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AI -Powered Online Recruitment App

Naga Leela Gangala[1], Likhita Doddi[2], Banu Bee Satyala[3], Mohammad Faizaan Shaik Pagidala[4], Arjuneshwar Rao Khamithkar[5]
[1]*Assistant Professor, Computer Science and Engineering, Srinivasa Ramanujan Institute of Technology, Anantapur, India.*
[2,3,4,5] *Computer Science and Engineering, Srinivasa Ramanujan Institute of Technology*

Abstract:
Artificial Intelligence (AI) is increasingly shaping the recruitment process, offering significant benefits in improving hiring efficiency and decision-making. This app explores the challenges and outcomes of using AI in recruitment, focusing on how it can enhance the identification of suitable candidates and reduce human bias in hiring. It highlights the role of AI vendors and companies that have integrated AI technologies, such as applicant tracking systems and algorithmic assessments, to evaluate candidates more effectively.
The app also examines the current state of AI in recruitment, noting that larger or high-tech companies are leading the way in adoption. However, despite the benefits of AI, the app reveals challenges such as the persistence of human bias in interviews and assessments, which still play a central role in hiring decisions. While AI can provide valuable insights and support HR departments, it does not replace the need for human judgment.
The project emphasizes the importance of understanding AI's role as a tool to assist human decision-making rather than as a replacement. Further exploration is needed on how AI can complement human input in the hiring process, optimizing recruitment outcomes while addressing concerns about bias and fairness.
Keywords: Artificial Intelligence (AI), Hiring Process, Challenges, Outcomes, Adoption, Human Resource Management (HRM).

1. Introduction:

Artificial Intelligence (AI) has rapidly become a transformative technology across various sectors, including human resource management (HRM), where it is reshaping recruitment practices. The application of AI in the hiring process promises to revolutionize how organizations attract and select talent by leveraging advanced algorithms and AI-powered tools to enhance efficiency, accuracy, and fairness. This shift is expected to streamline recruitment by automating repetitive tasks, improving candidate screening, and providing data-driven insights that help HR professionals make more informed decisions. However, while AI holds substantial promise, its integration into recruitment is not without challenges and complexities.
Despite its potential benefits, the use of AI in the hiring process comes with certain limitations. These may include the risk of algorithmic bias, data privacy concerns, and the possibility of over-reliance on technology at the expense of human intuition. It is essential to critically evaluate both the advantages and drawbacks of AI to ensure its successful implementation and avoid unintended consequences, such as reinforcing existing biases in recruitment or creating a lack of transparency in decision-making. This app seeks to explore these challenges by examining various perspectives, ideas, and opinions surrounding AI's role in HRM, offering a balanced view on its effective utilization in recruitment.
Additionally, the app will highlight the benefits of using AI in recruitment, such as identifying AI vendors and firms that have successfully adopted AI technologies to improve their hiring strategies. It will also provide an in-depth analysis of the current state of AI in the hiring process, exploring how it is being used to enhance recruitment practices and examining the tangible outcomes of AI adoption. A crucial aspect of this exploration is understanding the limited scope of AI adoption, which is

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primarily seen in high-tech or large-scale organizations. These companies often provide reports on their AI usage, but these insights may lack a comprehensive, step-by-step evaluation of how AI is implemented in practice.

Moreover, it is important to recognize that AI is not intended to completely replace human involvement in recruitment. Interviews, personal assessments, and human judgment continue to play critical roles in the decision- making process, which can sometimes introduce bias. Therefore, it is essential to view AI as a tool that complements human decision-making rather than replacing it entirely. This app aims to provide a deeper understanding of AI's role in recruitment, addressing both the benefits and challenges while encouraging the responsible and balanced integration of AI into HR practices.

2. Literature Review:

The literature survey explores several key studies on the use of Artificial Intelligence (AI) in recruitment, providing a deeper understanding of its potential and limitations in transforming human resource management processes. These studies highlight how AI can streamline recruitment, enhance efficiency, and reduce human bias, while also addressing the challenges associated with its implementation.

