# Industrial Internship Report on

# Content Management System (CMS) for Blog Website

## Prepared by

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*Executive Summary*

This report provides details of the Industrial Internship provided by **upskill Campus** and **The IoT Academy** in collaboration with the Industrial Partner **UniConverge Technologies Pvt Ltd (UCT)**.

This internship was focused on a project/problem statement provided by UCT, and the project along with documentation was completed within a duration of **4-6 weeks**.

My project titled **"Content Management System (CMS) for Blog Website"** focuses on designing and developing a full-stack web application that allows administrators to create, manage, edit, and publish blog content securely, while allowing users to view published blogs.

This internship provided me with an excellent opportunity to gain exposure to real industrial problems and design and implement an end-to-end solution using full-stack development technologies. Overall, it was a valuable learning experience that enhanced my technical, analytical, and professional skills.

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# 1 Preface

This report summarizes the work carried out during the six-week industrial internship. In today's competitive environment, relevant internships play a crucial role in career development by bridging the gap between academic learning and industry expectations.

The assigned project involved developing a **Content Management System (CMS) for a Blog Website**, which required understanding both frontend and backend development concepts. The internship opportunity provided by **upskill Campus** in association with **UniConverge Technologies Pvt Ltd (UCT)** was well-structured and industry-oriented.

The program was planned in a systematic manner, starting from problem understanding, followed by technology learning, implementation, testing, and documentation. Throughout the internship, continuous guidance and support were provided.

This internship helped me improve my technical skills, problem-solving ability, teamwork, and professional confidence. I would like to thank **upskill Campus**, **The IoT Academy**, **UCT mentors**, and all individuals who supported me directly or indirectly.

I encourage my juniors and peers to actively participate in such internships, as they provide real-world exposure and significantly enhance career readiness.

# 2 Introduction

## 2.1 About UniConverge Technologies Pvt Ltd

A company established in 2013 and working in Digital Transformation domain and providing Industrial solutions with prime focus on sustainability and RoI.

For developing its products and solutions it is leveraging various **Cutting Edge Technologies e.g. Internet of Things (IoT), Cyber Security, Cloud computing (AWS, Azure), Machine Learning, Communication Technologies (4G/5G/LoRaWAN), Java Full Stack, Python, Front end** etc.

