A logo with a green ribbon

AI-generated content may be incorrect.

**Title: Assistant chatbot for Dedan Kimathi University of Technology-Dekut Chat**

Submitted by: Cheryl Achieng

Reg No: C027-01-2630/2021

Project Proposal Submitted to Dedan Kimathi University of Technology in Partial Fulfillment of the Requirement for the Award of Bachelor of Business and Information Technology

**DECLARATION**

This research is purely my work, which has never been submitted previously by anyone else, whether individual, group, organization, or institution. No part of it may be reproduced without the prior written permission of the authors and Dedan Kimathi University of Technology

Student Name: Cheryl Achieng

Reg No: C027-01-2630/2021

Signature:………………………………………………….

Date:………………………………………………………..

# **TABLE OF CONTENTS**

**[CHAPTER 1](#_Toc203483699)** [4](#_Toc203483699)

**[1.1 INTRODUCTION](#_Toc203483700)** [4](#_Toc203483700)

**[1.2](#_Toc203483701)****[BACKGROUND OF THE STUDY](#_Toc203483701)** [4](#_Toc203483701)

**[1.3 PROBLEM STATEMENT](#_Toc203483702)** [5](#_Toc203483702)

**[1.4 OBJECTIVES OF THE STUDY](#_Toc203483703)** [5](#_Toc203483703)

**[1.5 SCOPE AND LIMITATIONS OF THE STUDY](#_Toc203483704)** [5](#_Toc203483704)

**[1.6 SIGNIFICANCE OF THE STUDY](#_Toc203483705)** [6](#_Toc203483705)

**[CHAPTER 2 LITERATURE REVIEW](#_Toc203483706)** [7](#_Toc203483706)

**[2.1 INTRODUCTION](#_Toc203483707)** [7](#_Toc203483707)

**[2.2 REVIEW OF RELATED WORKS](#_Toc203483708)** [7](#_Toc203483708)

**[2.3 GAPS IDENTIFIED IN THE LITERATURE](#_Toc203483709)** [8](#_Toc203483709)

**[CHAPTER 3 METHODOLOGY](#_Toc203483710)** [9](#_Toc203483710)

**[3.1 INTRODUCTION](#_Toc203483711)** [9](#_Toc203483711)

**[3.2 RESERCH DESIGN](#_Toc203483712)** [9](#_Toc203483712)

**[3.3 DATA COLLECTION AND PROCESSING](#_Toc203483713)** [9](#_Toc203483713)

**[3.4 SYSTEM DESIGN AND ARCHITECTURE](#_Toc203483714)** [10](#_Toc203483714)

**[3.5 TOOLS AND TECHNOLOGIES TO BE USED](#_Toc203483715)** [11](#_Toc203483715)

**[3.6](#_Toc203483716)****[ESTIMATED BUDGET](#_Toc203483716)** [12](#_Toc203483716)

**[3.7 ETHICAL CONSIDERATIONS](#_Toc203483717)** [12](#_Toc203483717)

**[REFERENCES](#_Toc203483718)** [13](#_Toc203483718)

**[APPENDICES](#_Toc203483719)** [14](#_Toc203483719)

# **CHAPTER 1**

# **1.1 INTRODUCTION**

In today’s digital era, a fast, reliable, and accessible platform to interact with institutional systems is essential. However, many university departments still rely on manual communication methods, making it difficult to get timely answers to common questions regarding academics, exam results, departmental contacts, admissions queries and more. This proposal introduces a chatbot system tailored for Dedan Kimathi University of Technology. The chatbot aims to streamline communication by providing 24/7 automated responses to frequently asked questions, updates, and support. Through this intelligent assistant, enhanced access to information is provided, reducing repetitive workload, improving service delivery.

# **1.2** BACKGROUND OF THE STUDY

Students, parents, and visitors usually want quick and accurate information about Dedan Kimathi University of Technology, including admissions procedures, academic programs offered at the school, events, and other frequently asked questions (FAQs), in today's hectic educational environment. For school employees, manually answering these questions can be time-consuming.   
  
Many organizations are using AI-powered chatbots to automate answers to frequently asked questions in order to overcome this difficulty. This reduces the workload for administrative staff while offering immediate assistance. A school chatbot serves as a virtual assistant, offering 24/7 assistance to users, improving communication efficiency, and enhancing the overall user experience.  
  
The goal of this project is to create a school FAQ chatbot that can respond to frequently asked questions about our university.

