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GOALGUIDER: AI-POWERED CAREER ROADMAP GENERATOR

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Abstract: Career planning is a crucial yet often confusing process for students, especially those at the school level who are uncertain about the path to achieve their dreams. The GoalGuider project aims to assist such students by generating personalized career roadmaps based on their current academic status and future career goals. Using an interactive chatbot interface, the system collects basic information such as the student's name, present academic level, and desired profession and then provides a step-by-step roadmap outlining what subjects, courses, and skills are needed. Developed using Python and the Django framework with AI API integration, GoalGuider offers a simple and effective digital solution for individualized career guidance, bridging the gap between ambition and actionable planning. The system further incorporates a streak-based progress tracking mechanism to keep users motivated and consistent throughout their learning journey.

Index Terms - Artificial Intelligence, Career Planning, Personalized Roadmap, Chatbot Interface, Python, Django Framework, Streak-based Progress Tracking, Career Guidance System.

I. INTRODUCTION

Goal Guider is an AI-powered career guidance and progress tracking platform designed to help students and professionals achieve their career goals in a structured way. In an era where career paths are increasingly complex and options are overwhelming, students often lack a clear, personalized direction to guide their academic and professional choices. This results in poor subject selection, wasted effort on irrelevant skills, and significant confusion about the future.

GoalGuider addresses these challenges by providing personalized career roadmaps based on user goals, skills, and preferences, and breaking them into manageable, actionable tasks. By combining artificial intelligence with a streak-based progress system, GoalGuider motivates users to stay consistent, focused, and confident throughout their learning journey. The system collects information about the student's current academic level and desired profession through an interactive chatbot interface and generates a customized, step-by-step career roadmap.

This paper proposes **GoalGuider: An AI-Powered Career Roadmap Generator** that replaces generic career counselling with a **smart, personalized digital platform**. The system enables students to register, provide their academic background and career aspirations, and receive a structured roadmap. The platform also tracks daily progress through a streak-based mechanism, encouraging discipline and consistency in career development.

The proposed system aims to provide a **reliable, scalable, and user-friendly career guidance solution** suitable for school students, college students, and working professionals seeking career transitions.

II. EXISTING SYSTEM AND PROBLEM STATEMENT

Several platforms currently exist that attempt to address career guidance and learning. Coursera and LinkedIn Learning offer online courses and certifications but do not provide personalized, step-by-step career roadmaps. CareerGuide.com provides career counselling and assessments but lacks AI-based interactive guidance. Coach.me focuses on habit tracking but has no integration with career planning. None of these platforms offer a unified solution combining AI-driven roadmap generation, interactive chatbot assistance, task management, and streak-based progress tracking.

A. Problem Statement

Students often lack clear and personalized career guidance, resulting in poor subject or course choices and confusion about future paths. Many students waste time learning irrelevant or non-essential skills because there is no simple tool that provides a structured career roadmap based on individual goals. The absence of intelligent, real-time guidance leaves students demotivated and without a clear path toward their career aspirations.

B. Drawbacks of Existing Systems

No personalized, step-by-step roadmap is provided for achieving a specific career goal. Existing platforms lack AI-based guidance or interactive chatbot support for real-time user assistance. There is no unified tracking system combining learning progress with career planning. No streak-based motivation mechanism exists in current systems to encourage daily task completion and consistency in skill development.

III. PROPOSED SYSTEM AND ARCHITECTURE

The proposed GoalGuider system follows a **modular layered architecture** designed to ensure scalability, reliability, and efficient AI-driven career guidance. The architecture consists of four major layers:

A. User Interface Layer

The user interface layer provides the interaction platform for students and users. It is implemented using **HTML, CSS, and JavaScript** to create responsive web interfaces. Users can register, log in, interact with the AI chatbot, view their personalized roadmap, and track daily progress through an intuitive dashboard. The interface is designed to be simple and accessible for users of all technical backgrounds.

B. Application Processing Layer

The application layer implements the **core system logic**, including user authentication, career profile management, task scheduling, streak tracking, and chatbot interaction handling. Built using the Python Django framework, this layer ensures secure and efficient processing of all user requests and correctly routes them to the appropriate system modules.

