

Project Name : AI-based career counselling

**BACHELOR OF TECHNOLOGY**

(Computer Science and Engineering.)



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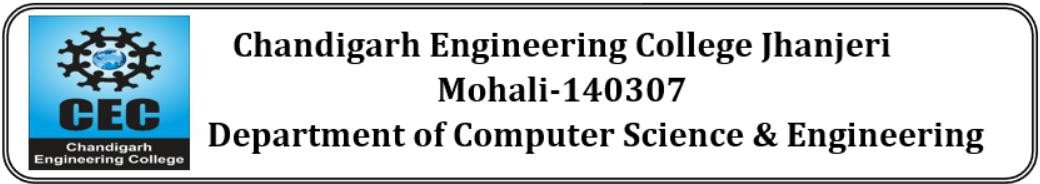
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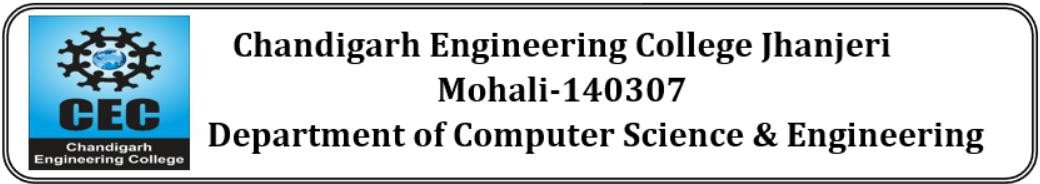
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1. **Introduction**

The Career Counselling Portal is an innovative, AI-powered web platf]\orm designed to assist students in making well-informed career decisions. By leveraging machine learning, data analytics, and intelligent recommendation algorithms, the system provides personalized guidance tailored to an individual's academic background, skill set, interests, and aspirations.

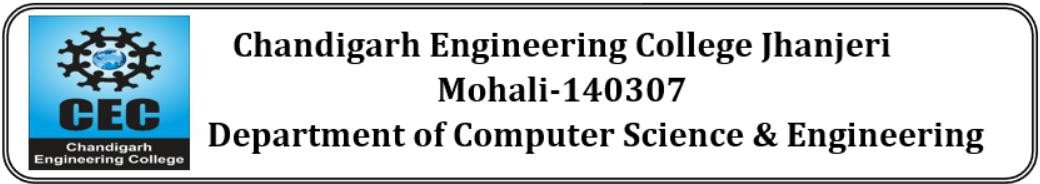
The portal aims to bridge the gap between students and career opportunities by offering insights into emerging industry trends, job market demands, and skill enhancement pathways. It serves as a comprehensive career advisory system, enabling students to explore suitable career paths, access relevant resources, and receive expert recommendations based on real-time data analysis.

Through features such as interactive career assessments, AI-driven job matching, resume evaluation, and professional development suggestions, the Career Counselling Portal empowers students to strategically plan their future and take proactive steps toward achieving their career goals.

**1.1 Scope of the Work**

The "Career Counselling Portal" is an AI-driven web platform designed to provide students with career guidance, addressing the growing challenge of career selection. By leveraging the Meta LLAMA-2 model, the portal offers intelligent career recommendations based on students' interests, academic background, and industry trends. The system provides real-time counselor interaction and AI-powered assistance, making it a reliable tool for students worldwide. The primary goal is to make career counseling more accessible, personalized, and data-driven to ensure students receive optimal career recommendations.

Additionally, this system aims to reduce the dependency on expensive career consultation services by offering a cost-effective and scalable alternative. The system ensures continuous improvement through feedback loops and data-driven enhancements, ultimately bridging the gap between students and industry-relevant career options. It will also include features such as career progression tracking, salary trend analysis, and industry-specific skill recommendations to provide a well-rounded counseling experien



**1.2 Background and Proposed Work**

The project builds upon existing AI models and career counseling solutions but introduces several enhancements to improve user experience and effectiveness. Traditional career counseling services are often expensive, time-consuming, and inaccessible to many students. This portal aims to democratize career guidance by offering a free or low-cost, AI-driven solution that is accessible to students from diverse backgrounds.

