Firebase-Integrated Mobile Platform for Swipe-Driven Job Matching

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Abstract

The swift transition to mobile-first recruitment platforms necessitates the implementation of systems for job matching that are more intuitive, efficient, and engaging. Current employment portals rely on text-dense listings, redundant forms, and restricted personalization, resulting in low match accuracy and, subsequently, diminished user interest. SwipeRight is a mobile application that combines the swiping interaction model with real-time data synchronization and AI-driven profile analysis to address these discrepancies. The objective is to enhance candidate-employer compatibility by facilitating smoother navigation, improving personalization, and alleviating the strain of manual screening. This solution utilizes Flutter for cross-platform deployment and Firebase for authentication, data storage, and real-time updates. Additional AI-driven elements, including Named Entity Recognition (NER), resume parsing, and TF-IDF with cosine similarity, are incorporated for the automated extraction of talents and experiences, hence facilitating a systematic job-recommendation framework. The application architecture has layers for presentation, business logic, services, and data administration. Experimental assessment and initial user comments indicate expedited application procedures for candidates and diminished shortlisting duration for recruiters. The real-time notifications, dynamic resume generation, and swipe-based filtering markedly improved user experience and engagement. Overall, SwipeRight offers a far more effective and user-centric mobile solution for job matching, establishing a readily scalable foundation for the advancement of AI-driven recommendations.

Keywords

Job Matching, Flutter, Firebase, Swipe Interface, Resume Generation

Introduction

Mobile technology has changed almost every part of daily life, including how people look for jobs and how companies search for talent. Yet, even with these advancements, many recruitment platforms still feel outdated. They rely on long forms, rigid profile setups, and keyword searches that often fail to capture what candidates or employers are really looking for. As a result, job seekers get lost in endless listings, while recruiters spend too much time sorting through

applications that don't fit their needs. This makes the whole process slow, repetitive, and frustrating for both sides. In recent years, mobile apps with gesture-based designs especially swipe interfaces have shown how simple interactions can make user experiences feel faster and more intuitive. At the same time, AI techniques like resume parsing, Named Entity Recognition (NER), and text-matching algorithms have made it possible to automatically understand skills, experience, and job requirements. Despite these advances, most job-matching systems still use basic filtering methods and rarely combine smart technology with modern interaction designs. This leaves a large gap between what technology *can* offer and what recruitment platforms deliver. Research on job recommendation systems, resume analysis, and mobile user interfaces has made progress, but important gaps remain. Very few platforms bring together swipe-based navigation with AI-driven personalization to make job discovery feel both engaging and intelligent. Many systems also struggle to keep information updated in real time, causing delays that affect both applicants and employers. Moreover, there is limited research on how swipe-driven, mobile-first interfaces can improve engagement and speed in recruitment settings. These issues point to the need for a unified solution that blends ease of use with intelligent, real-time matching. To address these challenges, this study introduces **SwipeRight**, a mobile-first job-matching application designed to make hiring simpler for everyone. Developed using Flutter and supported by Firebase, SwipeRight provides instant data updates, built-in resume creation, and AI-assisted profiling. By combining a swipe-based interface with structured data analysis, the system aims to reduce manual work for employers, improve match accuracy for candidates, and create a smoother, more efficient hiring experience overall.

Methodology

This section describes the research process followed in the design and development of SwipeRight, a mobile-based job-matching system that integrates gesture-driven interaction with real-time data synchronization and AI-assisted profile analysis. The methodology covers the system design approach, architectural components, data flow, and the technologies used for implementation.

- **Research and Development Approach**

The study adopts a **design-science methodology**, which is commonly used in information systems research to develop and evaluate technology-based solutions.

