

Nexera: A Mobile Platform Integrating Instant On-Demand Services and AI-Driven Market Insights

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ABSTRACT

Smart job search systems and mobile applications have significantly improved access to employment opportunities, yet they remain largely constrained to conventional recruitment processes, graduate employability tools, and social networking-based professional systems, leaving a persistent gap between job seekers' immediate needs for flexible, income-generating tasks and the dynamic requirements of local markets and emerging startups. This study introduces Nexera, a Java-based mobile application designed to provide instant service provision, micro-task employment, and grassroots-level purchase insights powered by AI. Unlike existing systems, Nexera integrates job search with real-time market intelligence, enabling users not only to earn through short-term tasks but also to access supplier data, gain entrepreneurial insights, and transition into sustainable business ownership. By connecting local economic actors with AI-driven insights, Nexera supports both regional micro-earning opportunities and instant access to on-demand workers across a region, supporting global entrepreneurial participation and local-to-global market integration. By combining instant gig opportunities, AI recommendations, and startup dashboards, Nexera contributes to both individual empowerment, local economic development, and the broader processes of globalization.

General Terms

Mobile Application, Artificial Intelligence, Gig Economy, Entrepreneurship

Keywords

Micro task, Part-time job search, gig economy, AI insights, mobile applications, grassroots entrepreneurship, local purchase intelligence, global market integration, cross-regional opportunity.

1. INTRODUCTION

Employment ecosystems are undergoing a rapid transformation with the rise of smart platforms, gig-based tasks, and AI-driven decision-making. Conventional online job portals facilitate resume uploads, vacancy management, and candidate selection, while social networking sites such as LinkedIn have become essential tools for professional networking. These systems typically establish a fixed time frame for both part-time

and permanent employment, where workers remain dependent on a particular company or organization. However, existing platforms continue to serve only structured recruitment channels, overlooking the growing gig economy and grassroots entrepreneurial ecosystems. In contrast, gig-based platforms[12] offer working independence and flexibility by providing microtasks[5,9]. In emerging economies such as South Asia and the Middle East, young job seekers increasingly demand flexible, immediate income sources rather than long recruitment cycles. Simultaneously, small startups and local businesses require real-time data on suppliers, wholesale markets, and consumer trends. Current applications fail to integrate these parallel needs into a unified platform.

This paper proposes Nexera, a mobile application that unifies instant micro-task employment, grassroots purchase intelligence, and AI-powered[17,18,22] insights. By addressing both individual income generation and entrepreneurial empowerment, Nexera aims to establish a sustainable, demand-oriented employment model that contributes to local economies. The platform leverages real-time analytics and AI-driven recommendations to optimize task allocation and market insights, ensuring efficiency for both workers and small businesses. In doing so, Nexera bridges the gap between flexible employment opportunities and the practical needs of emerging entrepreneurial ecosystems, fostering inclusive economic growth.

2. OBJECTIVES

The primary objectives of this research are as follows:

- To build an interactive, modular mobile system to efficiently manage jobs and data operations.
- To deliver AI-powered recommendations [17,18,22] that promote worker flexibility, provide local market intelligence, and support grassroots entrepreneurship.
- To enable the execution of short-term micro-tasks [20,21] while facilitating the collection of insights on local markets [4].

3. LITERATURE REVIEW

The study Job Training and Search Assistance for Microwork:

Evidence from Haiti [1] examines the impact of a randomized training program on participants' microwork engagement, socioemotional skills, and English proficiency. The program increased task completion and earnings; however, broader employment outcomes remained unaffected, and microwork was primarily perceived as a supplementary activity. Existing literature underscores the gaps in bridging digital labor with traditional job markets and providing comprehensive skill development. Addressing these gaps necessitates platforms that integrate microwork opportunities with training and support, thereby enhancing both skills and employment prospects. Current approaches emphasize interface-level personalization rather than real-time task provision or local economic integration.

