AI CHATBOT FOR VUT STUDENTS (AI)

PRACTICAL IMPLEMENTATION AND DOCUMENTATION

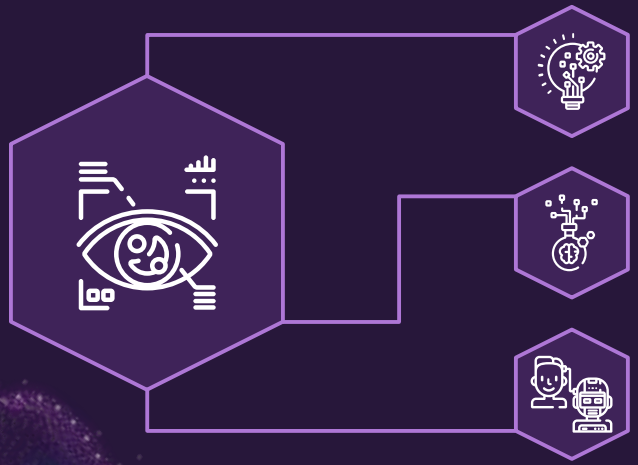
FREE APP FOR ALL VUT STUDENTS

Group members

- T MPHAHLELE - 222124059
- NN MANAVI - 221874534
- MM SELLO - 221673695
- B MANYERUKE- 222397594
- N MASONDO - 222387831
- JJA Santos - 222374918

OUTLINE

PROJECT OVERVIEW



1. An all-in-one solution for VUT students
2. Focus on academic, social, mental, physical well-being tips or advising
3. Powered by an AI chatbot using machine learning and NLP

TECHNICAL Tools

TOOLS

- Python: Main programming Language
- GitHub: for project history and collaborative work.

Libraries

- nltk: Natural Language Toolkit for text processing.
- Pandas: Data management.
- gTTS: Google Text-to-Speech for audio responses.
- SpeechRecognition: For voice input.
- Pygame: To play audio responses.
- TensorFlow: Placeholder for deep learning model.
- Pyaudio and OS: For microphone input and system operations.

AI FEATURES

NATURAL LANGUAGE PROCESSING (NLP)

Understands and responds to queries about campus events, study groups, lost and found, etc.

Speech Recognition

Handles voice inputs from users.

TEXT-TO-SPEECH

Converts bot responses into speech

DEEP LEARNING INTEGRATION

Placeholder for intent recognition.

SPEECH RECOGNITION AND RESPONSE

HOW IT WORKS

```
def recognize_speech():
    with sr.Microphone() as source:
        audio = recognizer.listen(source)
```

TEXT-TO-SPEECH: ANSWERS WITH AURDIO

```
def text_to_speech(text):
    tts = gTTS(text)
    tts.save(filename)
```

Performance Tracking

Time Series Data: Logs student queries and bot responses for future improvements.

```
def log_performance(user_input, response):
    performance_data.append({"timestamp": datetime.now(), "input": user_input, "response": response})
```

AI CHATBOT USER INTERACTION

User input via text/speech.

STAGE 1

Chatbot processes the query and retrieves data.

STAGE 2

Text-to-speech response playback.

STAGE 3

Logs performance for analysis.

STAGE 4

Constraints and Risks

Constraints	Risks
Budget: R10 000	Adoption Risk: If students are not aware of this app
Technology: run on windows and macOS.	Security Risk: data leak on all sensitive information.
Time of Launch: next academic year.	Technical Risk: directions not completely accurate.

SUMMARY

- The chatbot enhances VUT students' experience through real-time support.
- It provides social, academic, and mental well-being assistance.
- Future improvements include integrating deep learning for better intent recognition.

THANKS!

DO YOU HAVE ANY QUESTIONS?