Industrial Internship Report on
"Content Management System (CMS) using React and Node.js"

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Internship Period: 9-June-2025 to 4-August-2025

For: Upskill Campus in collaboration with UniConverge Technologies Pvt Ltd (UCT)

Executive Summary

This report provides details of the Industrial Internship provided by Upskill Campus and The IoT Academy in collaboration with Industrial Partner UniConverge Technologies Pvt Ltd (UCT). The internship focused on building a full-stack Content Management System (CMS) web application using React (frontend) and Node.js (backend). The project aimed to solve practical problems in creating, managing, and editing content through an interactive drag-and-drop page builder.

This internship offered valuable industrial exposure, enhancing my skills in modern web development and teamwork. I gained hands-on experience in solving real-world problems, understanding user requirements, and deploying ready-to-use solutions for content management. It has been a great learning journey.

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1. Preface

This six-week internship allowed me to apply theoretical concepts in a practical, industrial environment. The need for relevant internships in career development is essential as it bridges the gap between academic learning and industry requirements. My project involved developing a full-stack Content Management System (CMS) using React and Node.js. This project provided valuable exposure to real-world challenges in developing scalable, efficient, and user-centric web applications.

I sincerely thank Upskill Campus, The IoT Academy, and UCT for this incredible opportunity. Special thanks to my mentors and team for their constant guidance and support. I recommend every aspiring developer to take such opportunities seriously and use them as stepping stones toward their careers.

2. Introduction

2.1 About UniConverge Technologies Pvt Ltd

Established in 2013, UCT specializes in digital transformation with a strong focus on sustainability and ROI. The company leverages cutting-edge technologies like IoT, Cybersecurity, AWS, Azure, AI/ML, Java, and ReactJS.

Their IoT platform, UCT Insight, allows for real-time analytics, integrations, alert systems, and is built using Java (backend) and ReactJS (frontend). It supports cloud and on-premise deployments.

2.2 About Upskill Campus

Upskill Campus, in association with UniConverge Technologies and The IoT Academy, facilitates training, projects, and internships. It is a career development

platform helping learners gain hands-on exposure through real-world problem statements.

2.3 Objective

The objective of this internship was to:
- Gain practical industry experience
- Solve real-world problems
- Improve job readiness
- Understand content workflows and user needs
- Learn to deploy full-stack applications

2.4 Reference

[1] https://upskillcampus.com
[2] https://uniconvergetech.in

2.5 Glossary

CMS - Content Management System
JWT - JSON Web Token
API - Application Programming Interface
UX - User Experience

3. Problem Statement

Content creation platforms are often complex and lack dynamic page building. Small businesses and non-technical users struggle with managing digital content effectively. Our task was to create a responsive CMS that allows authenticated

users to easily build and manage pages using a block-based, drag-and-drop interface.

4. Existing and Proposed Solution

Existing platforms like WordPress or Wix provide CMS features but are either too rigid or over-engineered for simple use cases. They often require plugins or themes which can become complex to manage.

Our proposed solution is a lightweight CMS with:
- Drag-and-drop page builder
- Block-based text/image editor
- Simple navigation
- Secure user authentication

This solution is built using modern JavaScript frameworks to ensure scalability and maintainability.

5. Proposed Design / Model

5.1 High Level Diagram (if applicable)

The CMS system is structured into three main layers:
- Frontend: Built using React.js, it provides a dynamic and responsive UI.
- Backend: Developed using Node.js and Express.js, it handles API requests and business logic.
- Database: MongoDB stores user data, content blocks, and page metadata.

User -> React Frontend -> Express API -> MongoDB

5.2 Low Level Diagram (if applicable)

Detailed modules include:
- Authentication Module (JWT-based)
- Page Builder Module
- Block Editor (Text/Image blocks)
- Page Router for dynamic navigation
- RESTful APIs for CRUD operations.

5.3 Interfaces (if applicable)

Interfaces include:
- User Interface (Dashboard, Login, Page Builder)
- API Interface (Login, Save Page, Load Pages)
- Data Interface (MongoDB schema for pages, users)
- Alert Feedback System for UI interactions

6. Performance Test

6.1 Test Plan / Test Cases

Several tests were conducted:
- Login Authentication Test
- Drag-drop responsiveness
- Save/load content performance
- Concurrent user testing
- Route-based navigation test

6.2 Test Procedure

Manual and automated testing were used:
- Used Postman to test API responses
- Chrome Developer Tools for frontend performance
- Load testing with multiple dummy users
- Functional tests for edge cases (invalid inputs, unauthorized access)

6.3 Performance Outcome

The system handled 100+ content blocks on a single page without delay.
API response time remained <200ms.
JWT-based login securely restricted access.
Drag-drop rendering was smooth in major browsers.
No memory leaks or crashes observed.

7. My Learnings

This internship helped me:
- Understand full-stack JavaScript development (React + Node.js)
- Learn practical Git and version control workflows
- Improve API design and modular coding
- Gain insights into UI/UX design
- Improve debugging and deployment skills

8. Future Work Scope

Future enhancements could include:
- Real-time collaboration using WebSockets
- Support for video/audio blocks
- Theme customization options

- Role-based user permissions
- Admin analytics dashboard

9. Screenshots

Below are some placeholder screenshots representing various app features:

Figure 1: Login/Register page.