The study Artificial Intelligence in Digital Marketing: Insights from a Systematic Literature Review [3] by Ziakis and Vlachopoulou (2023) conducts a comprehensive bibliometric analysis of AI applications in digital marketing. The review identifies key clusters, including AI/ML algorithms, social media, consumer behavior, e-commerce, digital advertising, budget optimization, and competitive strategies. The findings highlight the transformative potential of AI in enhancing marketing strategies through predictive analytics, personalized user experiences, and real-time data processing. Nonetheless, the study emphasizes the need for continuous exploration due to the rapid evolution of AI technologies and their integration into dynamic digital marketing environments.

The QUICK HIRE system [4] proposes a web-based platform for connecting local service workers with employers via geolocation-based job listings. Its architecture consists of Admin, User, and Preprocessing modules, with a front end developed using HTML5 and Tailwind CSS, while the backend (Node.js, MongoDB) remains incomplete. Although the system supports responsive design and role-based functions, the absence of a mobile application, robust trust mechanisms, and AI-driven recommendations limits its functionality to basic job matching.

Lu, Weng, and Xiao [11] examined labor deployment in the on-demand economy, comparing employee, contractor, and hybrid models from a platform-centric perspective. While the study provides insights for organizational strategies, it overlooks aspects of worker autonomy and the short-term nature of gig work.

Luo and Tharumarajah [12] investigated the impact of flexibility in gig work on work-life balance, identifying factors such as unsocial working hours, job insecurity, unpredictable earnings, and prolonged stress as significant contributors to poor work-life balance among gig workers. The study highlights the challenges faced by gig workers in balancing professional and personal commitments due to the inherent characteristics of gig work.

Wang et al. [16] surveyed multi-task deep recommender systems (MTDRS), discussing task relationships, parameter sharing, training strategies, datasets, and associated challenges.

Rajput et al. [17] proposed TIGER, a generative retrieval recommender system that predicts item identifiers using a Transformer model and Semantic IDs, improving generalization and cold-start performance for sequential recommendations across different purposes.

3.1 Identified Gap

Across existing studies, a common limitation is evident: most platforms focus on job search and recruitment workflows [1,9] but do not integrate instant service provision, grassroots-level

market intelligence, or entrepreneurial enablement. This disconnect between job seekers and local economic realities remains largely unaddressed, highlighting the need for innovative systems such as Nexera. Unlike prior approaches, Nexera emphasizes the worker's perspective by providing a mobile application that enables instant access to short-duration job opportunities (ranging from hours to days), connects local services [4], incorporates AI-driven local market insights, and promotes new entrepreneurs by recommending their services through the platform [14,16,17]. Such features ensure fairer, more transparent, and worker-centric task allocation, fostering autonomy [11,12] and supporting entrepreneurship.

4. METHODOLOGY

This research follows a design science methodology, where a technological artifact (the Nexera application) is conceptualized, designed, and evaluated against existing literature and functional requirements. The methodology includes the following phases:

- **Problem Identification:** Involves a comprehensive review of gaps in current job search and gig economy systems[12].
- **System Design:** Defines Nexera's core modules (Job seeker, Job provider, Startup dashboard, AI insights) and their interactions.
- **Implementation Tools:** Utilizes Java for core application logic, XML for the Android UI, MySQL for data persistence, and AI modules for recommendations.
- **Evaluation Plan:** Encompasses user testing with target users, including job seekers, startups, and local market participants, to assess usability, scalability, and economic relevance.

5. PROPOSED SYSTEM: NEXERA

The proposed Nexera system integrates backend and frontend components into a unified framework designed for scalability and user-centric functionality.

5.1. Features

- **Job Seeker Module:** Allows users to search, apply, and negotiate for instant gigs with location-based task matching.
- **Employer Module:** Enables employers to post tasks, review applicants, and view ratings and performance analytics.
- **Startup Dashboard ("Uddokta Corner"):** Provides startups with tools to delegate tasks, collect grassroots market data[21], and monitor supplier insights.
- **AI Engine:** Generates personalized purchase suggestions, startup ideas, and supplier recommendations.
- **Trust & Analytics Layer:** Integrates reviews, ratings, and performance dashboards to ensure platform credibility and user trust.