The proposed system integrates advanced AI capabilities with a user-friendly interface, ensuring that students can easily navigate the platform and receive tailored advice. Key features include:

* **Interactive Chatbot**: Powered by LLAMA-2, the chatbot provides instant career recommendations and answers to common queries.
* **Real-Time Counselor Interaction**: Students can schedule one-on-one sessions with professional career counselors for personalized guidance.
* **Integrated Blog**: A repository of articles, industry insights, and career trends to keep students informed about emerging opportunities.

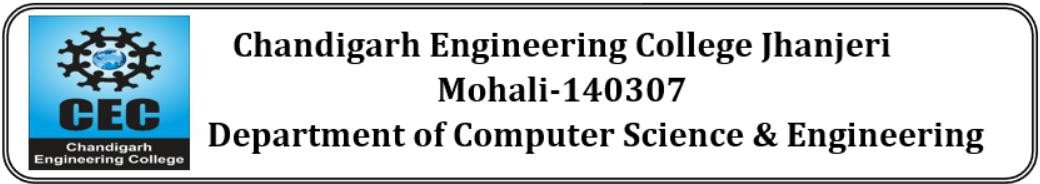
By combining AI-driven analytics with human expertise, the platform ensures that students receive comprehensive and accurate career advice tailored to their unique profiles.

**2. Brief Literature Survey**

* **2.1 Existing Solutions**

Several AI-based career counseling solutions have been developed in recent years, each with its own strengths and limitations. Some of the most notable examples include:

* **OpenAI GPT Models**: These models are widely used for natural language processing tasks, including career counseling. However, they often require costly subscriptions for extended use, making them inaccessible to many students.
* **Chatbase**: A chatbot platform that allows users to create custom AI chatbots. While useful, Chatbase is limited by its reliance on small datasets, which can restrict the depth of analysis and recommendations.



**Falcon 7B**: An open-source AI model that offers basic career counseling capabilities. However, it lacks features like session history storage, which can hinder the continuity of user interactions.

**2.2 Comparative Analysis**

| **Feature** | **OpenAI GPT Models** | **Chatbase** | **Falcon 7B** | **Our Solution** |
| --- | --- | --- | --- | --- |
| **Cost** | High subscription fees | Moderate cost | Free | Cost-effective |
| **Dataset Size** | Large but restricted | Small | Limited | Scalable and diverse |
| **Session Continuity** | Yes | No | No | Yes |
| **Real-Time Interaction** | Limited | Limited | No | Yes |
| **Personalization** | Moderate | Low | Low | High |

**2.3 Our Solution**

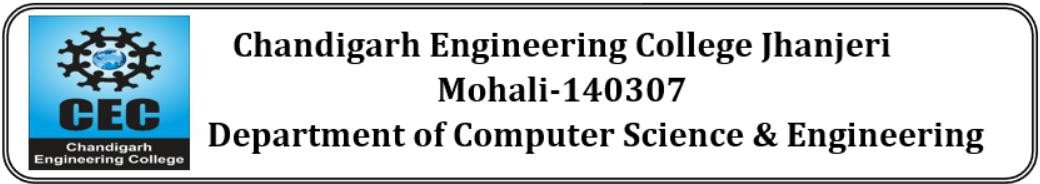
The **Career Counselling Portal** addresses the limitations of existing solutions by integrating a scalable, cost-effective AI model (LLAMA-2) with real-time interaction capabilities. The platform offers:

**3. Problem Formulation**

**3.1 Need and Significance** Students often struggle to make career decisions due to a lack of expert guidance, inadequate access to information, and high-cost consultancy services. This portal addresses these challenges by providing:

* AI-driven career path suggestions based on academic performance, personal interests, and industry trends.
* Interactive counselor communication through live chat, video calls, and career workshops.
* A comprehensive repository of career insights, industry trends, and expert interviews.

