ProFolio: An Intelligent Resume And Portfolio Builder Using Mern Stack

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Abstract: The creative and personalized brand of applicants is often not fully conveyed in conventional paper-based resumes, which limits their effectiveness in today's competitive job market. Existing digital tools are mostly restricted to either resume building or portfolio management, offering limited integration with recruiters and minimal opportunities for collaboration. To address these shortcomings, this paper introduces *ProFolio*, an intelligent and unified platform developed using the MERN stack (MongoDB, Express.js, React.js, Node.js). The system provides customizable templates, drag-and-drop editing, multimedia support, and real-time updates with adjustable visibility options. In addition, recruiters are equipped with tools for candidate search, bookmarking, and direct communication, while administrators ensure platform integrity through role-based access and oversight.

ProFolio also incorporates modern technologies such as secure multi-factor authentication (Local, Google, GitHub), cloud-based file storage with Cloudinary, and analytics dashboards for tracking recruiter engagement and portfolio visibility. Preliminary testing with pilot users indicates that the system significantly reduces the time required for resume creation, improves customization, and enhances recruiter efficiency compared to existing approaches. The paper discusses the architecture, design methodology, and implementation of *ProFolio*, emphasizing its potential as a scalable, user-friendly, and integrated solution for career development.

Keywords - Resume Builder, Portfolio Builder, MERN Stack, Recruitment System, Cloud Storage, Authentication, Analytics, Career Development

I. INTRODUCTION

Career development largely depends on resumes and portfolios. Conventional platforms rely on fixed templates, but they fail to adapt to evolving career requirements, recruiter expectations, and applicant tracking system (ATS) compatibility. Moreover, most existing solutions rarely allow users, recruiters, and administrators to collaborate effectively within a unified ecosystem.

ProFolio is solving these constraints through a create-your-own and interactive tool that brings together resume-creation, portfolio-building, and job-search services. The system allows job seekers to create a creative resume and a portfolio with the recruiters being provided with utilities like candidate search, bookmarking and direct communication. System integrity is provided by committed monitoring functions by administrators.

This paper provides the motivation, problem definition, related work, system design, methodology and the results of ProFolio and shows that it can be used as an intelligent career management platform.

II. MOTIVATION AND PROBLEM DEFINITON

Digital screening methods are becoming more popular among recruiters and job seekers are limited and disjointed. Key challenges include:

- Static resumes that fail to showcase creativity or adaptability.
- Separate tools for resumes and portfolios.
- Lack of recruiter-centric features such as bookmarking and candidate tracking.
- Minimal support for real-time updates and analytics.

ProFolio addresses these issues with an all-in-one, scalable, and intelligent solution.

A. For Job Seekers

- Difficulty managing resumes and portfolios in one place.
- Limited personalization and optimization.
- Lack of analytics on visibility and recruiter engagement.

B. For Recruiters

- Scattered candidate information across multiple platforms.
- No unified system for resumes, portfolios, and interaction.
- Time-consuming evaluation and filtering processes.

C. Existing Gaps

- Tools focus on either resumes or portfolios, rarely both.
- Few systems include recruiter or admin-specific modules.
- Weak ATS integration and limited real-time collaboration.

III. LITERATURE SURVEY

The work done previously regarding resume and portfolio builders shows incremental progress as well as illustrates gross limitations.

- **ResumeFlow (Zinjad, 2024)** employed large language models for automated resume generation, but its reliability remained limited [1].
- **Early Resume Builder Applications (Patil, 2024; Surolia, 2024; Hajare, 2021)** enabled structured CV creation but lacked job board integration and advanced AI features [2–4].
- **Automatic Resume Generator (Aladi, 2017)** introduced automation but offered limited flexibility [5].
- **Portfolio Systems (Cavalcante, 2015)** emphasized personal branding through portfolio creation but lacked recruiter integration [6].
- **Survey Papers (Kungwani et al., 2023; Raut, 2023)** highlighted the importance of template diversity and personalization as critical adoption factors [7–8].
- **IEEE ResumeLab (2018)** demonstrated the potential of integrated ecosystems for career management [9].

The literature indicates consistent improvements in resume optimization, but integrated systems that integrate resumes, portfolios and electronic contact with recruiters have not been studied extensively. ProFolio fills this research gap by providing one intelligent career management system.

IV. PROPOSED WORK

ProFolio is a proposed system which is a single career platform that is meant to dispel the inefficiencies of the traditional resume and portfolio tools. The solution consolidation brings the user, recruiter, and administrator point of view into one ecosystem.

A. Proposed Solution

- **Smart Resume & Portfolio Builder** – Interactive editor and customizable templates.
- **Three Dashboards** – User (resume/portfolio management), Recruiter (candidate search and bookmarking), and Admin (system oversight).
- **Secure, Cloud-Based Platform** – Multi-authentication (Local, Google, GitHub) and Cloudinary for storage.
- **Analytics & Insights** – Track recruiter engagement, portfolio visibility, and candidate performance.