5.2. System Architecture

The system architecture is designed to ensure modularity and efficiency. A multi-tier architecture separates the presentation layer (Android UI), application logic (Java/PHP), and data layer (MySQL).



Figure 1: System Architecture diagram of Nexera

5.3. Implementation

The implementation phase involved the concurrent development of the backend and frontend components.

5.3.1 Backend Development

The backend of the Nexera platform was developed using a MySQL relational database and PHP server scripts. Communication between the mobile client and server was managed through Volley HTTP requests.

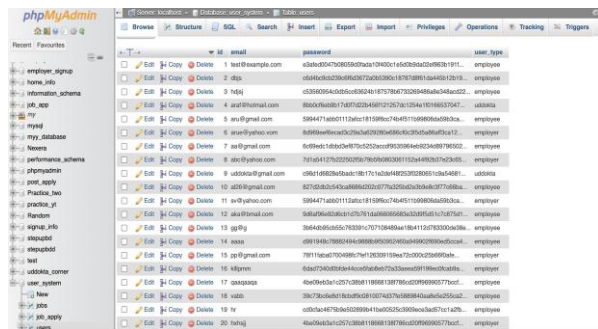


Figure 2: Recorded Data into MySQL Database

The server returned responses in JSON format or as plain text, ensuring efficient data exchange.

5.3.2 Frontend Development

The frontend was developed as an Android application using standard components such as EditText, Buttons, ListView, and RecyclerView. Features including search filtering, auto-scrolling banners, and optimized network request handling were implemented to enhance usability. AI-driven recommendations were integrated through a WebView module.

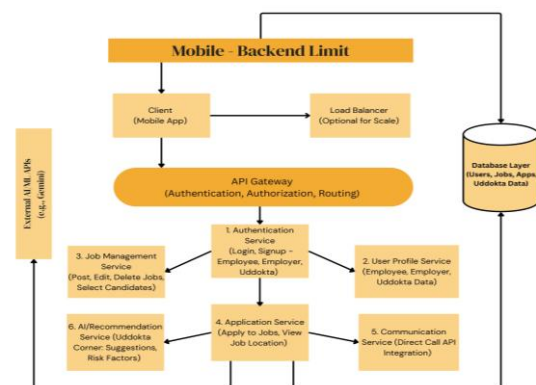


Figure 3: Frontend and Backend Integration Diagram

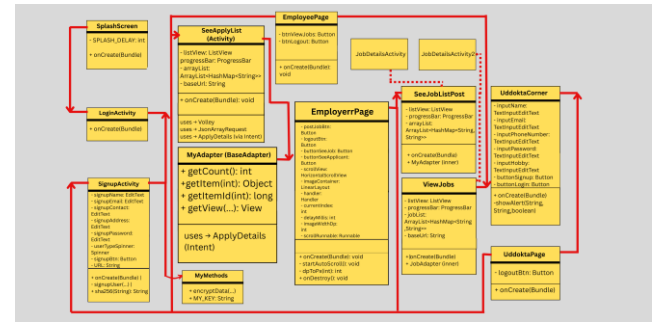


Figure 4: UML Class Diagram

5.4. Testing

The system was rigorously tested across its three major functional modules.

5.4.1 Ai-Section Activity Testing

Two AI-powered web applications were integrated into the Android environment using the WebView component. The first module, AiSuggestion, incorporates a conversational assistant for general-purpose tasks. The second module, AiIdeaGenerate, embeds a business ideas generator. Testing confirmed seamless integration and functionality. The location access feature, which uses a geo:0,0?q=LocationName URI to invoke Google Maps, was verified to work reliably, with a fallback to a web browser if the app is not installed.

