Discovering Your Path: Tailored Major Recommendations for University of Tennessee Freshmen Using AI.

Presented by ***Lamis Ghoualmi***

UT Innovative Technologies Symposium, 2025

Plan

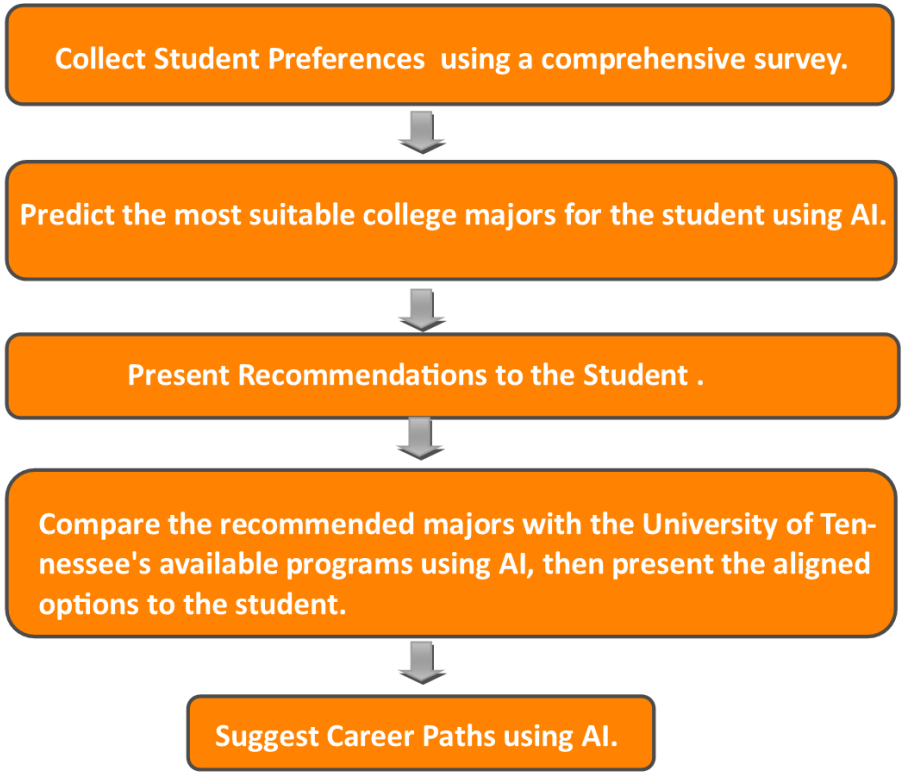
- Choosing a college major is a crucial and often difficult decision for freshmen, shaping their future careers and personal growth.
- Many freshmen feel confused and overwhelmed by the wide range of academic and career options.
- Traditional advising methods can feel impersonal, leaving students unsure about the best choice for their goals.

- Artificial Intelligence (AI) allows computers to perform tasks such as understanding language, solving problems, and learning from data. enables automation of tasks typically performed by humans, improving speed, efficiency, and accuracy while reducing errors.

- Large Language Models (LLMs) like ChatGPT are advanced AI tools that process text to understand and generate human-like responses. They can analyze information, answer questions, and offer advice.

- To address this challenge, we propose an innovative AI-powered system designed to provide tailored major recommendations for University of Tennessee students.
- The goal is to help students choose their majors by gathering insights about their interests, skills, and aspirations. Based on this information, personalized recommendations will be provided, empowering students to discover the best path for their future success.

