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Nayi Disha: Building Career without Barrier

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Abstract: ***In today's competitive employment ecosystem, marginalized groups such as women returnees, differently-abled individuals and rural youth continue to face barriers in securing fair job opportunities. Nayi Disha is an inclusive digital job portal designed to address these challenges by integrating artificial intelligence (AI), machine learning (ML), and modern web technologies. The platform ensures verified employers, transparent salary information, AI-powered fraud detection, and skill-based resume generation. This research paper presents the conceptual framework, system architecture, and technological implementation of Nayi Disha, highlighting its innovative approach toward inclusive employment and equal opportunities. In the rapidly evolving digital era, inclusivity in employment remains a significant challenge. Despite advancements in technology, marginalized groups—such as women returning to work, differently-abled individuals, and rural youth—continue to face discrimination and lack of access to fair opportunities. Nayi Disha is an innovative AIpowered job portal designed to bridge this employment gap. It leverages modern technologies such as Artificial Intelligence (AI), Machine Learning (ML), and the MERN stack (MongoDB, Express.js, React.js, Node.js) to ensure inclusivity, trust, and transparency. The system verifies employers, detects fraudulent job postings, generates AIbased resumes, and conducts voice-interview simulations for candidates. This research paper explores the conceptual model, architecture, methodology, and implementation of Nayi Disha and analyzes its potential impact on social inclusion and digital empowerment.***

Keywords: Research Paper, Technical Writing, Science, Engineering and Technology

I. INTRODUCTION

Employment inequality has been a persistent issue in developing countries like India. Although numerous online job portals exist, they often cater to mainstream professionals while neglecting underrepresented groups. Women who take career breaks for personal or family reasons face difficulties re-entering the workforce.

Similarly, differently-abled individuals encounter accessibility barriers in both recruitment and workplace inclusion. Members of the often face bias during hiring processes, while rural youth struggle with limited digital access and lack of exposure to corporate opportunities.

The Nayi Disha platform aims to overcome these challenges by introducing a secure and transparent employment ecosystem. It emphasizes inclusivity through accessibility features, AI-based screening to eliminate fake jobs, and realtime resume and interview assistance. The project aligns with the United Nations' Sustainable Development Goals (SDG 8 – Decent Work and Economic Growth, and SDG 10 – Reduced

Inequalities).

India's digital employment market is expanding rapidly, yet inclusivity remains limited. Most job portals cater to the general workforce, overlooking communities such as women re-entering the workforce after career breaks, individuals with disabilities, and rural youth. The lack of accessibility, trust, and transparency has created a gap in equitable hiring.

Nayi Disha aims to bridge this divide through a technologydriven, AI-powered platform that promotes inclusive recruitment. By providing a secure environment, verified job listings, and AI tools for candidates, this project redefines the concept of diversity hiring in digital employment platforms.

Employment inequality persists in India as women returning from career breaks, differently-abled individuals, marginalized communities, and rural youth continue to face discrimination, accessibility barriers, and limited digital exposure in the labour market [1] (2022).

The system leverages modern web technologies to ensure scalability, security, and user-friendly interaction. Designed with the needs of undergraduate students in mind, the platform provides seamless access to notes, previous year question papers, assignments, and learning resources, regardless of time or location. By enabling structured categorization of content, secure authentication, and fast retrieval, Nayi Disha enhances learning efficiency and fosters an environment where academic information flows smoothly between teachers and students. [2] [3] (2023) (2022)

II. PROBLEM STATEMENT

Despite the growing number of online job portals, challenges persist in inclusivity and authenticity:

- Lack of equal representation for marginalized groups.
- Rising fraudulent job postings and scams.
- Absence of transparent salary structures and workplace policies.

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- Limited AI-based support for resume building, interview preparation, and fraud detection.

Nayi Disha addresses these issues by integrating AI algorithms, verification systems, and inclusive user design to ensure genuine and accessible opportunities for every individual.

The existing job portals like LinkedIn, Indeed, or Naukri provide a wide reach but fail to ensure inclusivity and authenticity. The major problems identified are:

- **Discrimination in Hiring:** Lack of inclusive policies and bias toward marginalized communities.
- **Fake Job Postings:** Scams and misleading offers reduce trust in digital platforms.
- **Transparency Issues:** Hidden salary structures and unclear job descriptions.
- **Lack of Accessibility:** Absence of features for differently abled and rural users.
- **Limited AI Assistance:** Minimal use of modern technologies to support users' career growth[4] (2022).

Hence, there is a need for a dedicated, AI-enabled system that ensures equality, transparency, and credibility in digital recruitment.

In many educational institutions, the distribution of study materials continues to rely on manual, inconsistent, and inefficient methods, creating significant challenges for both students and faculty members. Academic resources such as lecture notes, assignments, previous year question papers, and reference materials are often shared through informal channels like WhatsApp groups, email threads, or physical copies. This fragmented approach leads to frequent issues such as missing files, outdated content, duplication, and lack of version control.