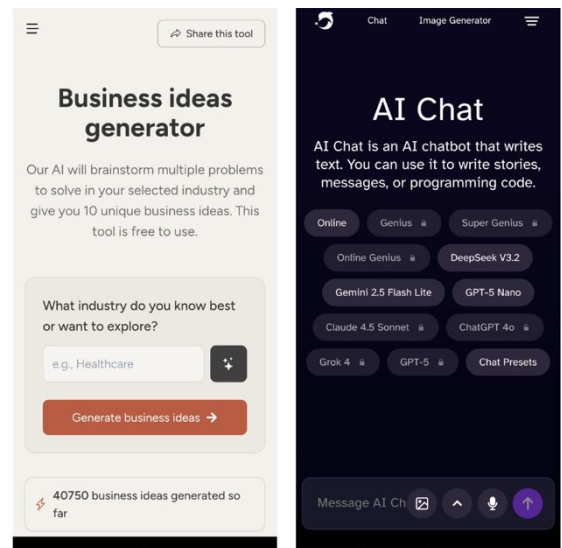


Figure 5: Business Idea Generator and AI Chat

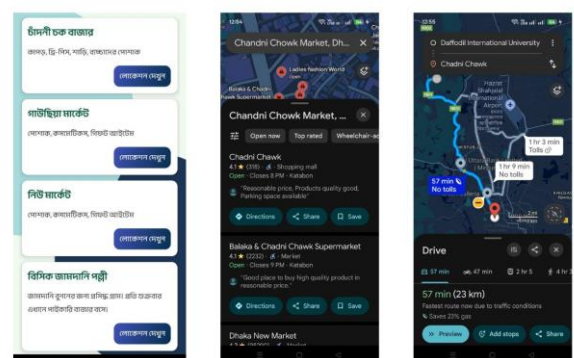


Figure 6: Searching Local Market using AI with Location

5.4.2 Job Posting Section Activity Testing

The PostJob module was tested to ensure accurate

communication between the Android frontend and the PHP-MySQL backend. Tests confirmed that job details submitted through the mobile form were successfully transmitted via HTTP requests and correctly inserted as new records into the database. Server responses were reliably displayed to the user. Furthermore, the module demonstrated consistent performance under multiple consecutive submissions, ensuring stability and reliability in real-world usage scenarios.

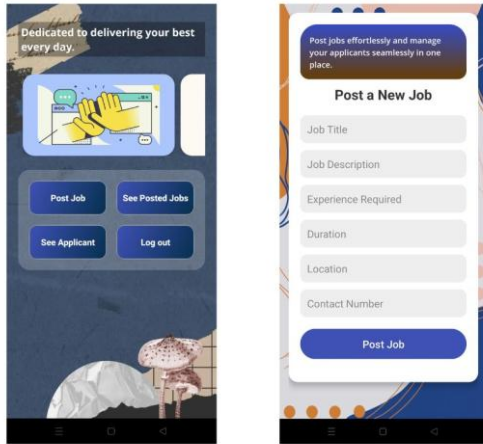


Figure 7: Interface for posting new jobs

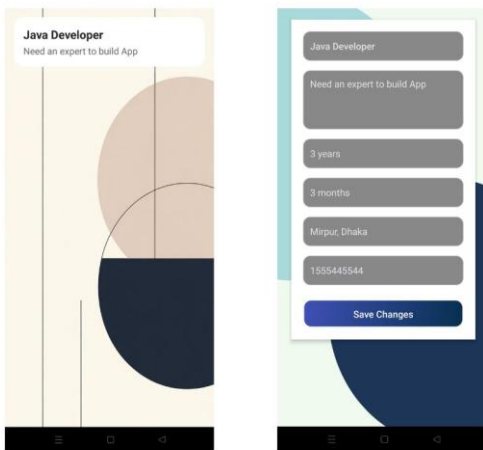


Figure 8: Interface for viewing jobs

5.4.3 Job Applying Section Activity Testing

The ViewJobs module was validated for seamless data retrieval and display. The backend script successfully returned job data in JSON format, which was correctly parsed and displayed in a ListView. The SearchView filter by location and the logout function were confirmed to operate as expected.