# **1.3 PROBLEM STATEMENT**

Currently, communication is through emails, phone calls, or physical visits to the school’s administrative office. Therefore, there is a need for an automated intelligent chatbot solution that can offer instant responses to frequently asked questions, provide updates, and support students, visitors, and parents' needs efficiently.

# **1.4 OBJECTIVES OF THE STUDY**

General Objective

* To create a university chatbot that answers clients frequently asked questions about Dedan Kimathi University.

Specific Objective

* To create a website interface for the user to interact with the chatbot.
* To create a communication channel that is available 24/7

# **1.5 SCOPE AND LIMITATIONS OF THE STUDY**

Scope of the study.

* Designing a web user interface chatbot to assist in answering FAQs about Dedan Kimathi University of Technology.
* Training the chatbot using lightweight natural language processing and rule-based technology to understand and respond to school-related FAQs
* Covering common topics such as admission, academic schedule, fee structures, campus facilities and school policies.

Limitations of the study.

* Restricted Question Handling: The chatbot may have trouble responding to extremely complicated or unclear questions that are not part of its trained dataset and will mostly respond to pre-established FAQs.
* Language Restrictions: Unless it is extended in later versions, the original version might only support English, making it inaccessible to non-native speakers.
* Dependency on Data Quality: The quality and applicability of the training data supplied determine how accurate the chatbot is. Inaccurate answers could result from incomplete or out-of-date information.
* Lack of Emotional Intelligence: In contrast to human employees, the chatbot is unable to decipher context, emotions, or tone beyond preprogrammed answers, which could negatively impact user satisfaction in delicate circumstances.
* Technical Requirements: The chatbot needs consistent internet access, and server or maintenance problems could cause outages.

# **1.6 SIGNIFICANCE OF THE STUDY**

Among the many advantages that the School FAQ Chatbot will offer are

* Immediate answers to frequently asked questions, increasing user satisfaction.
* Administrative employees' workload is lessened, freeing them up to concentrate on more difficult duties.
* Constant accessibility, guaranteeing that users receive responses even after business hours.
* Reliable and consistent data, reducing human error in answers

# **CHAPTER 2 LITERATURE REVIEW**

# **2.1 INTRODUCTION**

The adoption of AI-powered chatbots in educational institutions has grown significantly in recent years, driven by the need for efficient communication, quick information access, and reduced administrative workload. AI chatbots provide personalized help with a high 80% accuracy rate and operate 24/7, which enhances student engagement and quick access to information. Around 35% of schools employ AIchatbots, resulting in a 45% increase in student engagement**.** This chapter reviews existing literature on chatbot technology, its applications in education, and previous studies on FAQ-based chatbots in academic settings. By analyzing related works, this review identifies key trends, successful implementations, and research gaps that justify the development of a dedicated school FAQ chatbot.

# **2.2 REVIEW OF RELATED WORKS**

Onyalo (2022) evaluated UniBot, an AI chatbot designed specifically for the Department of Computing and Informatics at the University of Nairobi. Over a 3-week trial with 20 students, UniBot achieved a mean efficiency score of 4.10 , and was praised for being fast and easy to use, demonstrating significant improvements in handling student queries

Ai Chatbot: Improve Efficiency in Handling Student Queries at the Department of Computing and Informatics, Nairobi University.

Bamurange and Jonathan (2025) propose a hybrid AI chatbotframework specifically tailored for African higher education institutions, integrating lightweight NLP with human oversight to address linguistic, cultural, and ethical constraints. Their mixed-methods case study at the University of Kigali suggests the model achieves approximately 85% accuracy in handling academic queries and could reduce staff workload. This hybrid design, featuring escalation protocols and local-language support, is directly relevant to your project as it provides a blueprint for balancing automation with empathetic, human-managed escalation, especially for parents, applicants, and visitors.

Bilquise, Ibrahim, and Salhieh (2023) conducted a study with 207university students in the UAE to explore factors influencing the acceptance of an academic advising chatbot. Utilizing an extended Technology Acceptance Model (TAM/UTAUT), their findings revealed that perceived ease of use and social influence significantly predicted students’ behavioral intentions to adopt the chatbot. Interestingly, perceived usefulness, autonomy, and trust showed no significant effect. This research is critical to your proposal as it highlights the importance of building a user-friendly, socially endorsed chatbot interface, especially considering the diverse user groups—students, staff, parents, and visitors—you plan to serve. These findings suggest prioritizing simplicity and peer endorsement in your chatbot’s design to encourage broad adoption.