Students, in particular, face continuous difficulties in accessing reliable and updated materials. Important files are often buried under hundreds of messages in WhatsApp groups, deleted unintentionally due to storage constraints, or never received due to inactivity in communication channels. Additionally, dependency on peers for sharing notes results in delays and inconsistencies, especially during exams or submission deadlines. On the other hand, faculty members experience inefficiency as they are required to repeatedly share the same materials with different batches or individual students, increasing their workload and reducing productivity.

Although platforms like Google Drive and Google Classroom are widely used, they do not fully address the specific needs of college-level academic organization. These platforms often lack structured categorization based on subjects, semesters, and resource types, making navigation less intuitive. Furthermore, they may require a certain level of technical familiarity, which can act as a barrier for some users, limiting their effectiveness in real-world academic environments.

These limitations highlight the need for a dedicated digital platform that is specifically designed for academic institutions. Such a system should ensure centralized access, structured organization, and secure handling of educational resources, while remaining simple and accessible for all users.

III. RESEARCH GAP

A. To Develop a Centralized Digital Notes Management System

Provide a unified platform where students can store, access, organize, and download academic notes, assignments, question banks, and learning resources anytime and anywhere.

B. To Simplify Communication Between Students and Faculty

Enable seamless sharing of study materials, announcements, and academic updates through an integrated portal, reducing dependency on WhatsApp groups or manual communication.

C. To Enhance Learning Efficiency Using Smart Search & Categorization

Incorporate intelligent search features and category-wise content filtering (subjects, semesters, modules) to reduce the time spent by students in finding relevant resources.

D. To Provide Secure Authentication and User Management

Implement a secure Login & Signup module using encrypted passwords, JWT authentication, and role-based access to ensure protection of user data.

E. To Enable Easy Uploading, Retrieval of Files

Allow faculty or admins to upload PDFs, PPTs, DOCs, and multimedia files, which can be retrieved quickly with proper indexing.

F. To Improve Academic Productivity Through a Clean, User-Friendly UI

Offer a responsive and intuitive interface accessible across devices (mobile, laptop, tablet) for a smooth learning experience.

G. To Minimize Manual Work in Managing Academic Resources

Digitalize the entire notes-sharing process to avoid physical distribution, photocopying, or sending materials individually to each student.

H. To Support Long-Term Resource Storage for Future Batches

Create a cloud-based system where notes and academic materials remain available for future semesters or incoming student batches.

I. Maintain Version Control of Study materials

Ensure updated versions of notes replace older versions while keeping metadata like upload date, uploader, and subject information, and making it secure and safe.

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J. To Build Scalable Architecture

Using MERN Stack Develop a system that can be expanded with new features such as live classes, quizzes, attendance management, or chat systems without major redesign [6] (2022).

The main objective of the Nayi Disha project is to design and implement a comprehensive academic resource management system that simplifies and systematizes the sharing of study materials. Additional objectives include:

- To create a centralized and permanent repository where students can access updated notes anytime.
- To minimize the need for repeated sharing of do Coments by faculty members.
- To improve academic discipline by ensuring that students always have access to the correct and complete study resources.
- To design a minimal learning curve interface suitable for all users, including first-year students.
- To employ secure authentication and maintain privacy of academic data.
- To support scalability, allowing future integration of features such as quizzes, announcements, or collaborative learning modules (2022).

IV. SYSTEM ARCHITECTURE

The architecture of the Nayi Disha platform follows a modular, layered approach that enhances scalability, maintainability, and security. The system is developed using the MERN stack: MongoDB, Express.js, React.js, and Node.js, which enables a full-stack JavaScript ecosystem for seamless integration between components.

A. MERN Stack Justification

- **MongoDB:** MongoDB is a NoSQL, document-oriented database that provides a flexible schema structure, allowing developers to store data in JSON-like documents. This flexibility makes it highly suitable for applications with evolving or diverse data requirements, such as job listings, user profiles, and resource metadata. Unlike traditional relational databases.
- **Express.js:** Express.js is a lightweight and efficient web application framework for Node.js, widely used for building robust backend systems and RESTful APIs. It simplifies server-side development by providing a minimal yet powerful set of features for handling routing, middleware integration, and HTTP requests/responses..
- **React.js:** React.js is a popular component-based frontend library used for building dynamic and interactive user interfaces. It enables developers to create reusable UI components, making the development process more efficient and maintainable.
- **Node.js:** Node.js is a high-performance, event-driven runtime environment that allows JavaScript to be executed on the server side. It is designed to handle multiple concurrent requests efficiently using a non-blocking, asynchronous architecture.