The study by Sen, Kadam, and Kumar focuses on the growing role of AI in recruitment, shifting the recruitment function from a tactical to a strategic business imperative. The researchers explain that AI has become a vital tool for organizations looking to source the right talent more effectively. The AI-enabled recruitment process helps companies reduce the time and effort traditionally required for candidate sourcing and selection, providing an edge in the competitive hiring landscape. However, the study notes that the widespread adoption of AI in recruitment has been limited to certain industries, particularly Information Technology (IT) and Information Technology-enabled Services (ITeS). Other sectors, particularly those outside of tech, have been slower to adopt these technologies. Despite the efficiency and accuracy AI brings to recruitment, many organizations are still hesitant to integrate AI fully, due to factors such as the high costs of implementation, lack of expertise, and concerns about data security. The study also highlights the growing perception of AI as an indispensable asset in sourcing talent, particularly for organizations that have embraced it. This research emphasizes that, while AI is advantageous in enhancing the recruitment process, it still faces challenges in terms of scalability and integration into non-tech industries.

Beneduce's research tackles the issue of AI bias, which has become a significant concern as AI technologies are increasingly applied in recruitment. While AI systems are heralded for their ability to streamline recruitment and remove human bias, there are growing concerns about how these systems might inadvertently perpetuate biases, especially gender bias. AI algorithms often rely on historical data for training, and if that data contains biases— whether related to gender, ethnicity, or other factors—these biases can be reflected in the AI's decision-making processes. Beneduce's research investigates this issue by focusing on gender bias in AI recruitment systems. The study shows that recruiters view AI as a tool that could help improve the recruitment process by making it more efficient and data-driven. However, the potential for AI to inherit biases from historical hiring practices represents a significant challenge to its broader adoption. The paper presents survey data showing that while most recruiters see AI as an opportunity for improvement, the fear of reinforcing existing biases leads to hesitation in implementing AI systems widely. The study emphasizes the need for ongoing monitoring and modification of AI systems to ensure that they are fair and impartial, particularly in the context of recruitment. It calls for a deeper understanding of how biases are encoded into AI systems and the development of strategies to mitigate these biases to ensure fair and equitable hiring practices.

The research by Brishti, J.K., and Javed examines AI's application in the manufacturing industry, where recruitment processes are increasingly being automated to address various challenges. The study explains how AI technologies, including machine learning algorithms and natural language

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processing, help automate the sourcing and selection of candidates, making the process more inclusive, open, and cost-effective. By leveraging social media networks and online recruitment platforms, AI enables manufacturing companies to reach a broader pool of candidates than traditional methods would allow. The study also highlights how AI recruitment tools can target specific groups of candidates based on predefined criteria, delivering tailored messages that attract the right talent. AI systems help reduce the time spent on administrative tasks such as screening resumes and sending follow-up emails, thus freeing up HR professionals to focus on higher-value tasks. Moreover, the paper notes the increasing demand for automation in recruitment due to broader organizational pressures, such as geopolitical instability, environmental sustainability, and the need for efficiency in a competitive global economy. AI allows manufacturing companies to address these challenges by streamlining recruitment processes and enabling faster decision-making. Additionally, the research emphasizes the importance of AI in ensuring that recruitment is both efficient and equitable, offering equal opportunities to candidates regardless of location or background.

Madia's article on the use of social media as a recruitment strategy discusses how platforms like LinkedIn, Facebook, and Twitter have become essential tools for modern recruitment. The study reviews best practices for using social media effectively in the hiring process. Madia outlines the importance of having a well-defined social media recruitment strategy, which includes creating a strong employer brand, engaging with potential candidates through content, and utilizing paid advertisements to target specific demographics. The article also emphasizes the need for a comprehensive social media policy to guide recruitment efforts and ensure consistency in messaging. One of the key advantages of social media recruitment is its ability to reach a large and diverse audience, particularly passive candidates who may not actively be seeking a job but are open to new opportunities. The paper highlights the importance of creating engaging content that resonates with job seekers and enhances the company's image as an employer of choice. Furthermore, the study suggests that organizations should align their social media recruitment efforts with broader organizational goals, using social media not only to attract candidates but also to communicate their culture and values. The research demonstrates that social media platforms have the potential to revolutionize the recruitment process by providing a more dynamic, interactive, and targeted approach to sourcing talent.