Real-time job and internship matching based on student profiles and employer requirements



* **Personalized Recommendations**: Tailored career suggestions based on individual student profiles.
* **Real-Time Counselor Access**: Students can interact with professional counselors for in-depth guidance.
* **Comprehensive Knowledge Base**: A repository of career-related articles, industry trends, and educational pathways.

By combining these features, the portal provides a holistic and accessible solution for career counseling.

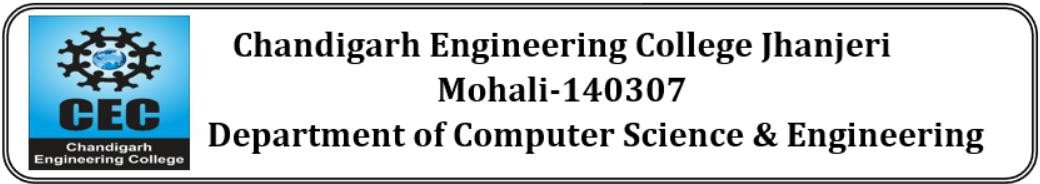
**1.3 Methodology**

The methodology involves:

* **Data Collection:** Gathering student preferences, academic records, and industry trends through surveys, academic transcripts, and online assessments.
* **AI Model Training:** Fine-tuning LLAMA-2 for precise career recommendations by incorporating large datasets of career progression patterns and employment statistics.
* **System Development:** Implementing a front-end using React JS and a back-end using Django with additional security features to protect user data.
* **Testing & Validation:** Ensuring system accuracy via user feedback, expert evaluation, and A/B testing to improve response quality.
* **Scalability Implementation:** Enabling the system to cater to a growing number of users efficiently, ensuring optimized server response times and seamless performance
* By integrating these components, the Career Counselling Portal aims to become a comprehensive platform offering accurate and user-centric career recommendations, while also incorporating gamification techniques to engage students in career exploration activities.

**3.2 Challenges in Existing Systems**

* High subscription costs of career counseling services, making them inaccessible to many students.
* Lack of personalized, context-aware career recommendations tailored to individual aspirations.
* Inaccessibility to real-time expert guidance, leaving students without timely career advice.
* Insufficient information on emerging career opportunities and skills required for evolving job markets.
* Difficulty in tracking career progression and understanding long-term career impact.



**3.3 Expected Outcome**

* A fully functional AI-integrated career counseling system with a robust data analytics engine.
* Increased accessibility of career guidance services for students worldwide.
* Improved accuracy in career recommendations using AI-powered analysis and predictive modeling.
* Enhanced student-counselor interaction via real-time consultation and feedback mechanisms.
* Greater career awareness and confidence among students through structured career planning.

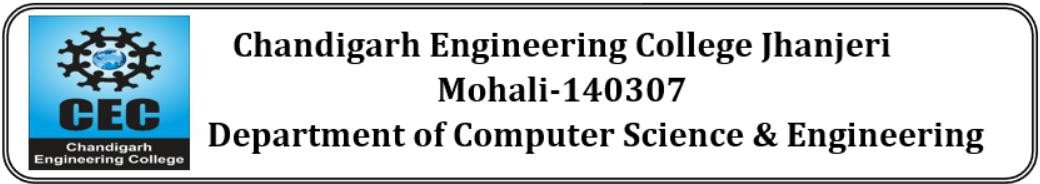
**4. Objectives**

**4.1 Primary Objectives:**

* Develop a user-friendly, AI-integrated career counseling platform with an intuitive user interface.
* Ensure real-time interaction between students and career experts through interactive communication tools.
* Implement a chatbot for personalized career recommendations based on deep learning models.
* Provide a secure, scalable, and cost-efficient system with enhanced data privacy protocols.
* Enable multi-faceted career advice, including market trends, job opportunities, emerging skills, and educational pathways.
* Improve career decision-making efficiency using AI-driven analytics and behavior-based recommendations.
* Offer multi-language support for global accessibility and inclusivity.

