**Approved Project topic**

**Design and Development of an Intelligence Chatbot for Prospective and New Student at Federal University of Technology Owerri**

**CHAPTER ONE**

1. **INTRODUCTION**
   1. **Background of Study**

A Chatbot is a computer program designed to simulate conversation with human users, especially over the internet. There are primarily two types of chatbots. One is a rule-based chatbot that uses a tree-like flow, which means its communication is through a pre-set rule, and users must conform to these pre-defined rules to get the required answer. Since this type of Chatbot has no implementation of artificial intelligence, an open conversation is not possible or very limited. The other is artificial intelligence based Chatbot. This type of Chatbot does not require the user to ask questions based on pre-defined rules. Thus, these Chatbot creates replies based on user input using natural language processing (NLP).

This project deals with an important section of our growing technological society focusing on the use of Chatbot in education. The current model of the project is made to handle queries from prospective and new students, guiding and helping them answer questions about the school, Federal University of Technology. The Chatbot works on a real-time basis with the student clearing any doubts prospective students may have about the admission procedure. Currently, students rely on knowledge from forums on the internet to get information that may not have been vetted to be true by school officials, and the alternative is visiting the admissions office or the departments in person to get information which can be very expensive if they do not live in the state. Mailing the school is another way to get factual information, but real-time communication cannot be guaranteed. Inquiry Chatbot is designed to help students through the admission process into the school meticulously.

The world is fast moving toward the automation of human effort with the help of artificial intelligence. One area that needs improvement is the communication system in the educational field. Human efforts can be replaced with an artificial intelligence based Chatbot without compromising the quality of service while also adding its ability to serve a huge number of inquiries simultaneously. The project will be developed using Python Kernel, Natural language processing (NLP) libraries, machine learning, and artificial intelligence. The frontend of this project will be its deployment on WhatsApp.

Chatbots have become very useful in recent years, especially during this global pandemic where close human-to-human contact is limited. It has helped as a desk tool, eliminating the need for anyone to come in person for information. It has also reduced the cost of hiring human support and the time it takes to get information.

The term "Chatterbot" was first initiated by Michael Mauldin, the producer of the Chatbot called Julia, and he created it in 1994. Since then, improvements have been made in artificial intelligence to birth more sophisticated bots like Google assistance, Amazon's Alexa, Apple's Siri, Samsung's Bixby. A chatbot can be classified by its usages, such as conversational, assessment, customer help, shopping, news, sports, travel, and utility.

The inspiration to build this project came because of a lack of information when I was still a prospective student, and as a fresher, information about the school (Federal University of Technology Owerri) was very limited.

* 1. **Problem Statement**

This project's core problem is the lack of real-time information regarding the admission process and general information about the university: Federal University of Technology Owerri. An attempt will be made using technology to resolve this by providing real-time access to information so that interaction between it and users feels conversational. Hence the task of this project is, therefore, to create an expert system that can simulate human conversational style while answering enquires from prospective students and new students at The Federal University of Technology Owerri.

* 1. **Objective of study**

This project aims to design and develop an intelligence chatbot for a prospective and new student at the Federal University of Technology Owerri.

The specific objectives of the Chatbot are:

* To answer repetitive questions.
* To minimize the time required to resolve simple inquiries.
* To give an accurate response to users based on queries.
* To make communication between users and machines simple and feel like human-to-human interaction without compromising on the quality of service.
* To streamline the experience of prospective students and newly admitted students.
  1. **Significance of study**

Chatbot provides the school; Federal University of Technology Owerri technical help it needs to answer any inquiry a prospective or new student needs in AI. It also contributes to the python open-source community with improved work on natural language processing

* 1. **Scope of work**

The Federal University of Technology is a big school with a vast number of departments grouped by faculty. The Chatbot will be used to answer repetitive questions so the school staff can concentrate on answering more difficult queries. To actualize this project will require gathering data from relevant school stakeholders, training the data so the Chatbot can reference data depending on user input. Testing the Chatbot and deploying it on social media (WhatsApp).

The bot will respond to queries in three categorized ways:

1. **Salutations** are responses to greetings by the users in a friendly manner.
2. **Domain-Specific Responses** are responses given when the user inquires for information specific to the Federal University of Technology.
3. **Apologetic Responses:** these responses are given by the Chatbot when the queries are tough to retrieve.

The outcome should be a chatbot that will save the time of prospective students and students while reducing the need for extra human resources to answer queries or guide new and prospective students. Students can get updated information at record time and see all documents related to the university, like courses offered by the school, head of departments, names of lecturers. The AI chatbot will act as the perfect communication bridge between the school and users seeking information.

* 1. **limitation of the study**

1. **Limitations With Chatbot**

Even with the increasing advancement in artificial intelligence, there comes the point where it becomes difficult working with Chatbot. Some of the few limitations of the study

**Domain Knowledge** – True artificial intelligence is still not within reach; it becomes difficult for any chatbot to completely grasp the conversational boundaries of the human conversation.

**Personality** – Chatbot cannot respond correctly with context, and poor comprehension skills have been a major Chabot error. Having a personality is a benchmark that is still far from being achieved in artificial intelligence.

1. **Time Limitation**

Since there is a limited time to do research and collect data, time is a limitation for this study

1. **Data Collection Process**

Since data will be collected manually and not through an API call, it is a limitation. Each time the school updates information, the chatbot knowledge base needs to be updated manually.

* 1. **Definition of terms**

**API**: API stands for Application Program Interface. It is software that allows two or more applications to talk to each other.

**Chatbot**: A chatbot or a chatterbot is a software application that simulates human-like conversations with users through text messages on a chat platform

**NLP**: NLP is an acronym for Natural Language Processing. Natural language processing as a subfield of artificial intelligence gives computers the ability to understand text and spoken words the same way a human being can.

**NLU:** Natural Language Understanding (NLU) Natural Language Understanding is a component of Natural Language Processing. It interprets the meaning a user communicates with language and classifies them into proper intents.

**NLTK:** NLTK stands for Natural Language Toolkit. It is a platform for building Python programs to work with human language data.

**AIML:** AIML stands for Artificial Intelligence Markup Language. It is an XML-based markup language meant to create artificial intelligent applications. AIML makes it possible to create human interfaces while keeping the implementation simple to program, easy to understand, and highly maintainable.

**UI**: UI stands for User Interface. It is the bridge between human-computer interaction and communication. A user interface can include a lot, but for this project, the user interface is WhatsApp.

**GPU:** GPU is an acronym for Graphics Processing Unit. The graphic processing unit is a part of a computer used in artificial intelligence to accelerate workloads.