AI CAREER PATH FINDER

A project Report
Submitted in partial fulfilment of
The requirements for the award of the

BACHELOR DEGREE
In
Computer Application
From
University of Calicut

Submitted By

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Carried out at

Department of Computer Application

Safa College of Arts & Science
POOKKATTIRI

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Safa College of Arts & Science

POOKKATTIRI

Certificate

This is to certify that the project report entitled **"AI CAREER PATHFINDER"** is a record of the work done by **HUDHA REEM (SFAXBCA006), AYSHA NEHALA (SFAXBCA002), MUFEEDHA (SFAXBCA039), MUHAMMED SHAHID K P(SFAXBCA026)** under our supervision and guidance. The report has been submitted in partial full fulfilment of the requirement for award of the Bachelor Degree in Computer Application from the University of Calicut for the year 2026.

Submitted for the University Exam on:

Head of the department: ***Project coordinator:***

Submitted to the project and viva-voce examination held on -----/-----/----

Declaration

I hereby declare that the project report entitled "**AI CAREER PATHFINDER**" was carried out by me as the Bachelor Degree Project in Computer Application under the guidance and supervision of **Mrs. ASIA P** Head of Department of Computer Application, Safa College of Arts & Science and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgement has been made in the text.

Date: Signature:
Place

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Acknowledgement

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Abstract

AI Career Pathfinder is an intelligent and personalized career guidance system designed to assist students in making informed decisions about their future. Traditional career counseling methods are often generic and fail to consider the individual's skills, interests, and evolving job market trends. This project aims to bridge that gap by leveraging Artificial Intelligence to provide customized career suggestions, learning paths, college course recommendations, and resume- building tools. Through an AI-powered chatbot, the system offers real-time guidance, career comparisons, and progress tracking, helping users to navigate their journey from education to employment with clarity and confidence.

CONTENTS

INDRODUCTION

Choosing the right career path is one of the most critical decisions in a student's life, yet it is often influenced by limited information, societal pressure, or generic guidance that fails to address individual potential. With rapid advancements in technology and the constant evolution of the job market, students require dynamic, personalized, and data-driven career guidance rather than traditional one-size-fits-all counseling approaches.

AI Career Pathfinder is an intelligent and personalized career guidance system designed to empower students with informed and confident career decisions. By leveraging Artificial Intelligence, the system analyzes a student's skills, interests, academic background, and market trends to deliver tailored career recommendations. It goes beyond simple suggestions by offering structured learning paths, relevant college course recommendations, and resume-building support aligned with chosen career goals.

The platform features an AI-powered chatbot that provides real-time guidance, career comparisons, and continuous progress tracking, making career planning an interactive and engaging process. By integrating personalized insights with current industry demands, AI Career Pathfinder acts as a comprehensive bridge between education and employment, helping students navigate their career journey with clarity, confidence, and future readiness.

SYSTEM ANALYSIS

The **AI Career Pathfinder** system is designed to overcome the limitations of traditional career guidance methods by providing an intelligent, personalized, and scalable solution for students. The system analysis focuses on understanding existing challenges, defining system requirements, identifying key users, and outlining the functional and non-functional aspects of the proposed solution.

Existing system

The existing career guidance system relay on traditional traditional and semi-digital approaches, which include:

Manual Career Counseling

- Guidance provided by teachers or career counselors.
- Requires physical presence and scheduled sessions.
- Limited reach and high cost.

Generic Online Career Tests

- Fixed Questionnaires with no adaptability
- One-time assessment without follow up guidance.
- Broad and non-personalise career suggetions.

Static Guidance Methods

- No integration with learning resources or job search
- No tracking of user progress or skill development
- Limited exposure to emerging and non-traditional careers

Drawbacks of existing systems

- Same career advice for all users
- Lack of personalization and adaptability
- No real-time career support
- High dependency on manual interpretation
- No progress tracking or learning guidance

- Limited scalability and accessibility

Proposed System

The proposed system introduces an AI-driven, intelligent career guidance platform that provides personalized, continuous, and interactive career support through a mobile application.
The system analyzes user data and quiz responses using Grock AI(Llama 3.1) to generate accurate career recommendations. It also includes an AI career assistant chatbot, personalized learning paths, job discovery, resume handling and progress monitoring. Secure authentication and admin management ensure system reliability and scalability.

