

Where Do I Go? – A Career Guidance Application

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Abstract

With the rapid growth of digital platforms, students and job seekers are exposed to an overwhelming number of career choices, educational pathways, and labor market information. The absence of a unified and intelligent guidance system often results in confusion, poor career decisions, and skill mismatch. To address this challenge, this paper presents Where Do I Go?, an AI-powered career guidance application that provides personalized career recommendations using machine learning techniques. The system analyzes user data such as academic background, interests, skills, and market demand to generate suitable career paths, perform skill gap analysis, and recommend learning resources. Artificial intelligence models are employed to match user profiles with education and employment opportunities using real-time labor market data. The platform integrates career counseling, skill development insights, and job trend analysis into a single solution. Experimental evaluation and user feedback demonstrate that the proposed system offers more accurate, holistic, and adaptive career guidance compared to traditional counseling methods and existing platforms.

Keywords: Artificial Intelligence, Machine learning, EdTech, Career Guidance, Skill Development, Career Counseling, Recommendations.

Introduction

In India, career selection is one of the most defining moments in a student's academic and professional journey. Every year, millions of students must decide between higher education, skill development, or immediate employment. According to demographic data, nearly 28% of India's population comprises students, a segment that represents more than 38.5 million students enrolled in higher education across India [7] as shown in Figure 1.

This includes students at undergraduate, postgraduate, and research levels (Ph.D., etc.). Despite this significant number, career counseling services remain fragmented and often inaccessible to many.

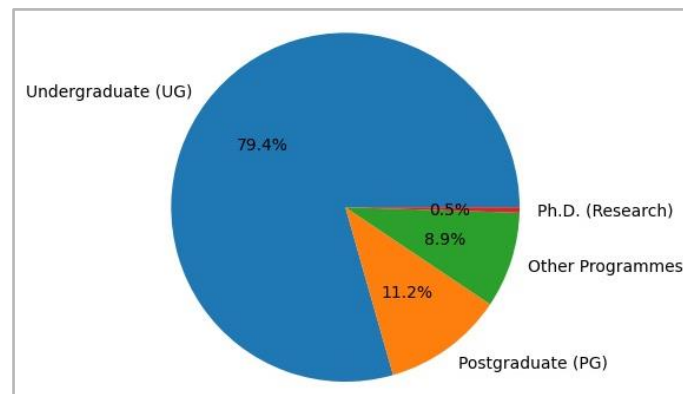


Figure 1: Enrollment Category (Source: AISHE 2019-20)

Traditional methods of career guidance include school counselors, personal networks, or private coaching centers. However, these services are often localized, costly, and unable to account for fast-changing industry demands. At the same time, online portals provide access to job listings but rarely offer personalized career roadmaps. The consequence is a mismatch between individual potential and available opportunities, leading to underemployment or misguided career choices.

The introduction of artificial intelligence in the education and employment sector has enabled the possibility of more personalized and adaptive career counseling. AI can analyze user profiles, identify skill gaps, and suggest learning or career opportunities with greater accuracy. Where Do I Go? was conceptualized to leverage these technologies to provide an end-to-end career navigation system.

This paper introduces the platform, its architecture, challenges, and business viability, showing how it can transform the way students and professionals make career decisions.

Literature Review

Career guidance research has evolved from psychological theory to AI-driven recommendation systems. John L. Holland's *Making Vocational Choices* [5] introduced the RIASEC model, emphasizing alignment between personality types and work environments, which remains foundational in modern career assessment systems.

Early computational approaches applied machine learning for structured prediction. Rajeswari and Natarajan [6] used decision trees to predict career paths from academic and personal data, while Talke et al.'s Adhyayan [3] improved accessibility through a mobile-based platform but offered limited AI personalization.

Recent studies focus on intelligent and hybrid recommendation models. Wan and Ye [2] proposed a deep learning framework that improved predictive performance, and Christine et al. [1] found hybrid adaptive recommender systems to be more accurate and user-satisfactory. EduKrishnaa by Ajgaonkar et al. [4] enhanced personalization through assessment-driven recommendations, though primarily centered on academics.

Existing platforms such as LinkedIn and Naukri.com focus on job-ready users, while Coursera and Unacademy emphasize skill learning without structured career mapping. Conventional counseling lacks scalability, and many AI research prototypes remain theoretical.

