depends on how the chatbot is modelled and there are no problem with speech recognition.

- The other risk is, the chatbot might not recognizing and not reply to the messages sent by the user that are not trained into the chatbot making it not recognize some words or sentences. This can be easily fixed by adding more words or training the chatbot more and thoroughly which is not that hard.
- The unintentional transaction that might be caused by the bot thinking it is the correct action when its clearly not. This action might be banning somebody for using an offensive language when in fact the language used was normal with a typo that triggered the chatbot to take an action that is not justified. This can be easily fixed by making sure about edge cases and no slip ups.
- Final Risk might be taking over a job and making people working there jobless. This causes a problem where the chatbots when they advance they will take over the job of the actual support team

6. Ethics

In this section, There will be information about the ethics when it comes to Artificial Intelligence and we will be trying to make a list while observing other papers written on ethics when it comes to Artificial intelligence.

- On the paper [4], We can see that one of the most important ethical rule is a chatbot should be sensitive to the social and cultural boundaries.
- Also, another ethical move would be giving AI the ability to give information about the Social problems that is currently going on.[4]

7. Conclusion

In this part of the paper, We will be talking about the conclusion I drew from the entirety of the project after working on it. This part will include what benefits this project has as well as my reasoning on choosing this project.

7.1 Benefits

We will be listing the benefits of this project to the users as well as me and what I learned.

a. Benefits to users :

1. Easier access to support when they run into a problem
2. Increased productivity for the website
3. 24/7 access to support
4. quick response to their problems

b. Benefits to me :

1. Learning about artificial intelligence
2. Learning about python
3. Learning how to make a full-stack application

I have chosen this project so that I can learn about Artificial intelligence and Chatbots. After, I acquire this information I would like to use it in the future to do my masters on artificial intelligence and I thought this project was the right topic. This would help me start learning more and be more interested in Artificial Intelligence. Even, maybe use it to show to universities that I am interested in such topics and I would be incredibly happy to study in this field.

Also, after looking into the project idea more I realized that this topic can be very fun when working on it. It could even include languages that I have never used before such as python. However, I don't know how hard it will be in the real world but I'm still very happy to be working on this.

7.2 Future Works

After my graduation I am planning to keep pursuing this area to make more chatbots or artificial intelligence that can help problems and solve problems. That's why I would like to study artificial intelligence to understand how AI works and maybe even make Artificial intelligence that can learn and improve which is called machine learning. However, this is very difficult since there is not a single easy way to make artificial intelligence.

But after this project I am planning to use the knowledge I gained from working on this project to make different projects that can include Machine learning and help people with their lives such as self-driving cars or general knowledge AI. This is very hard to do but general knowledge AI are the most important innovation that human

8. References

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- [4]: Maniou, T. A., & Veglis, A. (2020). Employing a chatbot for news dissemination during crisis: Design, implementation and evaluation. *Future Internet*, 12(7), 109.