B. Key Features

- Customizable resume builder with templates.
- Multimedia-enabled portfolio creation.
- Role-based dashboards (User, Recruiter, Admin).
- Analytics for visibility and performance tracking.
- Secure authentication via Passport.js.
- Cloud deployment (Vercel for frontend, Render for backend).

C. Innovative Research Modules

- User-Centric Design and Experience.
- Dynamic and Interactive Portfolio Creation.
- Real-Time Resume and Portfolio Editing.
- Data Analytics and Performance Tracking.
- Multi-Platform Accessibility (Web, Mobile, Offline).
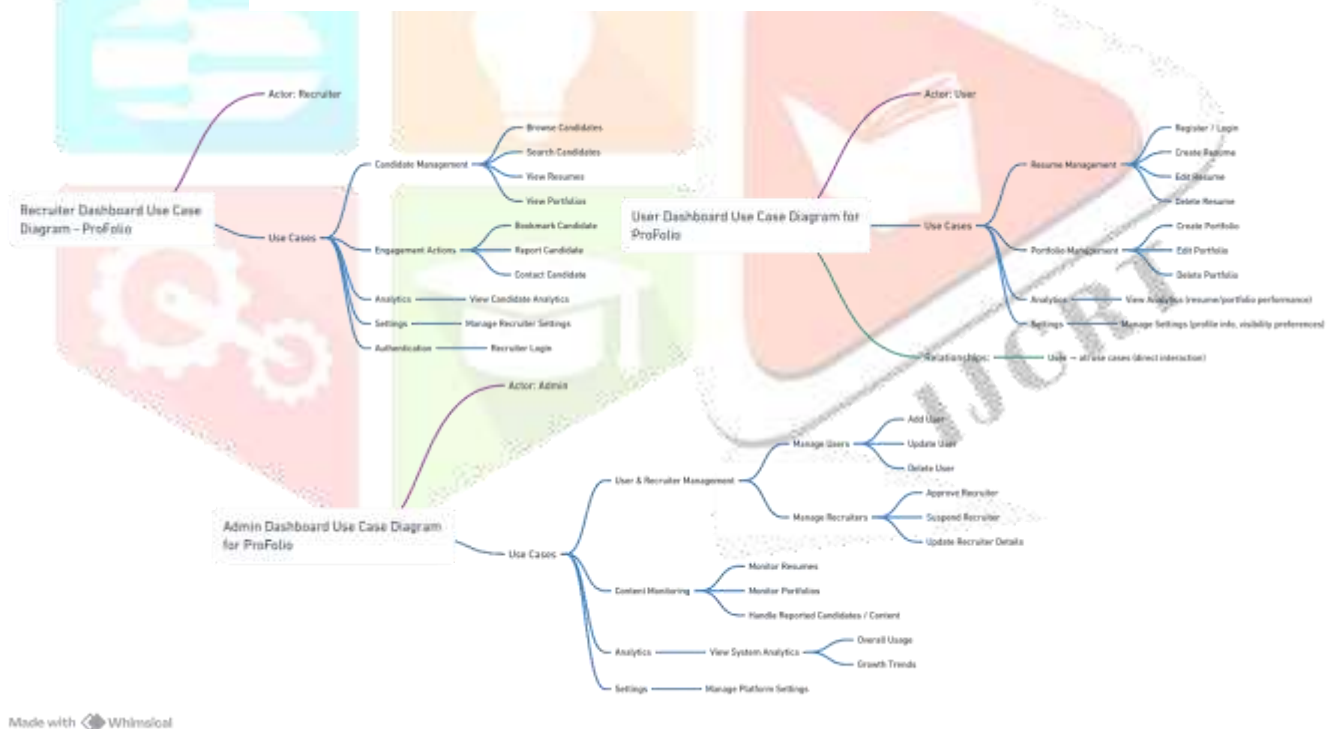

Figure 1: Dashboard Overview figure

Figure 2 Use Case diagram Of User, Recruiter & Admin Dashboard

V. METHODOLOGY

The development of ProFolio follows an Agile methodology to ensure iterative progress, continuous feedback, and adaptability. The system is implemented using the MERN stack with integrated cloud services and authentication strategies.

A. Frontend

The frontend is developed using **React.js** for component-based architecture and **Tailwind CSS** for responsive, utility-first styling. A **TinyMCE** editor is integrated for resume and portfolio content creation with rich-text and media support.

B. Backend

The backend is built on **Node.js** with **Express.js**, providing RESTful APIs for efficient data exchange between the client and server.

C. Database

A **MongoDB** database is used, managed with **Mongoose ORM** for schema modeling and structured queries.