Table 1: Comparative study between different application

Platform / Category	Focus	Key Limitation	How “Where Do I Go?” Improves
LinkedIn	Networking & job search	Suited for users with clear goals; lacks career exploration tools	Enables career discovery before networking
Naukri.com	Job search & recruitment	Focuses on job-ready candidates; no aptitude guidance	Begins with aptitude analysis and long-term mapping
Coursera	Online courses & certifications	Course-based recommendations; no structured career roadmap	Aligns skill learning with predicted career path
Unacademy	Skill development & exam prep	Lacks holistic career planning	Integrates counseling with learning pathways
Conventional Career Counseling	Academic & career advice	Limited scalability and high cost	AI-driven, scalable, and affordable guidance
AI Research Prototypes	Personalized recommendation models	Mostly theoretical; limited real-world integration	Combines research into a unified practical platform

The literature highlights a gap between theory and integrated implementation; **Where Do I Go?** addresses this by combining vocational theory [5], predictive modeling [2][6], hybrid recommender systems [1], and scalable digital platforms [3][4] into a unified AI-driven career guidance ecosystem.

System Design of Web app “Where Do I Go?”

Use Case Diagram

A Use Case Diagram is a type of diagram in UML (Unified Modeling Language) that shows how users (actors) interact with a system to achieve specific goals.