Advantages of proposed system

- Personalized career recommendations using AI
- Adaptive career assessment quizzes
- 24/7 AI chatbot career counseling
- Integrated learning paths and skill development
- Job discovery aligned with career recommendations
- Progress tracking and analytics
- Secure and scalable architecture
- Cross-platform mobile accessibility

MODULE DESCRIPTION

1.User Module

- User registration and secure login using JWT authentication
- Profile creation and management (education, skills, interests, strengths, weaknesses)
- AI-generated adaptive career assessment quizzes
- View personalized career recommendations with confidence scenes
- Access learning paths and curated resources
- Track leaning and career progress
- Resume data management
- Job discovery with external redirection

2.Admin module

- Admin authentication and authorization
- User management (view, update, delete users)
- Career and learning path management
- Monitor quiz results and career recommendations
- System analytics and usage reports
- Error monitoring and system maintenance

3.AI Career Recommendation Module

- Analyze user profile and quiz responses
- Match users with suitable career paths
- Generate career confidence scores
- Recommend required skills and growth paths
- Store and retrieve recommendations history
- Continuosly improve suggestions based on user activity

4. AI Career assistant chatbot module

- Real time AI powered chatbot for career guidance
- Context aware responses based on user profile and history
- Answer career related queries and suggest next steps
- Provide learning and skill recommendations
- Maintain conversation history for continuity
- 24/7 availability

FEASIBILITY STUDY

The feasibility study of AI Career Pathfinder evaluates the practicality and viability of developing and implementing the proposed system. It analyzes the system from technical, economic, operational, and legal perspectives to ensure that the project can be successfully executed and sustained

1. Technical Feasibility

The proposed system is technically feasible with current technologies and tools. Artificial Intelligence, Machine Learning, and Natural Language Processing techniques can be effectively used to analyze user data, generate personalized career recommendations, and power the chatbot interface. Cloud computing platforms enable scalable data storage and processing, while modern web and mobile frameworks support interactive user interfaces. The required hardware and software resources are readily available, and the system can be integrated with external APIs for course listings, job market trends, and resume templates.

2. Economic Feasibility

AI Career Pathfinder is economically viable as it significantly reduces the cost associated with traditional career counseling services. Once developed, the system can serve a large number of users with minimal additional cost. Open-source tools and cloud-based services can be utilized to lower development and maintenance expenses. The system also has potential for monetization through institutional licensing, premium features, or partnerships with educational platforms, making it financially sustainable in the long term.

3. Operational Feasibility

The system is operationally feasible as it is designed to be user-friendly and accessible to students with varying levels of technical expertise. The AI-powered chatbot simplifies interaction by providing instant guidance and responses. Minimal training is required for users, and career counselors or administrators can easily monitor progress and insights through dashboards. The automated nature of the system ensures smooth day-to-day operation with reduced manual intervention.

SYSTEM REQUIREMNETS SPECIFICATION

The AI Career Pathfinder system specification defines the detailed technical and operational requirements of the proposed system. It outlines the hardware, software, functional, and non-functional specifications necessary for successful development and deployment.

- Hardware requirments
- Software Requirements

Hardware Requirements

- Processor: Multi-core CPU (Intel i5/i7 or equivalent)
- RAM: Minimum 8 GB (16 GB recommended)
- Storage: Minimum 100 GB SSD
- Network: High-speed internet connectivity

Software Requiremnets

- **Operating System : windows 7**
- **IDE : Visual Studio Code, Android Studio**
- **Frond End : Flutter**
- **Back End : ASP.NET Core**
- **Database : MySql**
- **Other : Grock AI(Llama 3.1)**