### ****4.2 Specific Objectives****

* **User Authentication**: Implement secure login and profile management features.
* **AI Chatbot**: Develop a chatbot powered by LLAMA-2 for instant career suggestions.
* **Counselor Interaction**: Enable one-on-one consultations with professional counselors.
* **Blog System**: Create a repository of career-related articles and updates.



* **Notification & Review System**: Implement features for user engagement and feedback.
* **Admin Panel**: Develop a control dashboard for system monitoring and management.

**5. Methodology / Planning of Work**

**5.1 Work Plan**

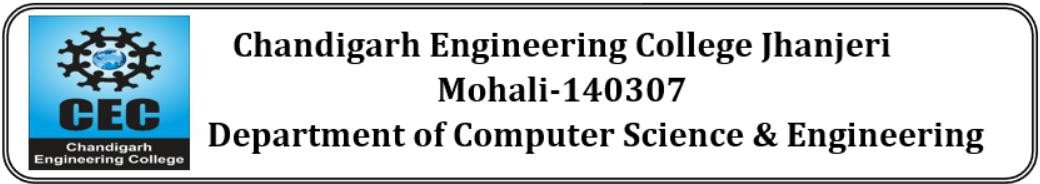
* **Requirement Analysis**: Identify target users and system needs.
* **Design & Development**: Build front-end (React JS) and back-end (Django, SQLite).
* **AI Integration**: Implement LLAMA-2 for chatbot assistance.
* **Testing & Deployment**: Conduct unit testing, integration testing, and user acceptance testing.
* **User Feedback & Refinement**: Gather insights for continuous improvement.
* **Scalability Planning**: Ensure the system can handle increased user traffic efficiently.
* **Performance Optimization**: Enhance response times and improve system accuracy.

**5.2 System Components**

* **User Authentication:** Secure login and profile management.
* **AI Chatbot:** Personalized career suggestions.
* **Counselor Interaction:** One-on-one expert consultation.
* **Blog System:** Career-related articles and updates.
* **Notification & Review System:** User engagement features.
* **Admin Panel:** Control dashboard for monitoring and management.

**5.3 Implementation Timeline**

* **Phase 1:** System Requirements Gathering and Analysis (Week 1-3)
* **Phase 2:** Frontend & Backend Development (Week 4-8)
* **Phase 3:** AI Integration & Model Training (Week 9-12)
* **Phase 4:** System Testing & Debugging (Week 13-15)
* **Phase 5:** Deployment and User Feedback Analysis (Week 16-18)



**6. Facilities Required for Proposed Work**

**6.1 Hardware Requirements**

* High-performance servers for hosting.
* User access via web-enabled devices (laptops, tablets, mobile phones).
* Secure cloud storage for chatbot interactions and user data.

**6.2 Software Requirements**

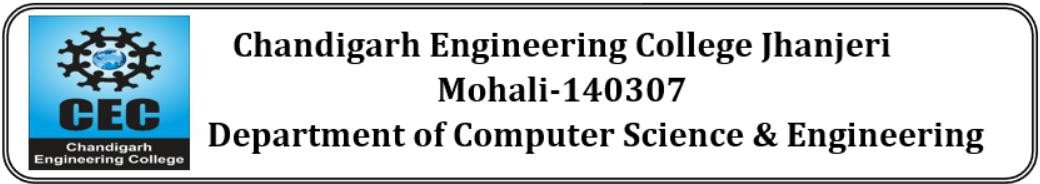
* **Front-end:** React JS
* **Back-end:** Django (Python)
* **Database:** SQLite
* **AI Model:** Meta LLAMA-2
* **APIs:** SendBird for chat, Pusher for notifications
* **Cloud Hosting:** AWS/GCP for scalable deployment

**6.3 Human Resources**

* Software Engineers for development and testing.
* AI Specialists for model training and optimization.
* UX/UI Designers for enhancing user experience.
* Career Counselors for real-time student guidance.

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