C. AI Processing Layer

The AI processing layer is the core intelligence of the system. This layer includes the Personalized Career Roadmap Generation module using AI APIs and natural language processing, the Interactive Chatbot module for real-time guidance, and the Progress Analytics module that evaluates user task completion patterns. The AI models analyze student data and career goals to generate actionable, step-by-step career roadmaps tailored to each individual user.

D. Database Layer

The database layer manages persistent storage of all platform data. The system uses a **SQL relational database** to store user profiles, career goals, generated roadmaps, task completion records, and streak data. The database ensures secure, structured storage while supporting efficient data retrieval for real-time system operations.

IV. IMPLEMENTATION

GoalGuider is implemented as a web-based application that integrates a frontend interface with a Django backend server and an AI module. The system collects user career details through an interactive chatbot, processes them using AI logic to generate a personalized roadmap, and tracks task completion through a streak mechanism. User progress and interactions are stored in a relational database to ensure consistency and scalability.

A. User Registration and Authentication Module

This module allows students and professionals to register and access the system securely. New users provide their name, email, and password to create an account stored in the database. Returning users are authenticated through credential validation. Role-based access ensures each user can only access their own personalized content and progress data within the platform.

B. Career Profile Input and AI Roadmap Generation Module

After login, users interact with the AI chatbot to provide their career goal, current academic level, skills, and preferences. This data is saved to the Career_Profile table. The AI module fetches these details, processes them through an AI API, and generates a personalized career roadmap comprising subjects to study, skills to acquire, certifications to pursue, and a recommended timeline. The roadmap is stored in the database and displayed to the user through the dashboard interface.

C. Task Completion and Streak Tracking Module

Each roadmap is broken into daily tasks. When a user marks a task as completed, the system increments their streak count. If a task is skipped for a day, the streak resets to zero. This module updates the progress dashboard in real time, providing users a visual overview of their consistency and motivating them to maintain their streak day after day.

D. AI Chatbot Interaction Module

Users can interact with the AI assistant at any time to ask questions about their roadmap, request updates to their career goals, or seek guidance on specific topics. The chatbot receives the user query, forwards it to the AI module, and displays the AI-generated response on the interface. This provides continuous, on-demand career support throughout the user's entire learning journey.

V. RESULTS

The GoalGuider system was evaluated through comprehensive test case execution covering all major modules. Ten functional test cases were executed to validate the correctness and reliability of the system. All test cases passed successfully, confirming that the system behaves as expected across user registration, authentication, career profile management, AI roadmap generation, task tracking, streak update logic, and AI chatbot interaction.

table 1: test case results summary

S.No	Test Case Description	Expected Output	Actual Output	Result
1	User Registers With Valid Details	Account Should be Created	Account Created Successfully	Pass
2	User Login With Valid Credentials	User Should be Logged In	Login Successful	Pass
3	User Login With Invalid Credentials	Login Should Fail	Error Message Displayed	Pass
4	Submit Career Details	Details Should be Saved	Career Profile Saved	Pass
5	Generate AI Career Roadmap	Personalized Roadmap Should be Generated	Roadmap Generated Successfully	Pass
6	Complete a Daily Task	Task Status Should Update	Task Marked as Completed	Pass
7	Daily Task Completed (Streak Update)	Streak Should Increase by 1	Streak Incremented	Pass
8	Skip Task for a Day	Streak Should Reset	Streak Reset to Zero	Pass
9	View Progress Dashboard	Progress Details Should Appear	Progress Displayed Correctly	Pass
10	AI Chat Interaction	AI Should Respond to Query	Response Received Successfully	Pass