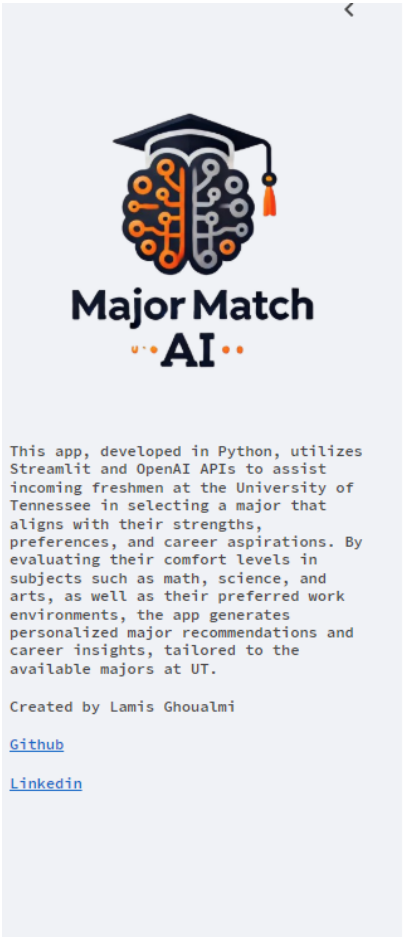
The Proposed Architecture

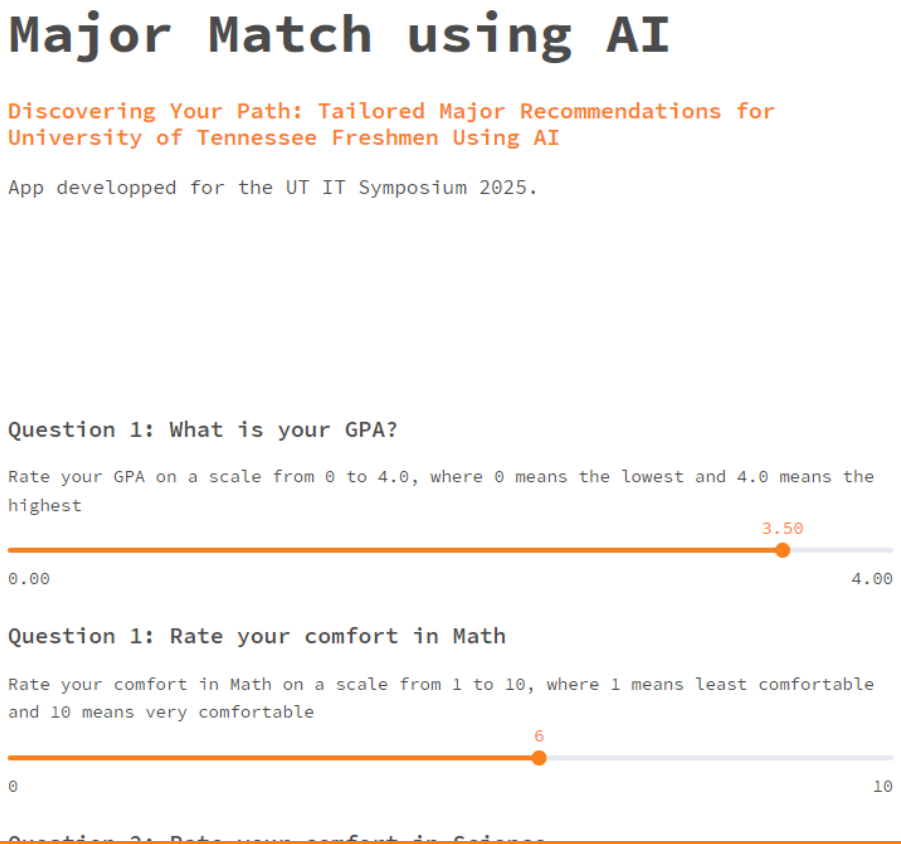


Parameters for the AI Model Configuration

Parameter	Description	Value
Model	Selects the AI model, such as "gpt-4" or "gpt-3.5-turbo," to determine response quality.	gpt-4
Temperature	Adjusts randomness; lower values for focused replies, higher for creative ones.	0.5
Max_tokens	Limits the number of words or tokens in the response.	1000
Top_p	Controls diversity by selecting the most likely words until reaching probability *p*.	0.9

Link to The app https://utsymposium2025majormatchai-lamisghoualmi.streamlit.app/.





Discover Your Path!

Recommended Majors

1. Information Technology/Computer Science: This major aligns well with the student's high interest in technology, comfort with math and science, and strong analytical skills.

2. Business Administration/Management: The student has shown a high interest in business/management, strong communication and presentation skills, and a preference for office-based jobs.

3. Health Information Management: This major combines the student's interest in healthcare and technology. It also benefits from their strong analytical skills and preference for office-based jobs.

4. Bioinformatics/Biotechnology: This field combines the student's comfort with science and interest in technology. It also requires strong analytical skills, which the student possesses.

5. Data Science/Analytics: This field would utilize the student's comfort with math, interest in technology, and strong analytical skills. It

List of Programs Available at the University of Tennessee for the Recommended Majors

Based on your previously recommended majors, the following programs from the list could be suitable:

1. Information Technology/Computer Science: This would align with "Computer Science" or "Information Science/Studies" from the list. Both of these programs would provide a solid foundation in technology and computer systems.

2. Business Administration/Management: This is directly listed as "Business Administration and Management". This program would provide the necessary skills for managing business operations.