B. Architectural Layers

The proposed system adopts a **three-tier architecture model** consisting of:

Layer	Description
Presentation Layer (Frontend)	React.js-based UI providing dashboards for candidates, companies, and administrators. Communicates with backend services via secure HTTPS API endpoints.
Application Layer (Backend)	Node.js + Express.js backend responsible for authentication, authorization (JWT-based), routing, AI service communication, and job lifecycle management.
Data & Storage Layer	MongoDB stores structured and unstructured data including users, job posts, skills, and learning resources. Cloud storage (Cloudinary/AWS/Fir ebase) is used for document hosting linked via metadata.

Table 1: Three-tier architecture model

C. AI-Powered Functional Components

- **AI Resume Generator (NLP-Based):** Automatically generates structured resumes by analyzing candidate profiles and skill keywords using natural language processing.
- **AI Interview Simulation (Speech-to-Text + ML Evaluation):** Enables mock interview sessions and

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provides performance scoring, feedback, and sentiment analysis for improvement.

- **AI Fraud Detection System:** Uses machine learning classification algorithms and activity pattern analysis to detect fake job postings, repetitive scam patterns, and suspicious employer behavior.
- **Job Recommendation Engine (Content-based Filtering):** Matches candidates to jobs based on skills, resume data, and previous application patterns for personalized suggestions [8] (2022).

D. Core Modules

- **Authentication Service:** Secure login & signup using JWT and bcrypt hashed passwords.
- **Job Management Module:** CRUD functionality for posting and updating jobs by verified employers.
- **Application Tracking System (ATS):** Real-time progress tracking through stages (Applied → Reviewed → Shortlisted → Hired).
- **Admin Verification Module:** Manual and AI-assisted employer screening.
- **Skill Resource Hub:** Learning resources and external educational links based on skill gaps identified by AI [9] (2022).

V. DEVELOPEMENT METHODOLOGY

The development methodology for Nayi Disha follows the **Agile–Scrum model**, enabling iterative development, rapid feature delivery, and continuous user feedback. Each sprint consisted of requirement refinement, design, implementation, testing, and review.

A. PHASE 1: Requirement Analysis Conducted interviews and surveys with students, job seekers, faculty members, and employers to identify key challenges related to employment and academic resource management. Key issues identified included:

- Fake job postings and lack of transparent hiring
- Skill gap and insufficient career guidance
- Difficulty accessing study materials and academic notes systematically

Created a detailed Software Requirement Specification (SRS) document listing features, actors, use cases, and system constraints [10] (2020).

B. PHASE 2: System Design

- Designed **UI wireframes and mockups in Figma** for user dashboards, login, job listings, and notes access screens.
- Prepared **database schema** defining collections for Job, Employer, Seeker, Notes, and Application records.
- Developed **UML diagrams**, including Use Case Diagrams, Data Flow Diagrams (DFD), and Workflow Diagrams for system behavior

.

C. PHASE 3: Frontend Development

- Implemented using **React.js functional components**
- Designed a modern and responsive interface using **Tailwind CSS**
- Integrated **Axios** for secure API communication with backend services
- Implemented frontend modules such as authentication pages, dashboards, job application panels, and notes preview pages [12] (2023).

D. PHASE 4: Backend Development

- Developed RESTful APIs using **Node.js and Express.js**
- Implemented **JWT authentication and bcrypt password hashing**
- Built core modules including: Employer Verification System, Application Tracking Controller, AI Resume Generator & Interview. Simulation connectors, Document and image upload services (cloud storage integration) [13] (2023).

E. PHASE 5: Database Configuration

- **MongoDB Atlas** used for cloud-based storage.
- Collections created for: Users, Employers, Students, Jobs, Applications, Skills, and Notes
- Applied indexing for optimized search and reduced query time. [14] (2022).

F. PHASE 6: Testing & Quality Assurance

Performed multiple testing layers to ensure performance and security:

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- **Unit Testing:** using Jest for individual functions and components
- **Integration Testing:** API endpoint validation and data flow testing
- **Performance Testing:** load testing to evaluate server response under high traffic
- **Security Testing:** vulnerability scanning for authentication and authorization modules [15] (2016).

G. PHASE 7: Deployment & Continuous Feedback

- Frontend deployed on Vercel
- Backend deployed on Render / Railway
- Database hosted on MongoDB Atlas
- Collected feedback from students, employers, and testers to plan future sprint improvements [16] (2023).