3. Proposed Methodology

The proposed system is designed to streamline and enhance the recruitment process by integrating various functionalities for HR, administrators, and users. It offers features such as adding job offers, reading resumes using AI, creating shortlists, and providing updates. The system also includes a database for managing details, viewing job offers, uploading resumes, and checking application statuses. This comprehensive approach aims to improve efficiency and user experience in the recruitment workflow.

3.1. Flow Chart:

The system is a comprehensive recruitment management platform designed to streamline the hiring process for organizations by catering to three primary user roles: HR personnel, administrators, and general users (candidates). HR personnel can add job offers and utilize AI-powered tools to read and analyze resumes, ensuring a more efficient shortlisting process. They can also provide updates to candidates, keeping them informed about their application status. Administrators have access to a centralized database, allowing them to manage job offers, user details, and system security. They can oversee user accounts, monitor job postings, and ensure the system runs smoothly. General users, or candidates, can upload their resumes, track the status of their applications, and view available job offers, all through an intuitive and user-friendly interface. The integration of AI in the system enhances the recruitment process by automating resume parsing, reducing bias, and improving candidate matching, thereby speeding up the hiring process.

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reducing bias, and improving candidate matching, thereby speeding up the hiring process. The centralized database ensures consistency and easy access to all recruitment-related data, while robust security measures protect sensitive information. The system also provides reporting and analytics features, enabling HR and administrators to make data-driven decisions and improve recruitment efficiency. Overall, the system is designed to provide a seamless, efficient, and transparent experience for all stakeholders involved in the recruitment process, ensuring that organizations can attract and hire top talent effectively.