3. Health Information Management: This could be closely related to "Registered Nursing/Registered Nurse" or "Audiology/Audiologist and Speech-Language Pathology/Pathologist". Both of these programs involve health care and could incorporate elements of information management.

4. Bioinformatics/Biotechnology: This could align with "Biology/Biological Sciences" or "Bioengineering and Biomedical Engineering" from the list. Both programs would provide a strong

If you're interested in exploring the wide range of majors and colleges at the University of Tennessee, check out the link below to discover all the available programs!

Explore UTK's Programs and Majors: Click Here

Recommended Jobs That a Student Could Pursue After Completing One of These Programs

Based on these programs, here are 10 potential career paths or job roles a student could pursue:

1. Software Developer/Engineer: This role involves designing, coding, and testing computer software or mobile apps. A degree in Information Technology/Computer Science would be beneficial for this career.

2. IT Project Manager: This role involves overseeing the planning, execution, and completion of technology projects. A degree in Business Administration/Management or Information Technology/Computer Science could be useful here.

3. Health Information Manager: This role involves ensuring that health information is complete, accurate, and protected. A degree in Health

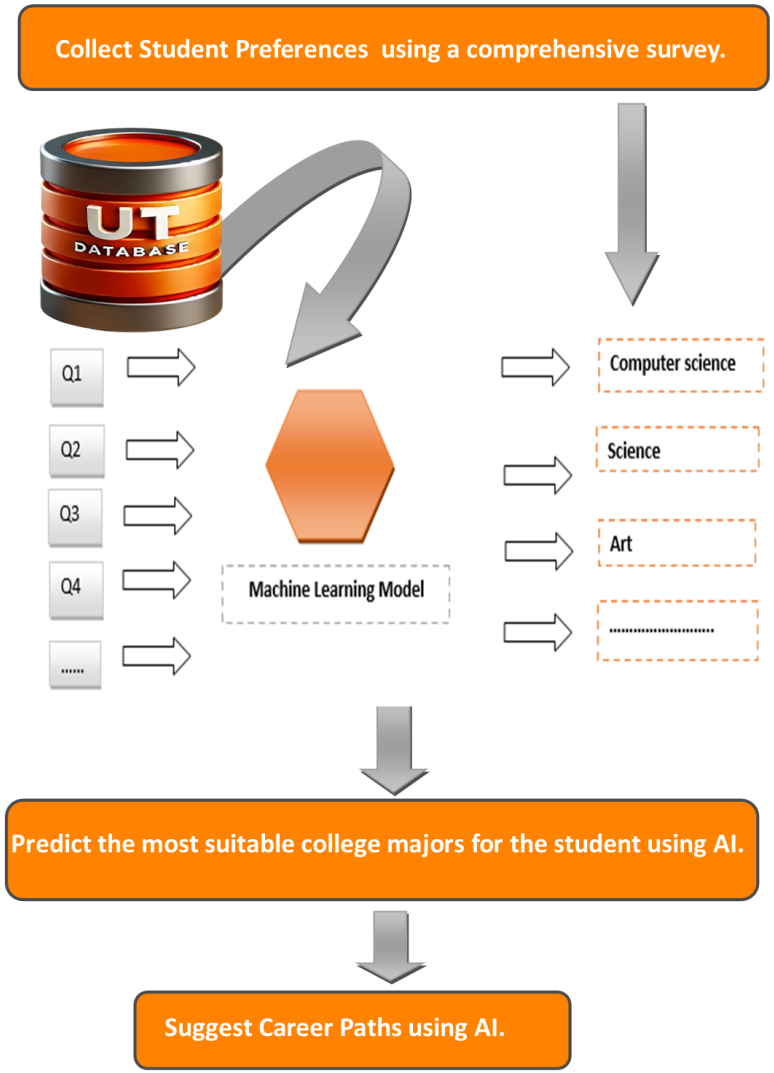
Plan

Impact and Benefits of Major Recommendations Using AI:

This project leverages data science and AI in higher education to improve decision-making and support student success, offering:

- **Better Decisions:** Students gain clearer insights into their strengths and career options.
- **Enhanced Advising:** Advisors deliver more personalized and data-driven guidance.
- **Long-Term Impact:** Students select majors aligned with their skills, reducing dropouts and increasing satisfaction.

Plan


Collect Student Preferences using a comprehensive survey.
UT
DATABASE
Q1
Q2
Q3
Q4
.....
Machine Learning Model
Computer science
Science
Art
.....
Predict the most suitable college majors for the student using AI.
Suggest Career Paths using AI.