figure 1.1: User Login Page

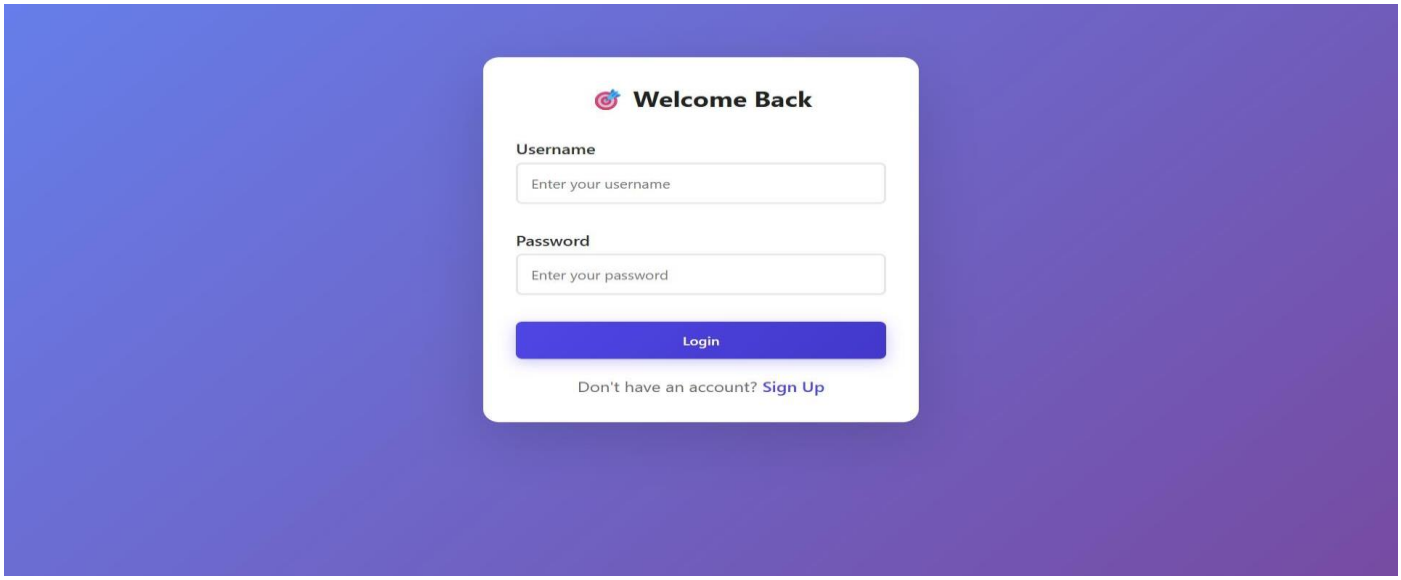
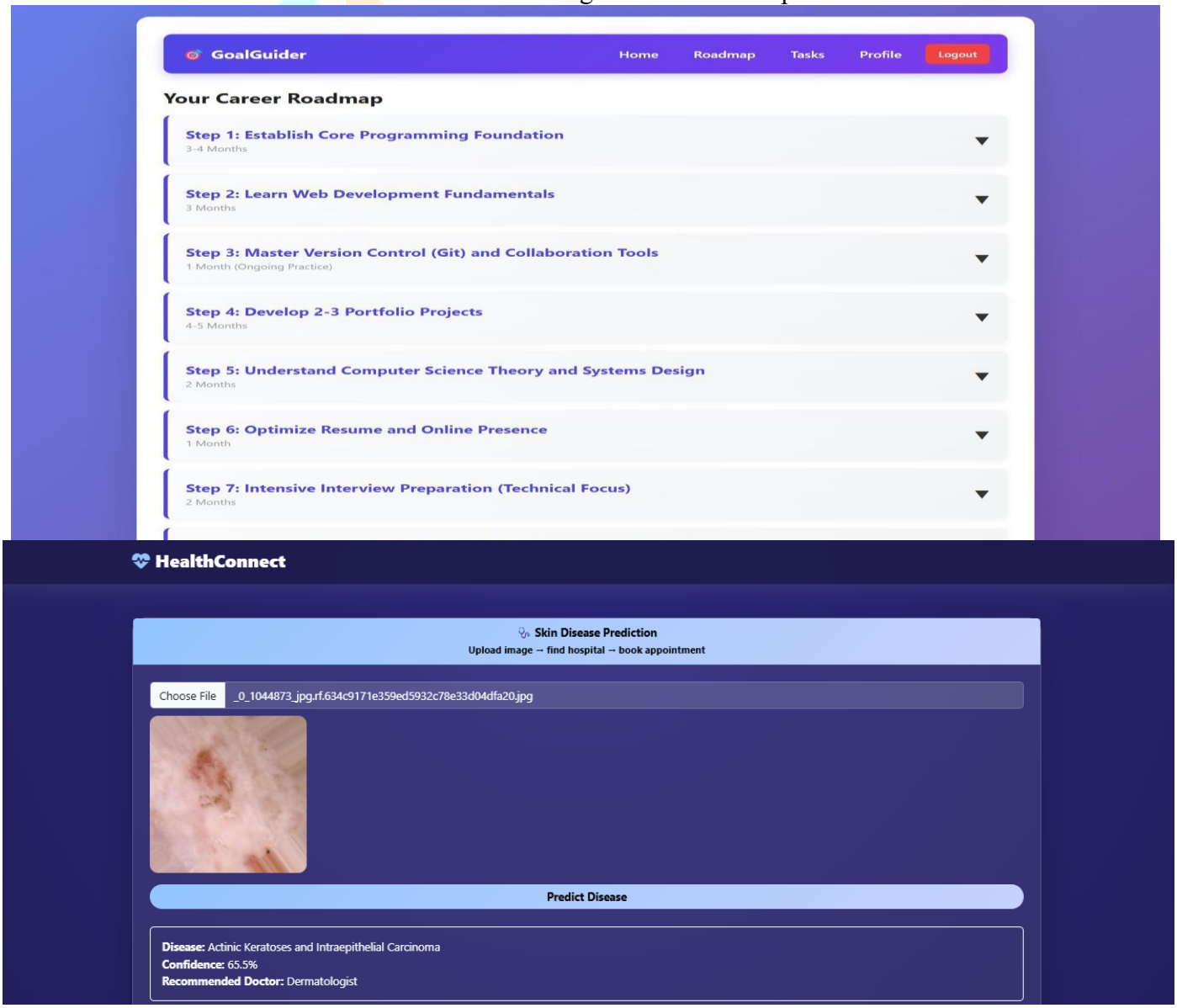


