

Campus Companion - Project Report

Chapter 1: DESCRIPTION (Page 1-4)

1.1 Introduction

Campus Companion is a WhatsApp-based virtual assistant bot that helps students access essential college-related services in a conversational manner. It reduces confusion and provides instant information like timetable, cafeteria menu, announcements, faculty contacts, etc.

1.2 Problem Statement

Students face delays and inefficiencies in retrieving routine campus information. Navigating websites or contacting faculty manually often leads to missed updates and time loss.

1.3 Objectives

- To create a chatbot-based assistant for campus queries
- To provide real-time, easy access to campus updates
- To integrate with existing services like Twilio and databases
- To reduce dependency on human resources

Chapter 2: BACKGROUND STUDY (Page 3-4)

2.1 Literature Review

Chatbots have proven useful in education for FAQs, LMS integration, and reminders. Many platforms like Telegram, Slack, and WhatsApp support API-based chatbot development.

2.2 Existing System

Typical student portals or mobile apps are slow, need logins, and lack real-time interaction.

2.3 Drawbacks of Existing System

- Non-interactive interfaces
- Difficult navigation
- Lack of quick updates
- No support for messaging platforms

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Chapter 3: SYSTEM ANALYSIS (Page 5-36)

3.1 Python (Used for AI integration)

Used optionally for NLP logic and OpenAI integration to handle advanced queries.

3.2 Features

- Timetable & event updates
- Faculty contacts
- Cafeteria menu
- WhatsApp interface
- Smart Q&A (AI module optional)

3.3 Proposed System

A WhatsApp-integrated chatbot using Twilio API and backend Node.js/Express to handle requests and respond using structured data from Firebase/MongoDB.

3.4 Advantage of Proposed System

- User-friendly
- No app download required
- Real-time response
- Scalable and secure

Chapter 4: SYSTEM STUDY (Page 36-37)

4.1 System Test

System test cases were written and executed on the bot, covering basic and edge cases.

4.2 Functional Test

Bot was tested for functional correctness in response parsing, routing, and error fallback.

Chapter 5: SOFTWARE ENVIRONMENT (Page 38-41)

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Frontend: WhatsApp (via Twilio)

Backend: Node.js, Express.js

Database: Firebase / MongoDB

Optional: Python (OpenAI API)

Hosting: Render / Railway / Heroku

Chapter 6: USE CASE DIAGRAM (Page 42-44)

Use case diagram includes:

- Student (User)
- Admin (For updates)
- Database
- WhatsApp API/Twilio
- Backend Server

Chapter 7: SOURCE CODE (Page 45-46)

Code available in Node.js backend with REST APIs and Twilio integration.

4.6 Outcomes:

- Bot successfully responds to timetable, events, menu queries.
- Real-time sync with updates.

Chapter 8: SYSTEM TESTING (Page 47-48)

Tested with various input combinations and verified with 20+ test cases.

Chapter 9: CONCLUSION (Page 49)

Campus Companion brings convenience to campus life by offering a smart and accessible chatbot interface through WhatsApp. It supports real-time communication and removes friction in information access.

9.1 Future Scope

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- Admin dashboard
- Voice command integration
- ERP integration
- Predictive analytics

Chapter : REFERENCES (Page 4)

1. Twilio Docs
2. Node.js Documentation
3. Firebase Docs
4. Research papers on Chatbot in Education