Integrating Machine Learning and ChatGPT for Major Recommendations and Career Insights

1. **Data-Driven Foundation:** The project will begin by utilizing survey responses from UT students, which include details such as their academic preferences, comfort with specific subjects, skills, and chosen majors. This historical data serves as the foundation for training and testing the machine learning model.

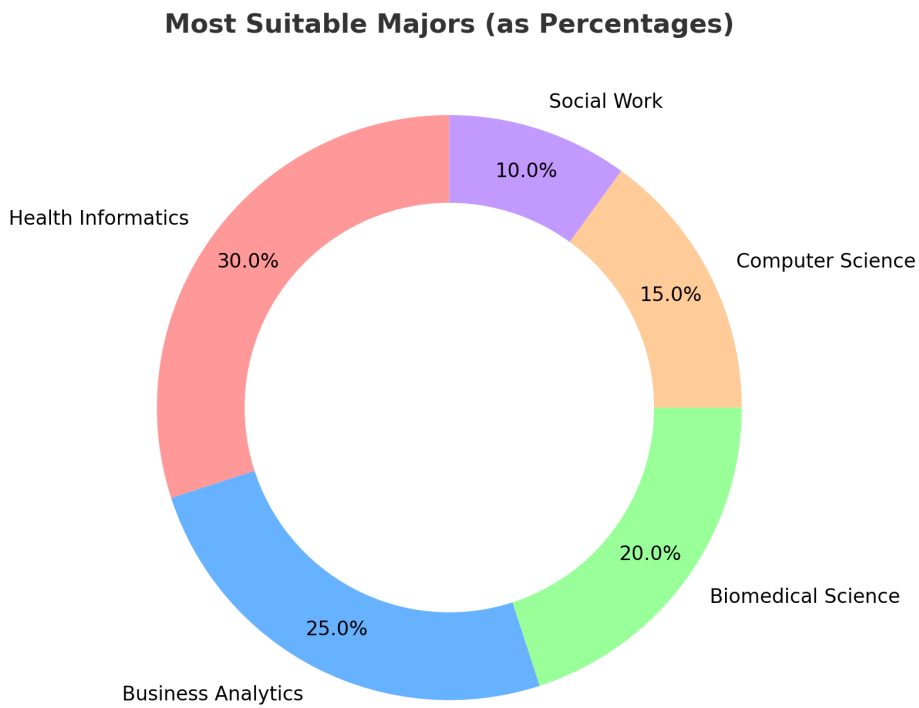
2. **Predict a major** Predict the most suitable majors for students based on their survey responses.

Integrating Machine Learning and ChatGPT for Major Recommendations and Career Insights

Enhanced Recommendations using AI (ChatGPT): We will use ChatGPT to organize the findings into an engaging, student-friendly format. This will include storytelling, insightful explanations, and illustrative visualizations to help students understand the reasoning behind the recommendations.

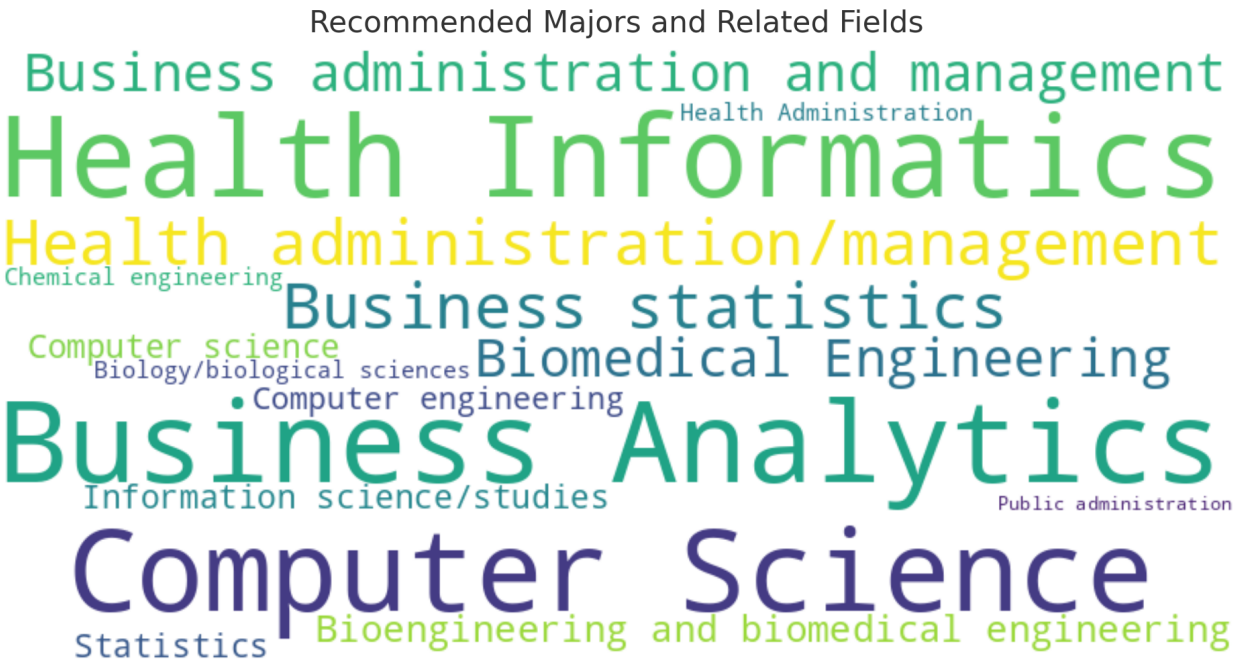
Integrating Machine Learning and ChatGPT for Major Recommendations and Career Insights