ROLE OF AI

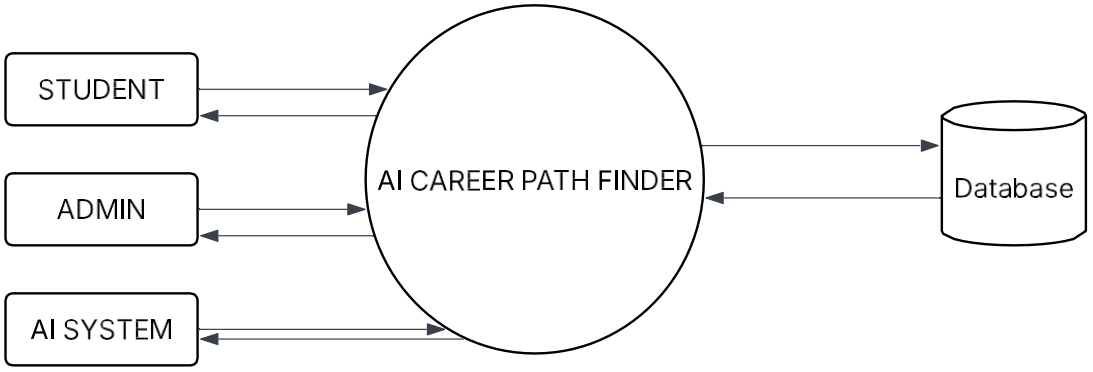
Feature	AI Technique Used
Career suggestions	Machine Learning classification & pattern recognition
Resume building	NLP (Natural Language Processing)
Learning path recommendations	GPT-based reasoning and LLMs
Chatbot Q&A	AI Chatbot (like GPT/LLM)
Progress tracking & feedback	Data analysis & adaptive intelligence

SYSTEM DESIGN

The AI Career Pathfinder system design describes the overall structure, components, data flow, and interactions within the system. It provides a clear blueprint for implementing an intelligent, scalable, and user-centric career guidance platform.

DATA FLOW DIAGRAM(DFD)