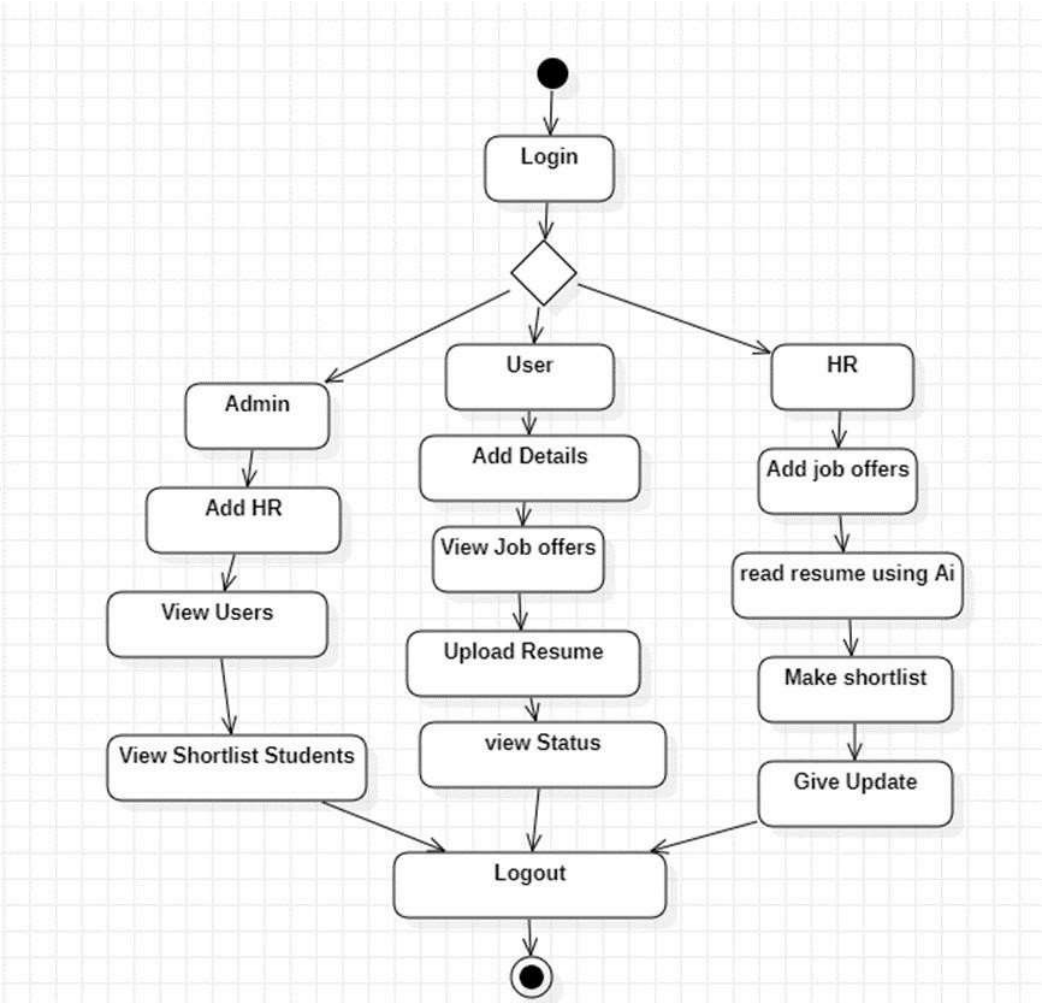

Figure 1: Flowchart of Recruitment Process

4. System Design

4.1. Use Case Diagram:

A use case diagram in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted.

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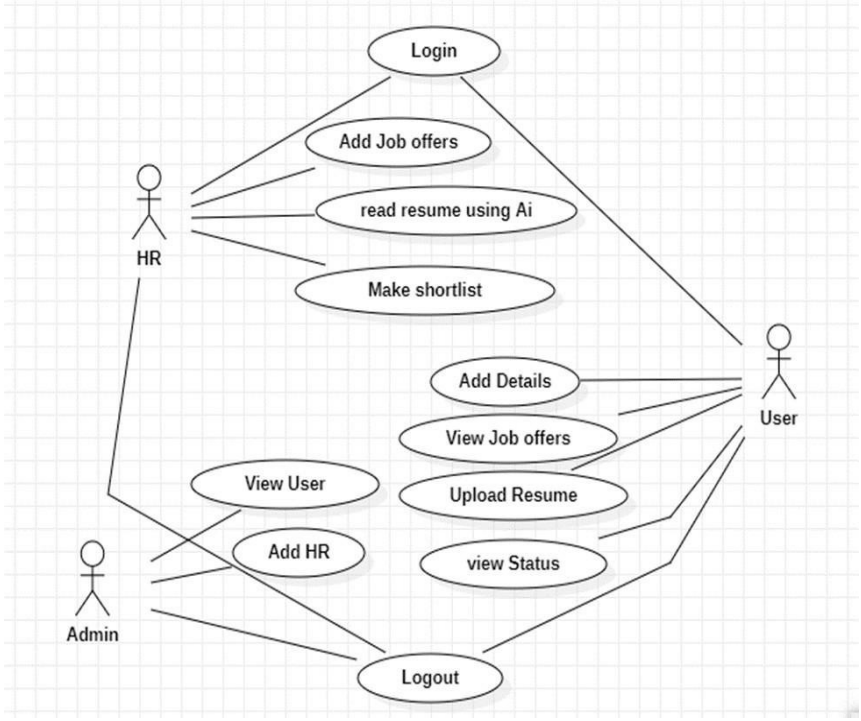

Figure 2 : Use Case Diagram

It helps in understanding system behavior by identifying which actors perform specific actions and how use cases are connected. These diagrams also illustrate dependencies, extensions, and generalizations, aiding in system design and requirement analysis. By providing a clear overview of user roles and system operations, use case diagrams facilitate effective communication between stakeholders and developers.