figure 1.2: Road Map



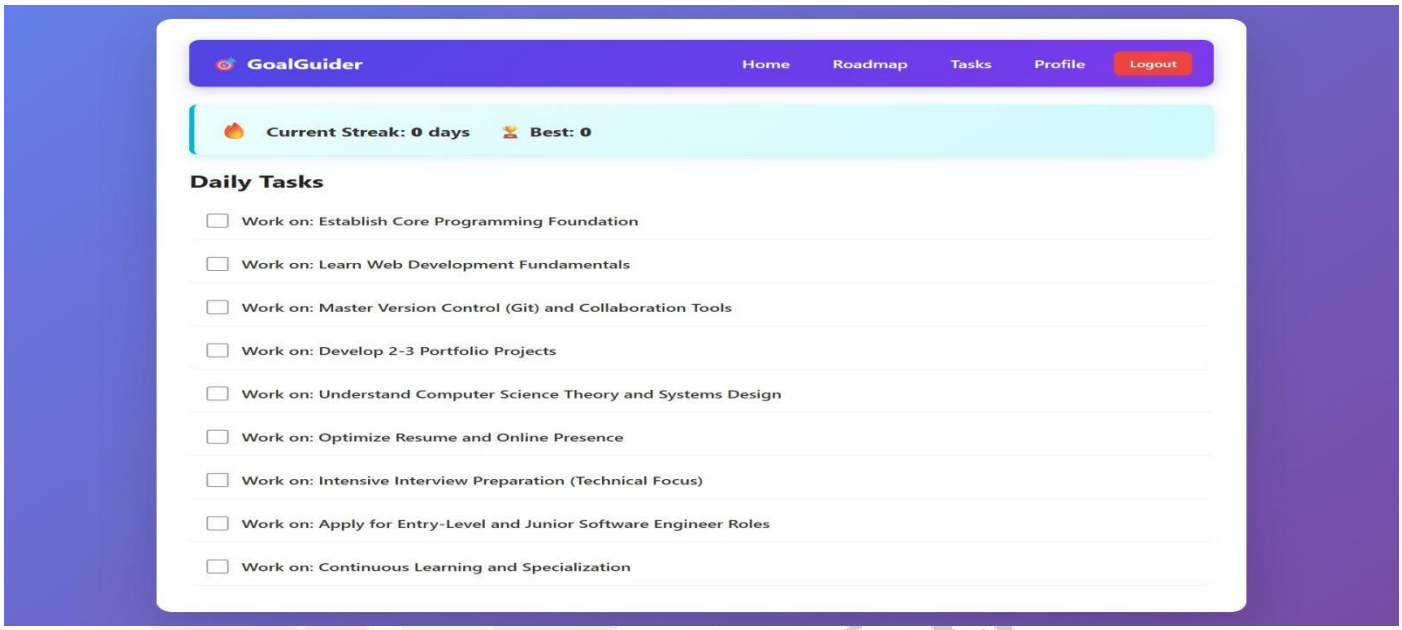