- A detailed explanation of why the suggested major aligns with the student's preferences, skills, and academic background.



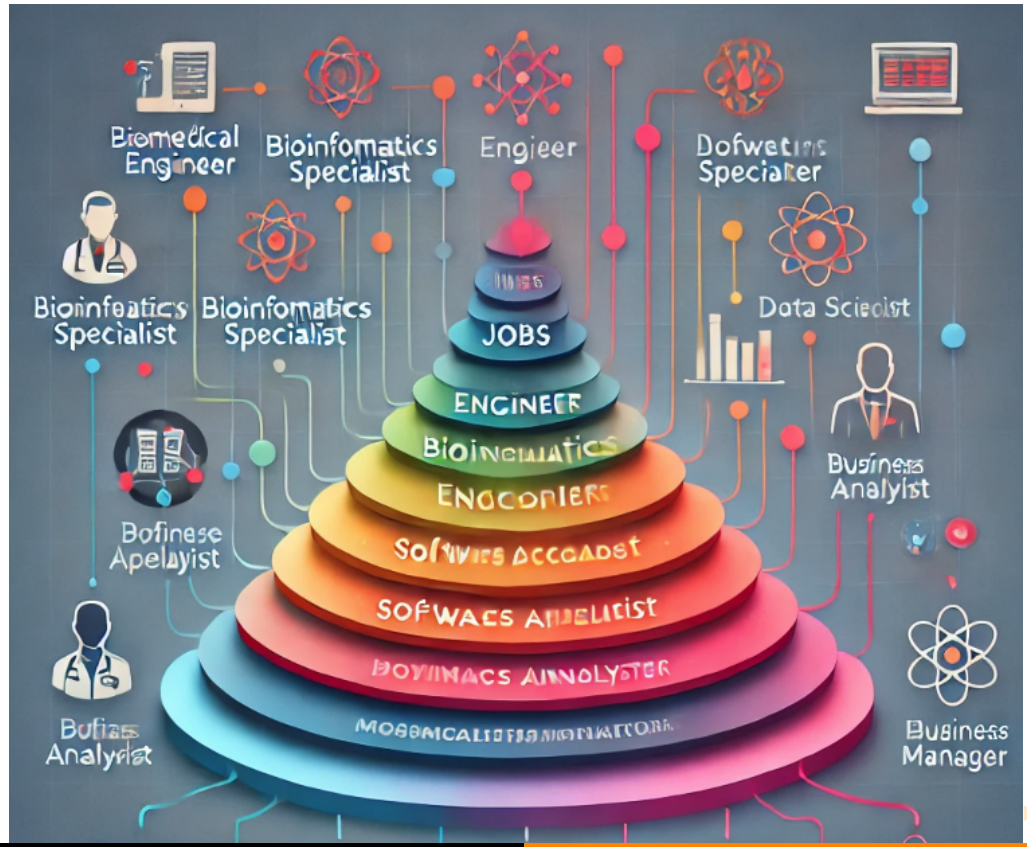
Integrating Machine Learning and ChatGPT for Major Recommendations and Career Insights

- A tailored list of relevant academic programs offered at the University of Tennessee.



Integrating Machine Learning and ChatGPT for Major Recommendations and Career Insights

- Recommendations for potential career paths and opportunities that align with the proposed major.



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