5. Implementation

5.1. Tech Stack for Android App Development:

5.1.1. MySQL: A database efficiently stores structured data by organizing it into tables with optimized queries and indexing for faster retrieval. It plays a crucial role in authentication, managing user credentials securely. Additionally, databases handle large-scale data storage, enabling seamless access, updates, and consistency across applications.

5.1.2. PHP: The backend in PHP has routes defined to handle authentication, database interactions, and various operations. These routes enable seamless communication between the frontend and MySQL database.

5.1.3. Kotlin & Xml: The frontend is built using Kotlin, leveraging XML-based UI for a smooth and responsive user experience. Kotlin's modern features enhance app performance, readability, and maintainability

5.1.4. Retrofit: Retrofit is used to handle network requests efficiently. It converts JSON responses into Kotlin objects using libraries like Gson. Retrofit supports both synchronous and asynchronous requests, making it easy to handle network operations efficiently.

5.2. Backend Development:

The backend APIs are implemented using PHP to handle core functionalities:

5.2.1. User Management: APIs for user registration, login, and authentication.

5.2.2. Hiring Management: The user applies for a job based on their skills, with each step—

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job selection, application submission, notifications, status tracking—managed through individual APIs.

5.3. Frontend Development:

Kotlin is used for handling logic and XML for designing the user interface, ensuring a seamless and efficient Android development process.

5.3.1. Login/Registration: Handles user authentication.

5.3.2. Admin Dashboard: Add Company, view users, and view shortlisted students.

5.3.3. Company Dashboard: Add job offer, read resumes using AI, shortlist users, and provide updates.

5.3.4. User Dashboard: Add details, view new job offers, upload resume, and check status.

5.4. Deployment:

PHP backend server is deployed on Hostinger for hosting and managing the application.

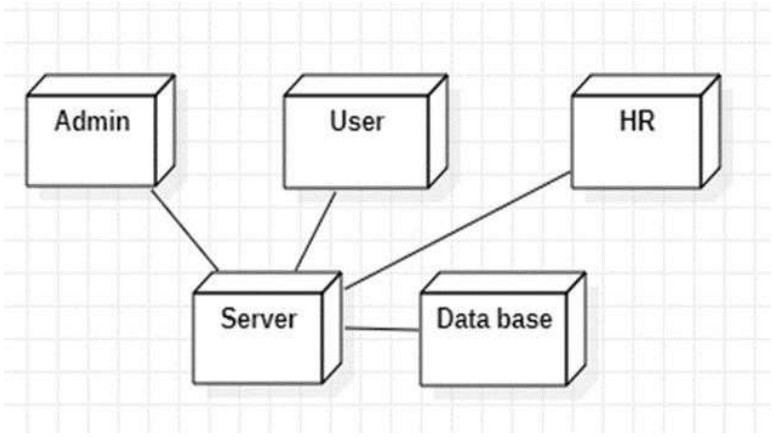

Figure 3: Deployment Diagram

6. Conclusion:

The Next-gen Recruitment: An Ai powered hiring ecosystem addresses this gap by integrating AI and OCR technologies to enhance recruitment efforts. By using the Google ML Kit, particularly the Google OCR API, the system allows for text recognition from resumes, simplifying the sorting and categorization process based on key technologies extracted directly from the resume text.

The project is designed with three core user roles: Users, Admins, and Companies. Users can snap employee photos to assess their stress levels, providing insights into employee satisfaction. Admins have the ability to add companies to the system and manage access privileges, while Companies can post job listings and track applications. The project is built with a Kotlin-based frontend, using XML for UI design, and PHP for backend development, deployed on Hostinger with a MySQL database for data storage. Retrofit is used for efficient API communication between the frontend and backend.

In conclusion, this AI-powered system not only enhances recruitment by automating resume sorting with AI- driven text recognition but also provides a streamlined and efficient platform for managing employee stress levels and job listings. By blending AI with human decision-making, the system provides more objective, faster, and bias-free recruitment, ultimately improving the hiring process.

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