- **Data Flow Diagram**

Figure 1 shows the Context-Level Data Flow of SwipeRight. The context diagram illustrates the flow of information between users (candidates, employers, and administrators) and the SwipeRight system. Candidates provide personal and professional data, view job recommendations, and receive match notifications. Employers upload job details, view matched profiles, and interact with candidate data. Administrators manage system configurations and data integrity.
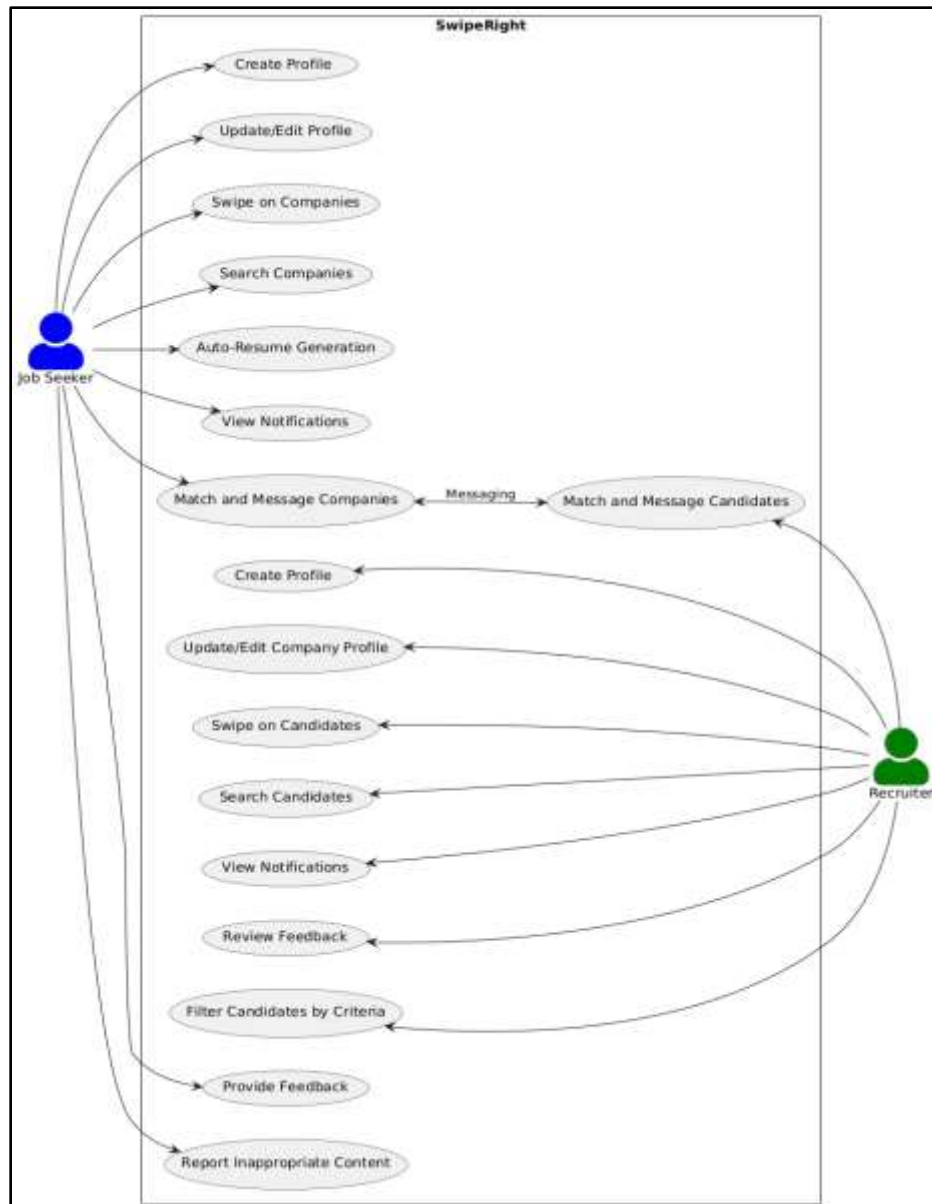
Figure 1: Data flow Diagram

- **System Architecture**

  The architecture is composed of multiple layers. SwipeRight follows a multilayered architecture to ensure clear separation of concerns and maintainable code structure**.**

  i.   Presentation Layer

Figure 2 shows the presentation layer diagram. This layer delivers the user interface developed using Flutter.

- **Candidate Interface:** registration, login, profile setup, resume builder, and swipe-based job browsing.
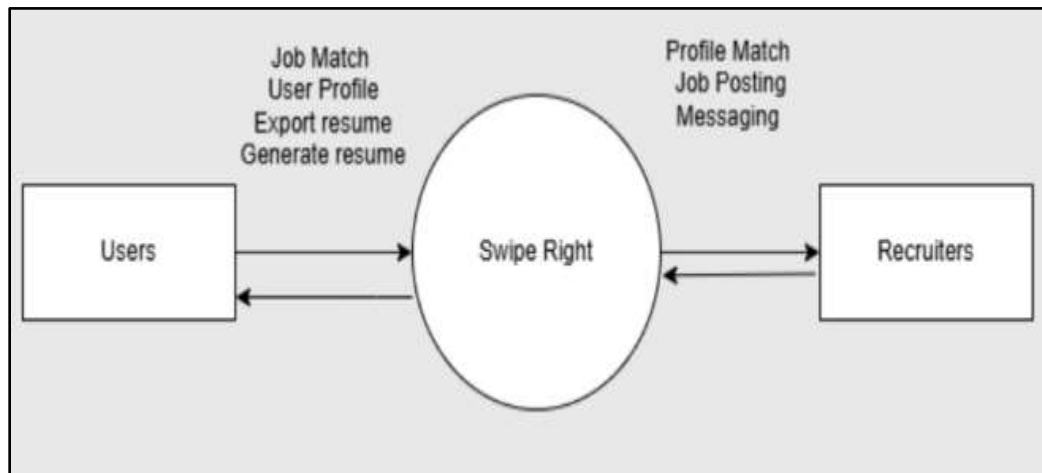- **Employer Interface:** job posting forms, candidate lists, and swipe-based evaluation.