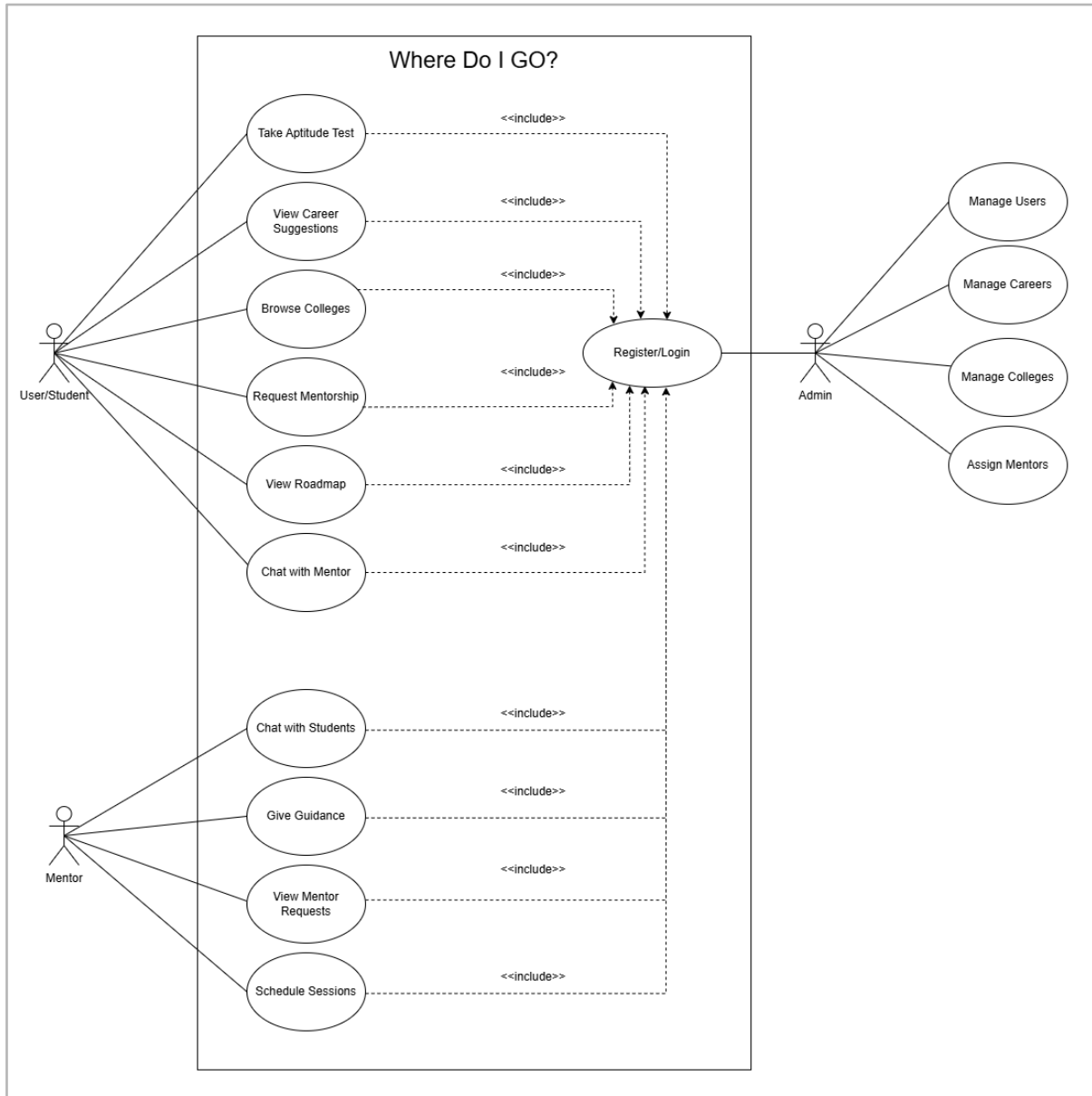


Figure 3: Use Case Diagram of Web App “Where Do I Go?”

Methodology

The “Where Do I Go?” web application follows a structured multi-layer architecture that transforms user aptitude responses into intelligent career recommendations using machine learning techniques. The methodology consists of four major layers: Input Layer, Data Preprocessing Layer, Machine Learning Layer, and Output Layer.

Input Layer

Aptitude Test Responses: Users complete an online aptitude assessment to evaluate logical, quantitate-

ve, verbal, and analytical abilities.

Personality and Skill Scores: The system collects personality traits and self-rated skill levels for career profiling.

Data Preprocessing Layer

Data Cleaning: Incomplete, inconsistent, or invalid responses are removed or corrected before processing.

Score Normalization: All aptitude and personality scores are scaled to a uniform range for fair comparison.

Trait Aggregation: Related responses are combined to generate structured trait-based features.

Machine Learning Model

Feature Vector Generation: Processed scores are converted into a numerical feature vector representing each user.

Clustering Algorithm: A clustering technique groups users into career domains based on similarity patterns.

Career Classification: The predicted cluster is mapped to suitable career categories and ranked accordingly.

Output Layer

Career Cluster Prediction: The system identifies the most suitable career domain for the user.

Recommended Career Paths: Top matching career options are displayed based on model prediction.

Personalized Dashboard Report: A visual report presents strengths, match percentage, and improvement suggestions.

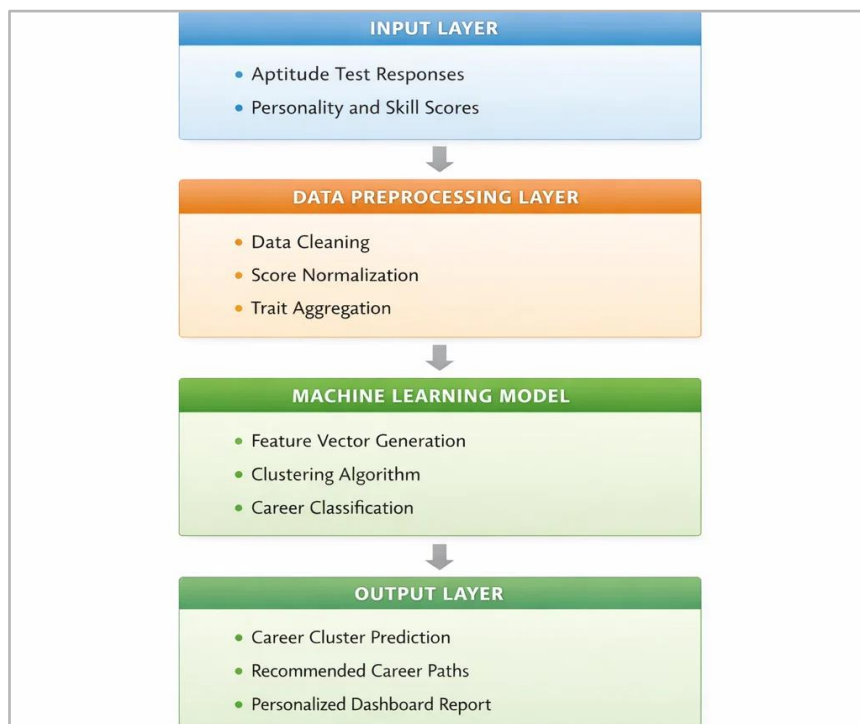


Figure 2: System Flow of Web App “Where do i go?”

