# AI Solution Documentation

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## General metrics

| 7,907 | 1,123 | 141 | 4 min 29 sec | 8 min 38 sec |
|---|---|---|---|---|
| characters | words | sentences | reading time | speaking time |

## Score


This text scores better than 87% of all texts checked by Grammarly

## Writing Issues

**37** Issues left

Critical

**37** Advanced

## Writing Issues

1 **Clarity**

1 Wordy sentences

## Unique Words

Measures vocabulary diversity by calculating the percentage of words used only once in your document

**39%**

unique words

## Rare Words

Measures depth of vocabulary by identifying words that are not among the 5,000 most common English words.

**35%**

rare words

## Word Length

Measures average word length

**5.5**

characters per word

## Sentence Length

Measures average sentence length

**8**

words per sentence

# AI Solution Documentation

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VAAL UNIVERSITY OF TECHNOLOGY

FACULTY: Applied and Computer Sciences

DEPARTMENT: Information and Communications Technology

SUBJECT: Business Analysis 3.2

SUBJECT CODE: AIBUY3A_2_2024

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YEAR: 2024

ASSESSMENT NAME:

AI Solution Documentation

ASSESSMENT DATE:

21 October 2024

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declare that the contents of this project represent our unaided work and that the project has not previously been submitted for academic examination towards any qualification. Furthermore, it represents our own opinions and not necessarily those of the Vaal University of Technology.

Signed M.T Date: 20.10.24

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1-AI Solution

In the fast-paced educational environment of today, freshman and senior students often handle a lot of campus life challenges as well as maintain good health for their school life; this could be so worrying at times but there is an AI solution which has come out clearly that it can help us solve these issues by coming up with an all-inclusive app meant for VUT students enabling them to succeed in their academic work besides class activities. Therefore, this artificial intelligence application will improve students' educational, social, and wellness experiences at university so that they can have a good time while studying at university.

This project aligns with the theme of "AI Solution for Industries" by targeting the education sector, a crucial industry where AI has the potential to create a significant positive impact.

AI Chatbot: The core of the app's AI functionality will be an intelligent chatbot capable of providing instant responses to student queries. This chatbot will assist with everything from academic counselling to mental health advice.

Machine Learning Approaches: The chatbot will use natural language processing (NLP) to understand and respond to student inquiries. Machine learning algorithms will help personalize recommendations based on user data, such as previous interactions or specific academic needs.

Data Utilization: The app will collect and analyse data related to student interactions, preferences, and needs. This data will be used to continually improve the AI's responses and the overall user experience.

2- Business Objectives

Objectives

strengthen VUT students through an AI application that provides improved social, physical, mental, and academic well-being tips.

To display information about student groups, clubs, and activities for socializing.

To promote healthy lifestyle living tips and to show available sports clubs.

Mental well-being is ensured through access to counselling services and real-time assistance with the help of an AI chatbot.

Enhance student academic performance by providing resources that supplement study groups, and access to academic advisors and private extra class tutors.

Navigation on campus should be facilitated with instructions provided by the AI chatbot.

Business Success Criteria

User Adoption Rate: The application should reach high adherence and user rates within the VUT community.

Improved Student Outcomes: Students' engagement in social, academic, and wellness activities should increase.

Positive Feedback: High rating of user satisfaction from feedback surveys about the usability, usefulness, and relevance of the app.

Ease of Navigation: The time spent on moving around campus and accessing key services is reduced.

Retention and Academic Performance: The actual improvement in student retention and academic performance is based on the use of the app.

Business Background

Institutional Context: VUT is a vibrant university with students making up a diverse base that needs help with managing academic, demands socially and in terms of wellness.

Current Challenges: Finding resources, groups, and services is challenging. Real-time support and guidance need to be improved for freshers and finalists.

Market Gap: There is currently no platform that would address the needs of VUT students under one easy-to-use app in the form of a comprehensive social, wellness, academic support, and campus navigation approach.

Requirements

Social group directories, event calendars, academic support resources and campus directions.

AI chatbot that responds in real-time for counselling and general student support.

The application should be secure; students' private data should not be tampered with.

The application should be highly reliable, especially the directions and chatbot aspects, and should load fast.

Constraints

Budget: R10 000 initial budget for marketing and creating the app.

Technology: The application should run on Windows and macOS operating systems.

Time of Launch: The application should go online at the start of the next academic year to ensure it achieves maximum impact.

Risks

Adoption Risk: If students are not aware of this app or the app does not meet the requirements, then it will lead to low adoption.

Security Risk: All sensitive information about different counselling conversations would come out if there is a data leak.

Technical Risk: directions are not completely accurate or the responses in AI chat are slow and may not be that responsive also.

Tools and Techniques

Tools

GitHub: for project track history, and collaborative work among group members.

Python: used for coding and creating the chatbot.

Natural Language Toolkit.

Google Text-to-Speech

Pygame.

Pandas.

TensorFlow.

Techniques

Use of Natural Language Processing (NLP) to allow the chatbot

to understand and accurately respond to student queries.

Speech recognition.

Text-to-Speech (TTS).

Machine Learning.

Time series analysis.

Performance tracking.

3- Problem definition

Students entering or nearing the end of their university education often struggle with a variety of challenges such as navigating campus resources, social inclusion, accessing academic support and managing their physical and mental health.

Relevance to Theme:

The problem statement aligns with the Al theme in the following ways:

Al-Powered Solutions: Implementing Al-driven chatbots, virtual assistants, or predictive analytics to enhance student navigation, resource discovery, and support.

Personalized Support: Leveraging AI to provide tailored guidance, recommendations, and interventions for students.

Data-Driven Insights: Utilizing AI to analyse student data, identify trends, and influence decision-making.

Automation and Efficiency: Implementing AI to streamline administrative tasks, reduce workload, and enhance resource allocation.

Intelligent Systems: Developing AI-powered systems to integrate fragmented support services, improve accessibility, and reduce barriers.

Benefits:

The proposed AI-powered chatbot will:

Enhanced navigation & resource discovery.

24/7 support and availability.

Improved academic performance and outcomes.

Reduced workload & academic conflicts.

Enhanced student support & engagement.

Yes, the benefits of an AI University Guide Chatbot can often be clearly[1] identified when reading the problem definition.

4. Poster

| | | | |
|---|---|---|---|
| 1. | ~~clearly~~ | Wordy sentences | Clarity |