LEVEL 0



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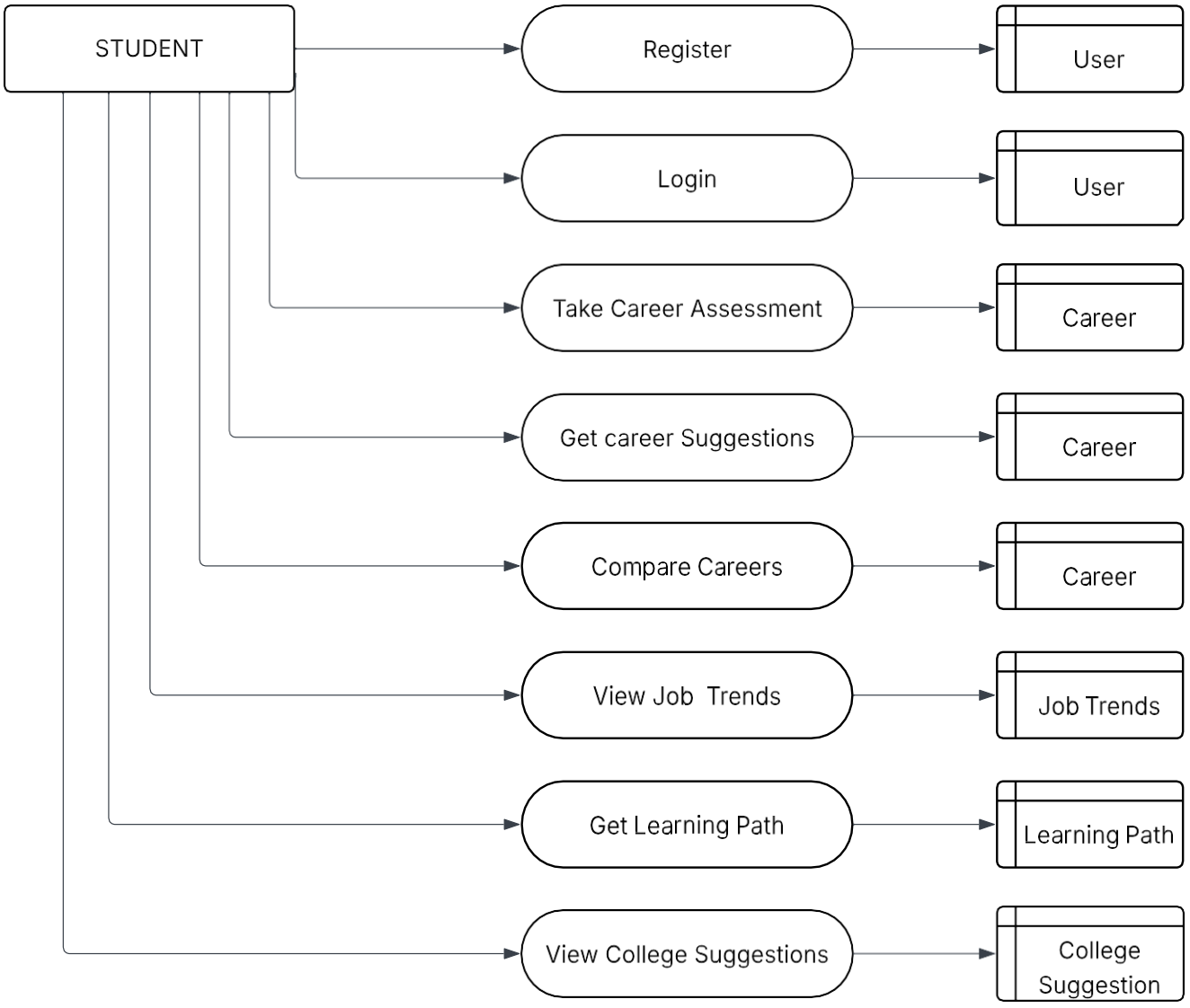
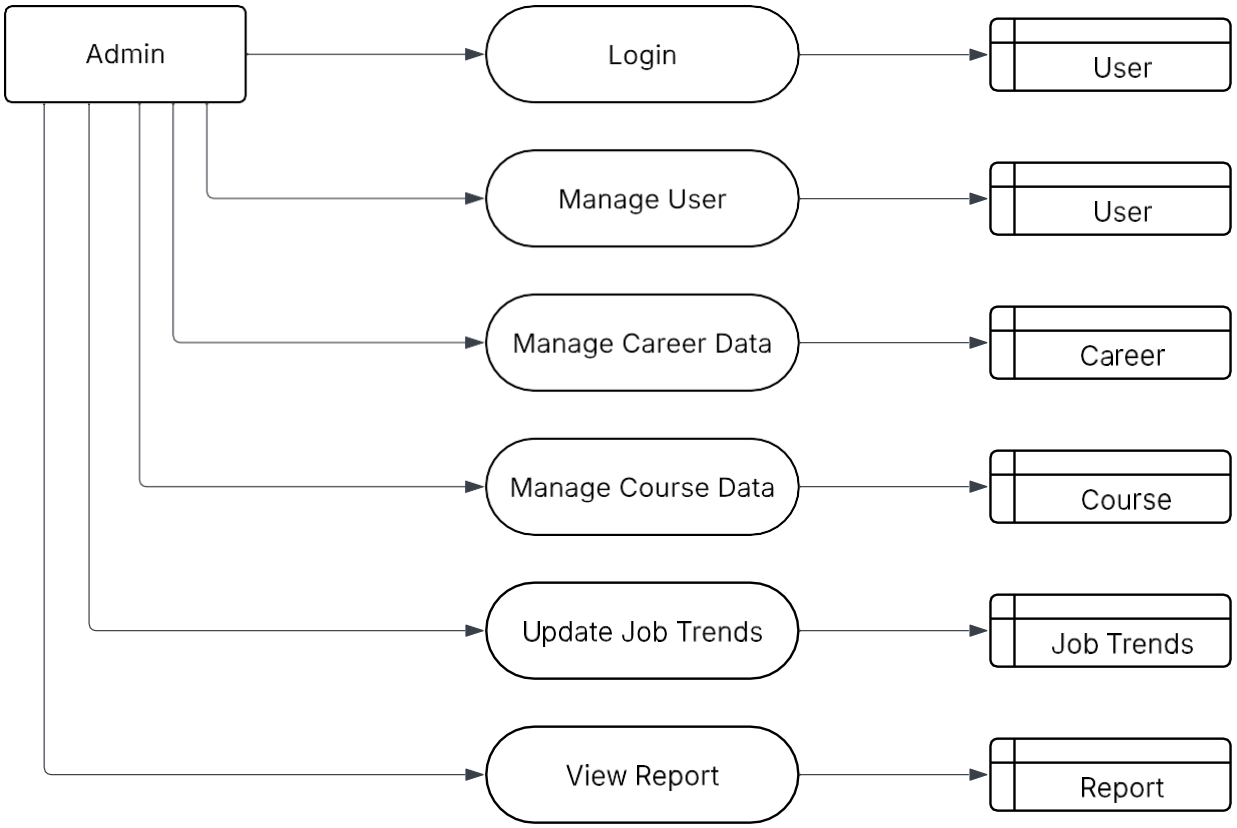