Figure 2: Presentation Layer Overview

ii.   Business Logic Layer

This layer manages all role-specific operations. It enforces permissions, controls profile editing, job filtering, swipe behaviour, and resume-generation mechanisms. It also ensures secure execution of user actions and maintains workflow consistency.

iii.   Service Layer

The service layer acts as an intermediary between the user interface and backend services. It handles authentication, resume parsing and generation, job posting retrieval, swipe history management, notification services where all service requests are validated before being proceed.

Results and discussion

The proposed SwipeRight system is expected to improve the job-matching process by combining mobile-first interaction with real-time data synchronization and AI-supported profile analysis. Unlike conventional recruitment platforms that rely on static forms and keyword filtering, SwipeRight is designed to support faster decision-making by allowing candidates and employers to engage through a simple swipe-based interface. This study anticipates several key outcomes that align with the system's objectives.

First, the gesture-driven design is expected to reduce navigation effort and increase user engagement. Prior work in mobile interaction suggests that swiping supports quicker judgments compared with scrolling through text-heavy lists. In the context of recruitment, this may translate into higher application rates for suitable roles and quicker screening cycles for employers. While this does not guarantee long-term user retention, it provides an initial advantage by lowering the cognitive load associated with job searching and resume review. Next, real-time synchronization

through Firebase is expected to address common delays observed in traditional job portals. Because job postings, candidate profiles, and match notifications are updated instantly, users interact with current information rather than outdated listings. This reduces the likelihood of candidates applying to closed positions or employers reviewing outdated profiles. From a technical standpoint, this enhances system reliability and provides a more responsive user experience.

Then, the integration of AI-based text extraction particularly Named Entity Recognition (NER) and similarity scoring is expected to enhance match relevance. By structuring skills, experience, and qualifications into machine-readable formats, the system can recommend roles that align more closely with the candidate's background. However, it is important to acknowledge that the current approach relies on rule-based similarity metrics, which may not fully capture nuanced career preferences or soft skills. Future development using advanced learning models could address this limitation. Finally, the platform is expected to simplify resume creation through its automated resume-builder feature. This is especially beneficial for students and early-career professionals who may lack experience in formatting or articulating their profiles. Nevertheless, automated generation may not fully replace the need for manual refinement, especially for specialized roles where detailed descriptions of responsibilities and achievements are crucial. These expected results suggest that SwipeRight has the potential to streamline key stages of the recruitment process. At the same time, the system's effectiveness will depend on the quality of input data, user adoption, and the extent to which employers are willing to rely on swipe-based screening. A more comprehensive evaluation with real-world datasets and user groups will be required to validate these assumptions empirically.

Conclusion

The study set out to address the limitations of traditional recruitment platforms by developing a mobile-first system that improves job matching through intuitive interaction and real-time data processing. The proposed application, SwipeRight, combines a swipe-based interface with Firebase-powered synchronization and AI-assisted profile analysis to reduce manual screening effort and enhance match relevance for both candidates and employers. The system design and early functional evaluation indicate that gesture-driven navigation, coupled with structured data extraction, can significantly improve user engagement and streamline the decision-making process. The findings highlight three key contributions. First, the swipe mechanism provides a faster and more natural way for users to explore job opportunities and candidate profiles compared with list-based interfaces. Second, the integration of NER-based resume parsing and similarity-based ranking supports more meaningful recommendations by organizing candidate information into structured formats. Third, real-time updates ensure that both employers and job seekers interact with current information, reducing delays commonly found in conventional portals. While SwipeRight demonstrates the potential of combining mobile interaction patterns with lightweight AI techniques, it is not without limitations. The current version relies on rule-based similarity scoring and has been evaluated on a limited sample of users. A more comprehensive study involving diverse user groups, real-world datasets, and longitudinal usage would provide deeper insights into performance and adoption. Future work will focus on strengthening the recommendation engine using advanced machine learning models, incorporating fairness checks to avoid biased suggestions, and expanding accessibility features for users with different interaction needs. With further refinement and large-scale validation, SwipeRight has the potential

to evolve into a robust recruitment solution that aligns with the expectations of modern, mobile-driven job seekers and employers.

Acknowledgement

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