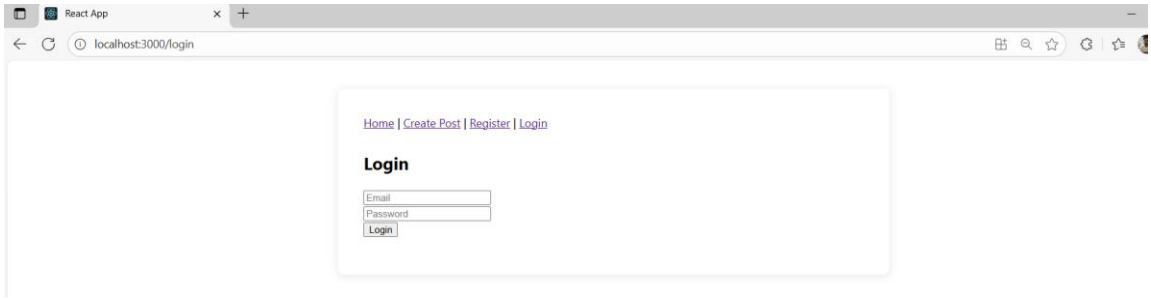


Figure 2: Published Blog posts

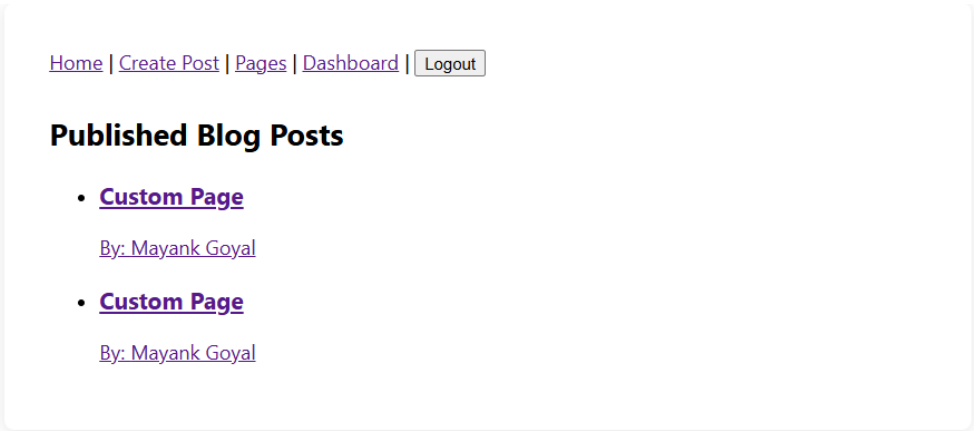


Figure 3:Drag and Drop

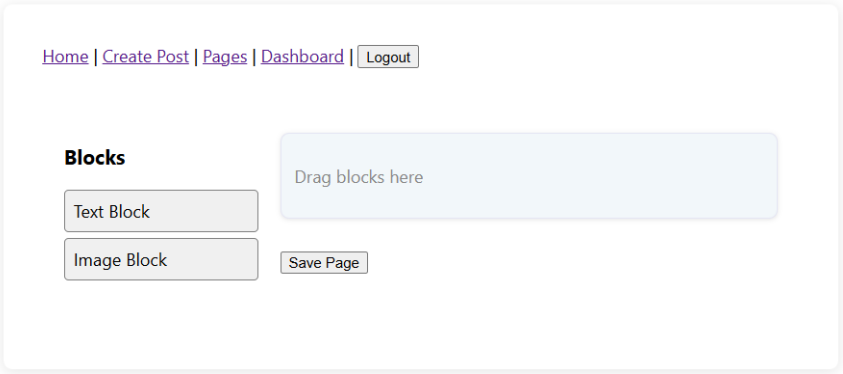
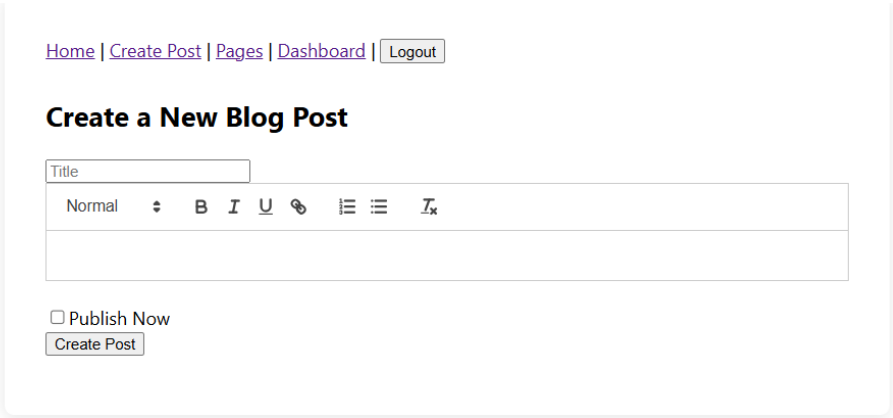


Figure 4:Create and publish post



10. Conclusion

This internship provided invaluable industry exposure and technical growth. Developing the CMS application from scratch helped me understand the software development lifecycle, from requirement gathering to implementation and testing. I now feel more confident in building and deploying scalable web applications.

11. Reference

[1] GitHub Repo: https://github.com/mayankgoyal21/UpSkill_campus.git
[2] React Documentation: https://reactjs.org
[3] Node.js Documentation: https://nodejs.org
[4] MongoDB Docs: https://www.mongodb.com/docs
[5] Stack Overflow and Dev forums