# **2.3 GAPS IDENTIFIED IN THE LITERATURE**

* Narrow Focus on Student Perception Only  
  While Bilquise et al. (2023) provide valuable insight into student acceptance, the study excludes other key users like administrative staff, parents, and visitors. This limits understanding of how broader stakeholder groups interact with or perceive chatbot systems in academic environments.
* Lack of Contextualization for African Institutions  
  The study was conducted in the UAE, where digital infrastructure, culture, and education systems differ significantly from many African universities. There is a research gap in exploring chatbot acceptance in under-resourced, diverse environments like Kenyan institutions.
* Absence of Multilingual or Localized Designs  
  The chatbot tested was not adapted for multilingual or local cultural nuances—a critical need for chatbot success in multicultural, multilingual African settings, where many users may not prefer English as the first mode of interaction.
* Short-Term Evaluation Only  
  The research did not assess long-term usage or evolving user behavior over time.

# **CHAPTER 3 METHODOLOGY**

# **3.1 INTRODUCTION**

The research design, resources, and techniques utilized to create the school FAQ chatbot are described in this chapter. It explains the system architecture, data gathering, development process, and assessment methods to guarantee the chatbot accomplishes its goals.

# **3.2 RESERCH DESIGN**

The project employs a mixed-methods approach:   
  
Quantitative techniques to gauge performance, such as accuracy testing and user surveys.  
Qualitative techniques (such as feedback analysis and interviews) are used to evaluate usability and user satisfaction.

Agile development methodology will be adopted to guide the project through a step-by-step process involving planning, development, and testing. This iterative approach supports continuous improvements by incorporating user feedback and performance evaluations throughout the development cycle.

# **3.3 DATA COLLECTION AND PROCESSING**

Dataset Compilation

Sources: School website, handbook, and interviews with staff/students

FAQs categories :

* Admission and enrolment
* Campus Facilities
* Events
* Exams Queries

Preprocessing and training using Google colab

* Text cleaning
* Intent labeling
* Training the model using supervised learning

# **3.4 SYSTEM DESIGN AND ARCHITECTURE**

The chatbot system consists of these main components

1. The user interface

The chatbot will have a web-based chat window designed with simplicity and ease of use in mind. This means the chat screen will be easy to navigate, allowing users to enter their questions simply and quickly and receive clear, easy-to-read answers.

1. Data compilation

The collection and cleaning of a dataset created from scraping the school's official website and the feedback form from students.

1. Deployment Process

* Prototyping Phase:  
  Initially, a simple version of the chatbot will be created using rule-based logic. This means it will respond based on specific keywords chosen from the FAQs, which allows quick development and immediate testing of basic functionality.
* NLP Integration Phase:  
  Next, the chatbot will be enhanced using the previously trained lightweight NLP engine. This will improve its ability to recognize users’ intent behind questions, allowing more natural and accurate responses. A fallback response system will also be added to politely handle any user queries that the chatbot cannot answer, guiding users on how to get further help.
* Deployment:  
  Finally, the fully functional chatbot will be integrated into the website and tested thoroughly to ensure all features work smoothly and provide a good user experience across different devices.

4.Testing and Evaluation

Performance Metrics

* Accuracy

Measures how often the chatbot gives the correct response compared to a set of test questions. This helps determine the chatbot’s reliability in understanding and answering user queries.

* Response Time

Calculates the average time the chatbot takes to reply to a question.

* User Satisfaction

Gathers feedback from users regarding how helpful, clear, and easy the chatbot is to interact with. This may be assessed using simple rating scales or short feedback forms.

Testing Methods

.Beta Testing

* The chatbot will be deployed to a small group of real users (students, staff, or parents) for trial use. Their feedback will be used to identify usability issues, bugs, or improvements before full-scale launch.

# **3.5 TOOLS AND TECHNOLOGIES TO BE USED**

|  |  |
| --- | --- |
| **Tools to be used** | **Purpose** |
| Python | Core programming language |
| Google col**l**ab | For Intents and Data Cleaning |
| Git hub | Store project progress and collaboration |
| JavaScript | For the website user interface |
| HTML/CSS | For the website user interface |
| Visual studio | Coding Development environment |
| Google forms /sheets | Collecting feedback from users |

# **ESTIMATED BUDGET**

|  |  |  |
| --- | --- | --- |
| **Item** | **Description** | **Cost(KSH)** |
| Laptop | Personal | 0 |
| Internet Bundles | For research and deployment | 3000 |
| Designing and coding tools | Free online tools to run code with | 3000 |
| Printing of theproject report | Printed and bound a hard copy | 1000 |
| Unforeseen costs | Testing integration and feedback | 1500 |

# **3.7 ETHICAL CONSIDERATIONS**

Informed Consent

* All participants who fill out the feedback form must be aware that their responses are being used for academic research.
* A short consent statement will be provided before the form begins. Example: “By submitting this form, you consent to your responses being used for research and development of a student support chatbot.”