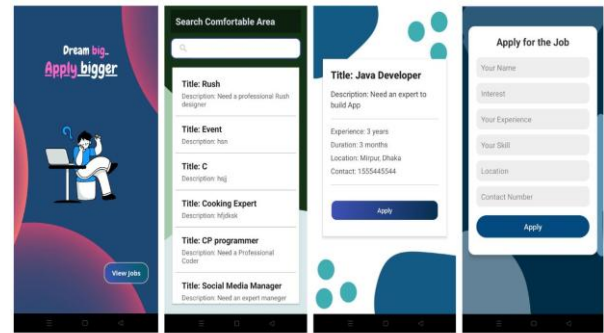


Fig. 9: Interface for finding jobs and applying through the app

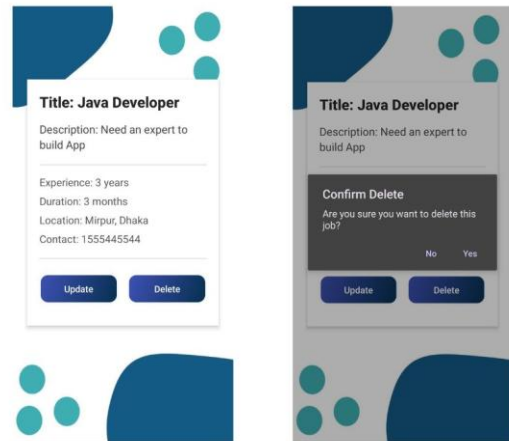


Figure 10: Update and Delete Section

6. RESULTS

The evaluation of the Nexera prototype across its core modules yielded positive results regarding functionality and reliability.

The location access feature demonstrated robust performance, seamlessly opening locations in the Google Maps app when installed, and gracefully falling back to a web browser when unavailable. This design ensures a consistent user experience and prevents application crashes.

For the job posting functionality, the system successfully handled the end-to-end process. The mobile application reliably retrieved employer information and submitted job details to the backend. The PHP-MySQL server consistently inserted new records into the database, with real-time server responses confirming successful communication. This confirms a reliable backend integration.

In the job application module, the data flow from the backend to the frontend was executed flawlessly. Job listings fetched via JSON were displayed with consistent formatting, and the location-based search filter operated effectively. The user session management, including the logout function, performed as intended.

These results demonstrate the system's core architectural reliability in handling critical operations like location services, data transfer, and user interaction. The implementation supports cross-platform stability and fault tolerance. A key discussion point, however, is the use of GET requests for data submission in the current prototype. While functional for testing, transitioning to POST requests is identified as a necessary step for enhanced security in a production

environment. Furthermore, the addition of offline caching mechanisms could significantly improve accessibility for users in regions with low connectivity, addressing a common challenge in the target demographic.

7. CONCLUSION

This research highlights the inadequacy of conventional job search platforms in addressing the combined needs of instant job seekers, startups, and local markets. The introduction of Nexera demonstrates a viable approach where mobile technology and AI converge to empower individuals through flexible income generation and entrepreneurial development. The system's holistic design, which integrates micro-task[5,9] employment with grassroots market intelligence, ensures its relevance for both personal employability and broader economic resilience.

The successful development and testing of the core functional modules validate the proposed architecture and its underlying concepts. The prototype effectively demonstrates instant job posting and browsing, integrated AI tools for business ideation, and reliable location-based market search.

For future work, the following scope is identified to enhance the system:

1. **Advanced AI Integration:** Implementing proprietary or fine-tuned AI models for more nuanced and context-aware recommendations for both gigs and market insights, moving beyond the current WebView integration.
2. **Enhanced Security and Protocol:** Transitioning from GET to POST requests for all data submissions and implementing robust user authentication and data encryption protocols.
3. **Offline Functionality:** Developing capabilities for offline job browsing and application drafting to cater to users with intermittent internet connectivity.
4. **Pilot Deployment and Scalability Testing:** Conducting extensive pilot testing in target urban markets to gather real-world usability feedback and stress-test the system's scalability under load.
5. **Comparative Analysis:** Performing a formal comparative analysis against existing platforms to quantitatively validate improvements in usability, task completion time, and user satisfaction.

In conclusion, Nexera presents a unified platform that redefines user-centric gig economy applications by uniquely combining instant job access with entrepreneurial tools and AI-powered local market intelligence.

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