D. Authentication

User authentication and authorization are handled with **Passport.js**, supporting Local, Google, and GitHub strategies. This ensures secure and flexible access management across all dashboards.

E. Cloud Integration

Cloudinary is employed for media storage, enabling resume and portfolio images or files to be uploaded and served efficiently.

F. Deployment

The application is deployed in a cloud-based environment: the **frontend on Vercel** and the **backend on Render**, ensuring scalability and high availability.
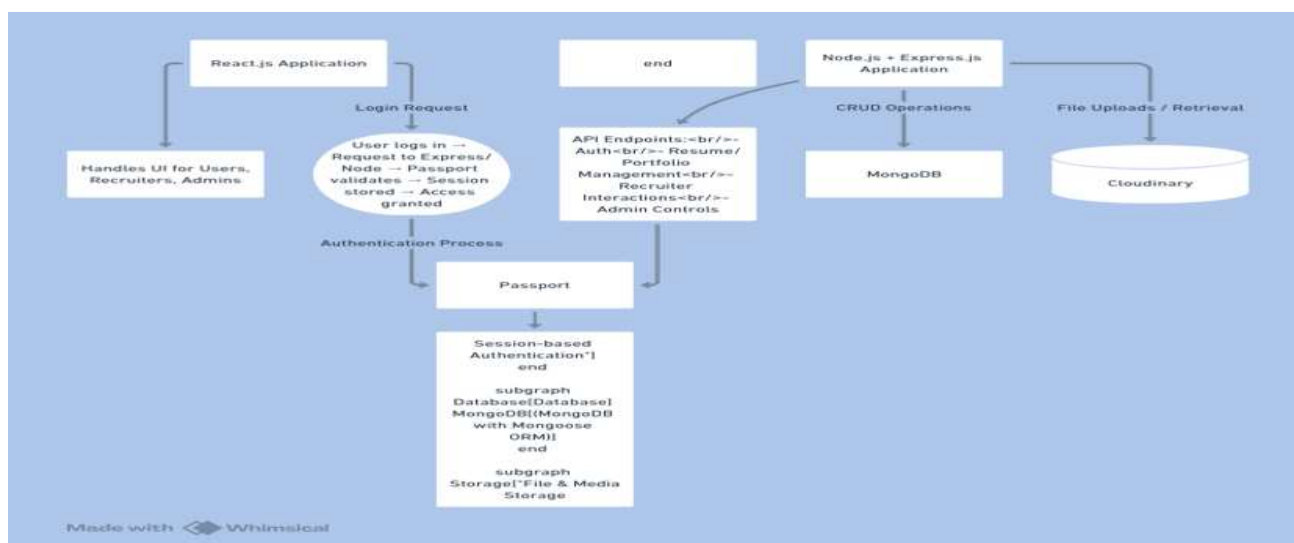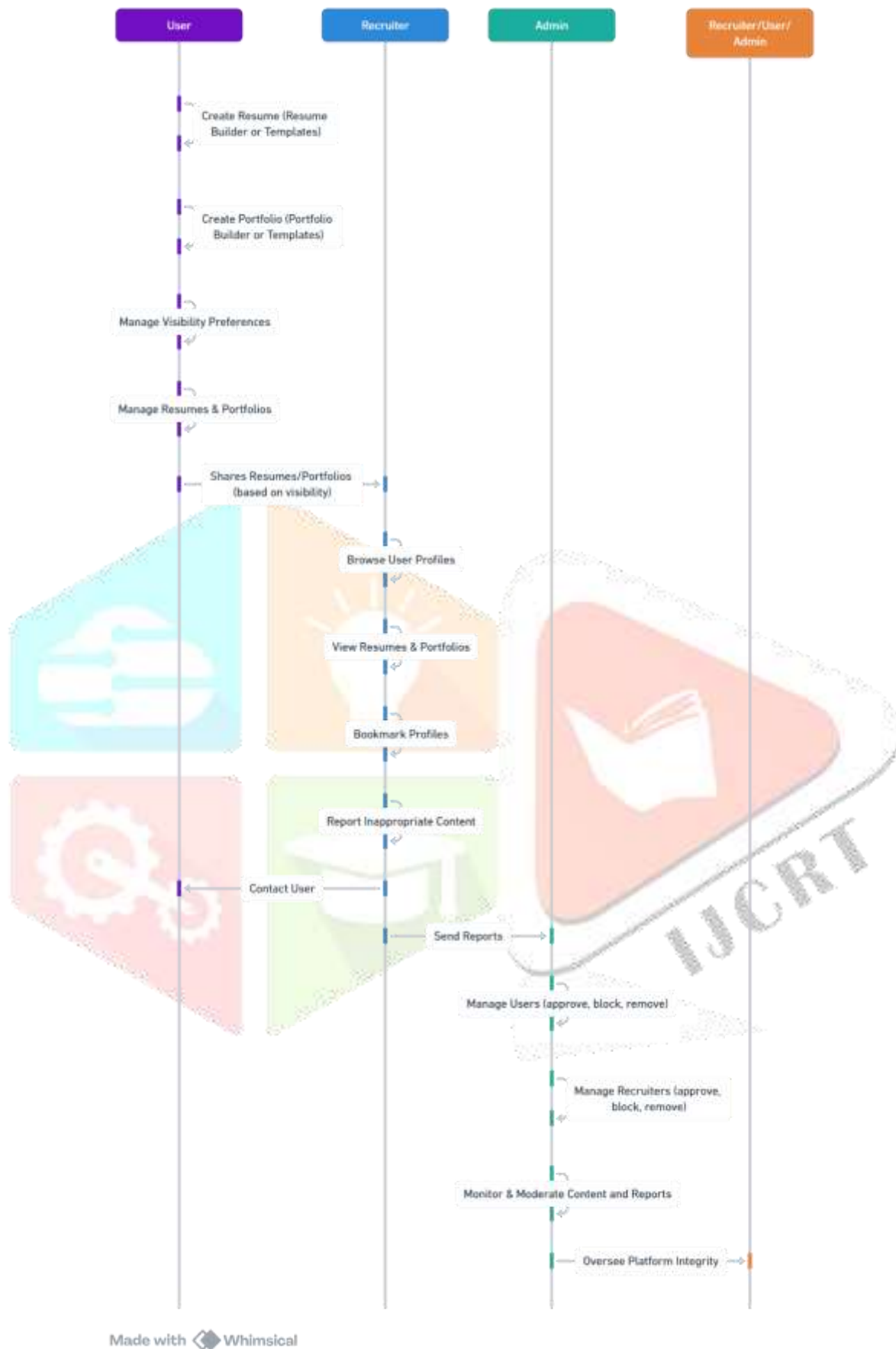