Data Privacy and Confidentiality

* No sensitive personal data (e.g. ID numbers, passwords) will be collected.
* Responses will remain anonymous unless someone chooses to share their contact for testing purposes.
* All data will be stored securely and only used for academic purposes.

Voluntary Participation

* Participants should not feel pressured or forced to respond.
* They should have the freedom to skip questions or stop the form at any time.

Transparency and Honesty

* The form and chatbot should not mislead users. Make it clear that the chatbot is a student project and not an official university communication channel (until approved).

Fair Representation

* Try to collect feedback from a diverse group of students (different years, departments, etc.) to avoid bias in your chatbot's responses.

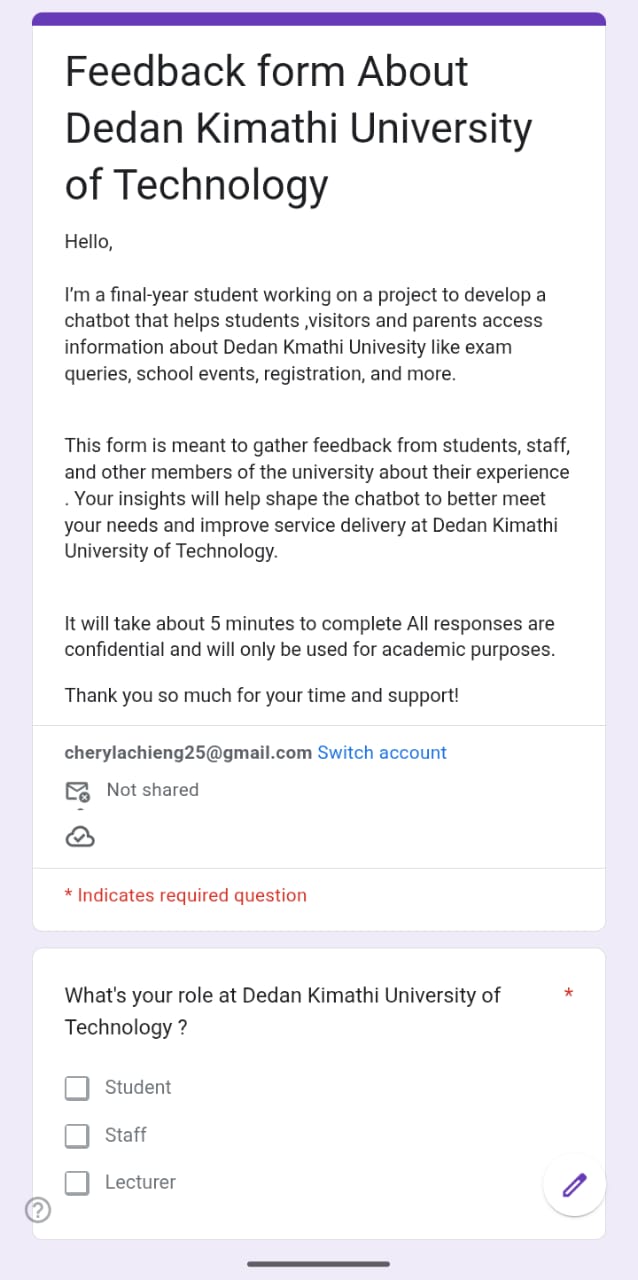
# **REFERENCES**

Onyalo, W. A. (2022).  
UniBot: Development of a Chatbot for Student Support at the Department of Computing and Informatics, University of Nairobi (Unpublished undergraduate project). *University of Nairobi Repository*.  
<https://erepository.uonbi.ac.ke/handle/11295/161598>

Bilquise, G., Ibrahim, S., & Salhieh, S. M. (2023).  
Investigating Student Acceptance of an Academic Advising Chatbot in Higher Education Institutions. *Education and Information Technologies, 29*, 6357–6382.  
<https://doi.org/10.1007/s10639-023-12076-x>

Bamurange, D., & Jonathan, K. N. (2025).  
Designing a Hybrid AI Chatbot Framework for Student Support: Integrating NLP and Human Oversight in African Universities. *Journal of Information and Technology, 5*(4), 41–52.  
https://edinburgjournals.org/journals/index.php/journal-of-information-technolog/article/view/501

# **APPENDICES**



**A screenshot of a phone

AI-generated content may be incorrect.**