STUDENT
Register
User
Login
User
Take Career Assessment
Career
Get career Suggestions
Career
Compare Careers
Career
View Job Trends
Job Trends
Get Learning Path
Learning Path
View College Suggestions
College Suggestion

LEVEL 1.1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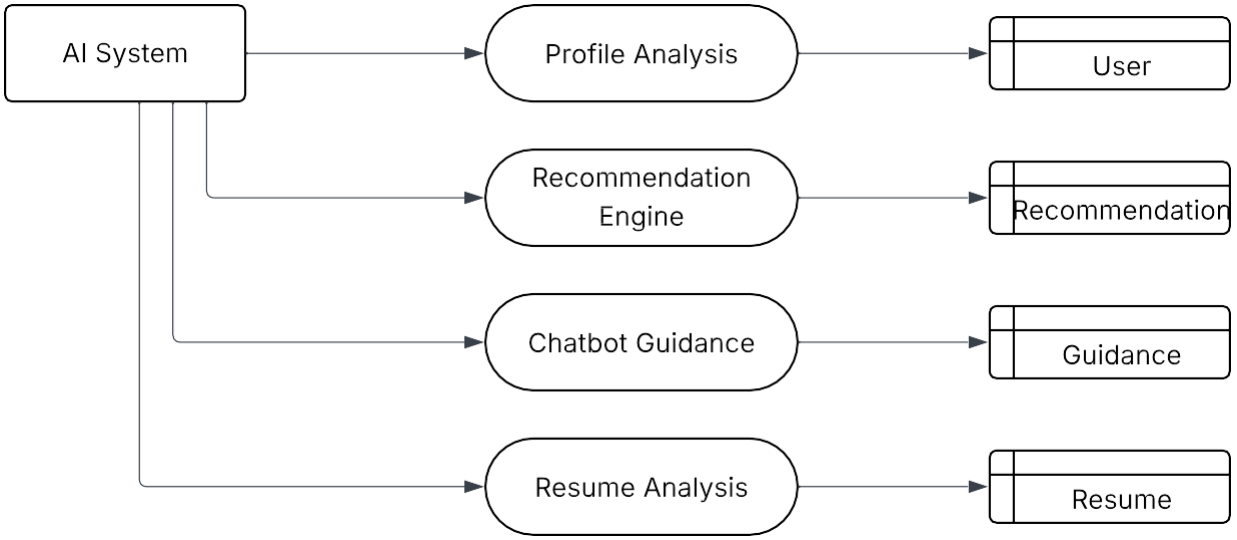
Login
User
Manage User
User
Manage Career Data
Career
Manage Course Data
Course
Update Job Trends
Job Trends
View Report
Report

LEVEL 1.2


AI System
Profile Analysis
User
Recommendation Engine
Recommendation
Chatbot Guidance
Guidance
Resume Analysis
Resume

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