Features of Web App “Where Do I Go?”

The platform is designed as a mobile-first solution to ensure accessibility across devices. Its primary features include:

Tailored Career Guidance: By analyzing user inputs such as skills, interests, academic records, and long-term goals, the AI engine generates customized career paths. These may include higher education, professional courses, or direct employment.

Comprehensive Student Resources: The system curates information on universities, entrance examinations like GATE, and vocational training opportunities. Unlike existing portals, these resources are consolidated in one location.

Expert Career Support: Students can connect with certified career coaches for personalized counseling. Support is extended for resume building, mock interviews, and career transition planning.

Skill Development Insights: The application identifies skill gaps by comparing user profiles with labor market requirements. It then recommends appropriate courses, training programs, or certifications.

Job Market Trends and Matching: The platform integrates job data feeds to provide real-time insights into hiring trends, in-demand skills, and emerging industries.

Tech Stack for Web App “Where Do I Go?”

Table 2: Tech Stack of Web App “Where Do I Go?”

Category	Technology	Description	Implementation
Frontend	Next.js	React-based web framework	Built optimized UI with routing and performance handling
	React	JavaScript UI library	Developed reusable components for tests, dashboard, and results
	Tailwind CSS	Utility-first CSS framework	Designed responsive and consistent layouts
Backend	Firebase	Backend-as-a-Service platform	Managed authentication and backend services
	Cloud Firestore	NoSQL cloud database	Stored user data and career predictions
	Firebase Hosting	Web hosting service	Deployed the application securely
Machine Learning	scikit-learn	Python ML library	Implemented clustering/classification algorithms
	NumPy & pandas	Data processing libraries	Performed preprocessing and feature preparation

ML Training Database	SQLite	Lightweight relational database	Stored training vectors for model development
Artificial Intelligence	OpenAI API	AI model API service	Generated personalized career insights and summaries
Development Tools	Git & GitHub	Version control platform	Managed code and collaboration

Business Model for Web App “Where Do I Go”

The sustainability of EdTech platforms depends on robust revenue models. Where Do I Go? has been designed with multiple streams:

Table 3: Revenue Streams

Revenue Stream	Description	Target Customers	Pricing Model
Subscription Plans	Premium AI features, analytics, expert sessions	Individual students	Monthly / Yearly subscription
Institutional Licensing	Platform access for schools & colleges	Educational institutions	Annual licensing fee
Expert Consultation	One-on-one career counseling sessions	Students & professionals	Per-session commission model
Advertisements & Partnerships	Sponsored listings & collaborations	Universities, training centers, job portals	Commission / Ad-based revenue

Financial projections suggest that with an active user base drawn from India’s large student population, the application can reach a break-even point within 2–3 years. Beyond this, international expansion and partnerships with global EdTech firms can further increase profitability.

Future Scope

Competition: Established platforms make market entry challenging, requiring strong branding and clear differentiation.

Trust Building: Users may hesitate to rely on a new platform for career decisions, making credibility, certifications, and transparency essential.

User Retention: Since career exploration is occasional, sustained engagement requires gamification, progress tracking, and updated content.

Data Freshness: Rapid changes in career and job markets demand continuous data updates to maintain relevance.

Partnerships: Building collaborations with institutions and industry experts takes time and established credibility.

Conclusion

Where Do I Go? represents an innovative step toward democratizing career counseling through artificial intelligence. By consolidating academic pathways, skill-building opportunities, and job market insights, it addresses the fragmentation prevalent in current solutions. With its robust business model and AI-driven adaptability, the platform has potential to scale nationally and internationally.

Future work includes deeper integration of AI for predictive analytics, expansion of skill gap databases, and partnerships with recruitment agencies. By reducing uncertainty and enhancing employability, Where Do I Go? is positioned to become a key player in shaping the future of career development.

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