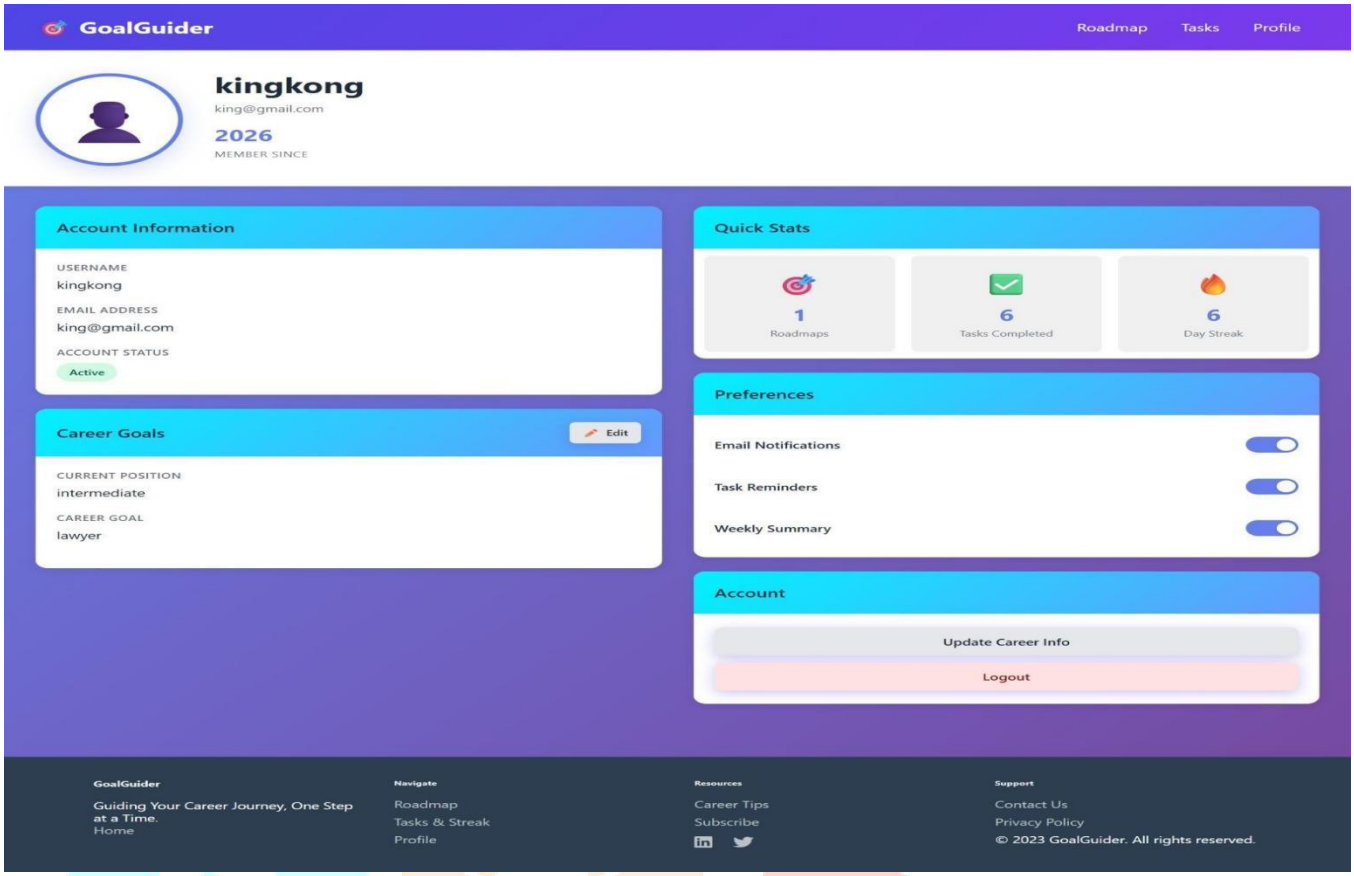


