Daffodil International University

DIU SWE Career Hub: AI-Assisted Recruitment System

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1. Introduction

The **DIU SWE Career Hub** is a web-based AI-powered recruitment platform designed to enhance the hiring process for faculty, lab assistants, and administrative positions within the **Software Engineering Department of Daffodil International University (DIU SWE).**

This system provides an interactive **job listing platform** that allows applicants to view available positions, apply seamlessly, and receive AI-powered assistance. The **AI chatbot**, integrated with **OpenAI GPT-3.5 Turbo**, will provide real-time responses to job-related queries, ensuring applicants have the necessary information at their fingertips. Additionally, a **secure admin panel** will enable authorized personnel to efficiently manage job postings and applications, making the recruitment process faster, more transparent, and highly efficient.

Technology Stack

Component	Technology Used
Backend	Python Flask
Database	MySQL
Frontend	HTML, CSS
AI Chatbot	OpenAI GPT-3.5 Turbo API

2. Key Features

For Applicants:

☑ **Vacancy Table:** Displays job titles, required qualifications (for faculty positions), descriptions, and salary details.
☑ **Application Portal:** A structured form allows applicants to submit their applications directly.
☑ **AI Chatbot Assistance:** Provides instant responses about job openings, eligibility criteria, application deadlines, and FAQs.

For Administrators (Secure Access Required):

☑ **Admin Panel:** Accessible via a secure login, allowing admins to manage job postings efficiently.
☑ **Job & Application Management:** Administrators can create, update, delete, and review job postings and applications.

3. AI Chatbot Functionality

Feature	Description
Real-time Assistance	Answers queries related to job details, required qualifications, and application procedures.
AI-Powered Responses	Integrated with OpenAI GPT-3.5 Turbo for automated yet intelligent responses to applicants.
Natural Language Processing (NLP)	Allows chatbot to understand and respond in a conversational manner

4. Implementation Roadmap

Phase 1: Design & Planning

✔ Define chatbot logic, admin authentication, and database structure.
✔ Identify key features and functionalities needed for a seamless recruitment process.✔ Develop UI/UX wireframes for applicant and administrator interfaces.

Phase 2: Development

✔ Implement vacancy tables for job postings.
✔ Develop a secure **Admin Panel** with authentication and role-based access.
✔ Integrate AI chatbot using OpenAI's GPT-3.5 Turbo API.
✔ Design a scalable **database architecture** to store applications and job listings.

Phase 3: Testing & Optimization

✔ Conduct unit testing for chatbot responses, job listing functionality, and admin panel operations.✔ Perform user testing to ensure the chatbot provides accurate and relevant answers.
✔ Optimize database queries to improve platform performance.
✔ Gather user feedback and refine the system accordingly.

Phase 4: Deployment & Maintenance

✔ Deploy the platform on a cloud-based server.
✔ Conduct **beta testing** with selected users to identify potential issues.
✔ Continuously monitor chatbot accuracy and update its knowledge base.✔ Provide regular maintenance updates based on user feedback.

5. Budget Table:

Item	**Estimated Cost (BDT)**	**Description**
1. Development Costs		
Backend Development (Python Flask)	50,000	Development of backend infrastructure and implementation of API endpoints for chatbot integration and job application handling.
Frontend Development (HTML, CSS)	40,000	Design and development of user interfaces for both applicants and administrators, ensuring responsiveness and usability.
Database Setup (MySQL)	20,000	Database setup for managing job listings, applications, and admin data.
AI Chatbot Integration (OpenAI GPT-3.5 Turbo)	30,000	Subscription and API integration for AI chatbot functionality.
2. Hardware & Software Costs		
Development Tools & Licenses	10,000	Purchase of development tools, IDEs, and licenses for the software stack (Flask, MySQL, etc.).
Server Costs (Hosting, Cloud)	25,000	Monthly cloud hosting fees for platform deployment and maintenance.
3. Testing & Optimization		
Testing & QA	15,000	Expenses related to conducting unit testing, user testing, and performance optimization.

4. Maintenance & Support		
Ongoing Maintenance & Updates	12,000	Regular updates, bug fixes, and minor enhancements for system performance and security.
5. Personnel & Training		
Developer Salary (2 developers)	150,000	Salary for two developers over the course of 3 months of project development
Administrator Training	10,000	Training for administrators on managing the platform and handling user queries.
6. Contingency	15,000	Reserved budget for unforeseen expenses.
Total Estimated Cost	357,000	

6. Risk Analysis

Identifying potential risks ensures a smooth development and deployment process. Below are key risks and mitigation strategies.

1. Technical Risks

- **Inaccurate AI chatbot responses** – Mitigated through extensive testing and continuous training.
- **System downtime or server failure** – Addressed by using a reliable cloud server with backups.
- **Security vulnerabilities** – Prevented with encryption, strong authentication, and regular audits.
- **Database performance issues** – Solved with query optimization and caching.
- **API failures or high costs** – Managed by optimizing chatbot interactions and having backup solutions.

2. Financial Risks

- **Budget overruns** – Controlled through regular tracking and a contingency fund.
- **High AI API costs** – Reduced by optimizing API usage and exploring alternative models.

3. Operational Risks

- **User resistance to AI chatbot** – Addressed with training and a user-friendly interface.
- **Developer shortages or delays** – Mitigated by thorough documentation and knowledge sharing.
- **Development timeline delays** – Managed through agile methodology and milestone tracking.

4. Legal & Compliance Risks

- **Data protection concerns** – Ensured by following privacy regulations and encrypting applicant data.
- **Intellectual property issues** – Managed by securing proper licensing for AI and API use.

5. User Experience Risks

- **Poor UI/UX design** – Prevented through usability testing and continuous improvements.
- **Low adoption rates** – Boosted with training, promotions, and user support.

Proactively addressing these risks will ensure an efficient, secure, and widely adopted recruitment platform. Regular monitoring, feedback-driven improvements, and security measures will be key to long-term success.

7. Expected Outcomes

Stakeholder	Benefit
Applicants	A seamless, AI-assisted job application experience support.
Administrators	A structured, secure, and efficient recruitment management system.
DIU SWE	A transparent, AI-powered recruitment platform ensuring fair hiring practice

8. Conclusion

The **DIU SWE Career Hub** will revolutionize the recruitment process by integrating AI-powered assistance with human decision-making. This platform will ensure efficiency, accessibility, and transparency, benefiting both applicants and administrators.

By providing **real-time AI assistance, structured job listings, and a secure admin panel**, this system will **enhance the hiring experience** while ensuring fair and streamlined recruitment. Future upgrades will include **advanced AI functionalities, integration with additional university departments, and improved security measures** for applicant data privacy.

This AI-driven recruitment system will make hiring smarter, faster, and more effective—ushering in a new era of AI-assisted career development at DIU SWE.