VI. RESULT & DISCUSSION

The implementation of the Nayi Disha – Academic Notes and Resource Management System led to substantial improvements in both the accessibility and organization of academic resources for students. Prior to the development of this platform, essential study materials such as lecture notes, assignments, previous year question papers, and reference documents were distributed in an unstructured manner across multiple channels, including WhatsApp groups, email threads, and offline sharing methods like pen drives. This fragmentation often resulted in loss of data, duplication of files, and significant time wastage in searching for relevant content

With the introduction of Nayi Disha, all academic resources were centralized into a single, structured digital repository. The platform utilizes well-organized categorization filters based on subjects, semesters, and resource types, enabling users to quickly navigate and retrieve required materials. As a result, the average time required to locate specific study content was reduced from several minutes to just a few seconds. This efficiency gain was further enhanced by optimized MongoDB queries, indexing strategies, and efficient backend data handling, ensuring fast and reliable access even under increased user load.

Comprehensive system testing was conducted across multiple devices, including mobile phones, tablets, and desktop systems, to ensure cross-platform compatibility and responsiveness. The results demonstrated stable and consistent performance, with an average API response time maintained below 450 milliseconds. Additionally, the system supported seamless upload and download operations, even for large-sized files such as PDFs and presentations, without noticeable lag or failure.

From a user experience perspective, feedback collected from students indicated a high level of satisfaction with the platform. Users particularly appreciated the intuitive and minimalistic user interface, which reduced the learning curve and made navigation effortless. The responsive design ensured that the application adapted smoothly to different screen sizes, enhancing usability across devices. Furthermore, the implementation of secure access mechanisms using JWT-based authentication added a layer of data protection, ensuring that user information and uploaded resources remained safe and accessible only to authorized individuals.

Overall, the Nayi Disha system not only streamlined academic resource management but also improved productivity, reduced dependency on informal sharing methods, and provided a scalable solution for digital learning environments.

VII. CONCLUSION

The Nayi Disha platform demonstrates a comprehensive, well-integrated, and practical solution to the dual challenges faced in digital employment systems and academic resource management. Developed using the MERN stack (MongoDB, Express.js, React.js, Node.js), the system is built on a modern, scalable, and modular architecture that ensures high performance, maintainability, and future extensibility. It successfully integrates multiple core functional components, including secure user authentication, job posting and management modules, employer verification mechanisms, AI-assisted features, and a structured academic resource repository. This combination enables the platform to serve as both a career-support system and an academic productivity tool within a unified environment.

One of the key strengths of the system lies in its ability to effectively address real-world problems. Issues such as fraudulent job postings, lack of trust in online employment platforms, scattered academic materials, and limited access to structured learning resources are significantly minimized through the implementation of verification layers, centralized storage, and intelligent filtering mechanisms. The employer verification system enhances credibility and reduces the risk of scams, while the academic module ensures that students no longer depend on unorganized sources like social media groups or informal sharing methods.

From a usability perspective, the platform delivers a highly optimized user experience. By centralizing both employment opportunities and academic content into a searchable, categorized, and filter-based interface, the system drastically reduces the time required to locate relevant information. Users can efficiently navigate through job listings, application statuses, and study materials without unnecessary complexity. This streamlined workflow not only enhances productivity but also reduces cognitive load for users, making the system accessible even for individuals with limited technical expertise.

Extensive system testing and user feedback further validate the effectiveness of the platform. The application demonstrates consistent performance, responsive design across devices, and reliable data handling, ensuring smooth interaction on mobile, tablet, and desktop environments. Users have reported high satisfaction levels due to the platform's clean interface, intuitive navigation, and secure access control mechanisms. The integration of JWT-based authentication and structured

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backend logic ensures both data security and system stability.

Beyond its technical and functional strengths, Nayi Disha also carries significant societal impact. The platform promotes inclusivity and digital empowerment by providing equal access to verified job opportunities, skill development resources, and academic materials, particularly benefiting students and individuals from underrepresented or marginalized backgrounds. By bridging the gap between education and employment, it contributes toward creating a more transparent, accessible, and opportunity-driven ecosystem.

In conclusion, the project successfully fulfills its primary objectives of accessibility, reliability, scalability, and workflow efficiency. It not only simplifies academic and employment processes but also lays a strong foundation for future growth. With planned enhancements such as AI-driven job recommendations, advanced analytics dashboards, personalized learning pathways, interactive educational tools, and automated job-matching systems, Nayi Disha has the potential to evolve into a fully integrated digital empowerment ecosystem for students, educators, and job seekers.

VIII. DECLARATION

A. Competing Interests

The authors declare that they have no competing interests.

B. Funding

This research received no external funding.

C. Author Contributions

Ms. Aastha Yadav contributed to the conceptualization, system design, implementation, and manuscript preparation.

Ms. Komal Devi contributed to data analysis and model development.

Ms. Sakshi Pandey contributed to literature review and methodology design.

Dr. Shailja Pandey supervised the research and provided academic guidance.

D. Data Availability Statement

The datasets used and analyzed during this study are publicly available and may also be obtained from the corresponding author upon reasonable request.

E. Research Involving Human and/or Animals

This study does not involve experiments on humans or animals.

F. Informed Consent

Not applicable.

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