Figure 3: System Architecture Diagram

Figure 4: Interaction/Data Flow Diagram

VI. RESULTS AND DISCUSSIONS

Pilot testing of the *ProFolio* system was conducted with a group of 10 users, including both job seekers and recruiters. The results highlight the effectiveness and potential of the platform.

A. Results

- **Customization:** 90% of participants rated the resume and portfolio templates as highly customizable.
- **ATS Compatibility:** Generated resumes achieved over 80% compatibility with Applicant Tracking Systems (ATS).
- **Recruiter Efficiency:** The analytics dashboard improved recruiter efficiency by approximately 30%.
- **Recruiter Feedback:** Bookmarking and reporting features were identified as particularly valuable for candidate management.

B. Discussion

The results indicate that modern web technologies, when combined with interactive design, can enable a scalable and user-friendly career platform. *ProFolio* bridges the gap between existing fragmented tools by integrating resume building, portfolio management, and recruiter interaction in one ecosystem**.**

However, certain limitations remain**:**

- Lack of Artificial Intelligence (AI)-powered assistance for automated recommendations.
- Limited export formats beyond the provided templates.
- Heavy reliance on manual user input.

Planned improvements include the introduction of **AI-driven resume optimization**, enhanced **ATS support**, and the development of **mobile applications** for broader accessibility.

Table 4.1: Limitations of Existing Tools vs. ProFolio

Feature / Aspect	Existing Tools	ProFolio
Resume & Portfolio Integration	Separate tools	Unified ecosystem
Recruiter Features	Minimal / None	Search, Bookmark, Reports
Customization	Limited Templates	Highly Customizable
Analytics	Absent	Recruiter & User Dashboards
Interest rate	-0.13	0.05
Authentication & Security	Basic	Multi-factor, OAuth
Cloud Storage	Not integrated	Cloudinary support

VII. CONCLUSION AND FUTURE SCOPE

The system, which has been proposed, ProFolio, combines resumes, portfolios, recruiters, and administrators into one ecosystem that supports personal branding and makes hiring easier. The platform shows that scalable and innovative career management solutions can be successfully supported by open-source web technologies, in particular, the MERN stack.

The results from pilot testing confirm the usefulness of ProFolio in improving recruiter efficiency, increasing ATS compatibility, and enabling better personalization for job seekers. By combining user-centric features with recruiter-oriented tools, the system offers a balanced approach to career development and recruitment.

Future Scope

To further enhance the system, the following improvements are planned:

- **AI-powered optimization** for resume and portfolio recommendations.
- **Enhanced ATS integration** for improved recruiter compatibility.
- **Offline support** to ensure uninterrupted access to resumes and portfolios.
- **Advanced analytics** to provide deeper insights into recruiter engagement and candidate performance.

VIII. ACKNOWLEDGMENT

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