figure 1.4: Profile Page



VI. CONCLUSION

This paper presented **GoalGuider: An AI-Powered Career Roadmap Generator**, a comprehensive digital career guidance platform designed to simplify career planning and improve student engagement. The proposed system integrates artificial intelligence for personalized roadmap generation along with an interactive chatbot interface and a streak-based progress tracking mechanism. By combining AI-driven guidance with structured task management, the platform provides users with a smart, consistent, and effective career development support system.

The implementation demonstrates significant improvements in terms of personalization, user motivation, and structured learning. All ten test cases passed successfully, validating the system's correctness and robustness. The streak-based progress mechanism successfully prevents task neglect while ensuring efficient use of study time. The system architecture ensures scalability, allowing it to handle a growing number of users without performance degradation.

Future work will focus on integrating **real-time mentorship matching**, **multilingual chatbot support**, and **industry-specific roadmap templates** to enhance accessibility for diverse student populations. Further improvements may include adaptive machine learning models that adjust roadmaps based on user progress patterns and integration with job portals for real-time career opportunity matching.

Overall, the GoalGuider system demonstrates that artificial intelligence can significantly enhance career guidance and student development by providing intelligent, scalable, and accessible digital planning solutions.

VII. LITERATURE SURVEY

The application of artificial intelligence in career guidance and educational planning has been explored in several recent studies. Researchers have demonstrated the effectiveness of AI-driven recommendation systems in improving student decision-making, personalized learning, and career outcome prediction. This section reviews key research works that influenced the design and development of the proposed GoalGuider system.

Kumar et al. (2021) developed an AI-based career recommendation system that utilizes machine learning algorithms to analyze user interests, academic performance, and skill sets to suggest appropriate career paths. Their research demonstrated that AI models can assist students in making informed career decisions based on data-driven insights rather than generic advice.

Patel and Shah (2020) proposed a personalized learning management system that breaks down educational goals into smaller, achievable milestones. Their system highlighted the importance of

structured task decomposition and progress tracking in improving student consistency and goal completion rates, concepts directly reflected in GoalGuider's streak-based task mechanism.

Rajpurkar et al. (2019) introduced deep learning-based educational assessment tools that adapt to individual learner performance. Their work highlighted the potential of adaptive AI systems to provide customized feedback and course recommendations, inspiring GoalGuider's approach to personalized roadmap generation based on individual user profiles.

Ghosh and Banerjee (2022) explored the use of conversational AI chatbots in educational guidance platforms. Their study demonstrated how natural language processing-based chatbots can effectively collect student information and provide personalized academic recommendations, supporting the chatbot-based user interaction design adopted in GoalGuider.

Li et al. (2023) conducted research on gamification techniques in learning applications, specifically investigating streak-based motivation systems. Their findings indicated that streak mechanisms significantly improve daily engagement, consistency, and long-term goal achievement among students, directly validating GoalGuider's core progress tracking design.

These studies collectively demonstrate that artificial intelligence can enhance career guidance services by providing personalized recommendations, structured goal decomposition, conversational support, and gamified motivation. The GoalGuider system builds upon these contributions by integrating all these elements into a unified, AI-powered career roadmap generation platform.

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