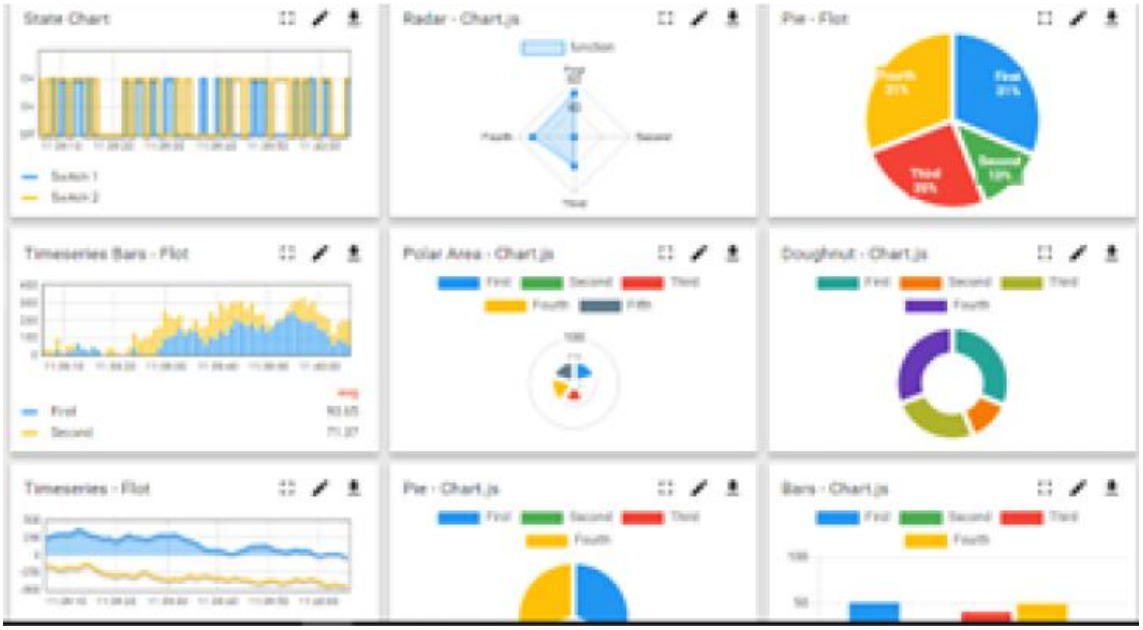

### i. UCT IoT Platform (UCT Insight)

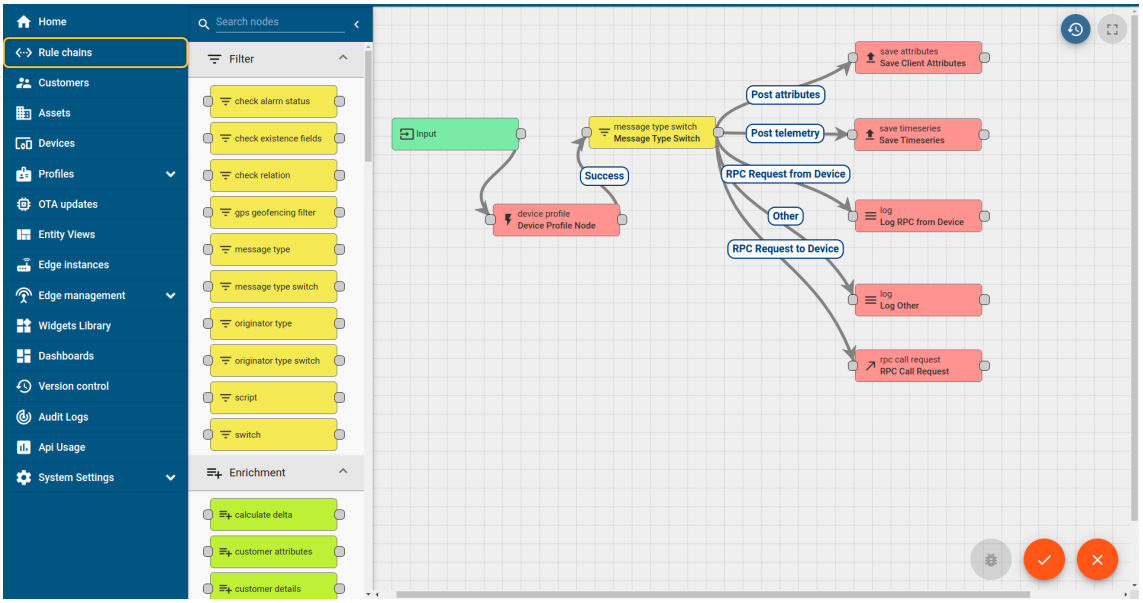
**UCT Insight** is an IOT platform designed for quick deployment of IOT applications on the same time providing valuable "insight" for your process/business. It has been built in Java for backend and ReactJS for Front end. It has support for MySQL and various NoSql Databases.

- It enables device connectivity via industry standard IoT protocols - MQTT, CoAP, HTTP, Modbus TCP, OPC UA
- It supports both cloud and on-premises deployments.

It has features to

- Build Your own dashboard
- Analytics and Reporting
- Alert and Notification
- Integration with third party application(Power BI, SAP, ERP)
- Rule Engine



## ii. Smart Factory Platform ( FACTORY WATCH )

Factory watch is a platform for smart factory needs.

It provides Users/ Factory

- with a scalable solution for their Production and asset monitoring
- OEE and predictive maintenance solution scaling up to digital twin for your assets.
- to unleased the true potential of the data that their machines are generating and helps to identify the KPIs and also improve them.
- A modular architecture that allows users to choose the service that they what to start and then can scale to more complex solutions as per their demands.

Its unique SaaS model helps users to save time, cost and money.


| Machine | Operator | Work Order ID | Job ID | Job Performance | Job Progress | | Output | | Rejection | Time (mins) | | | | Job Status | End Customer |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Start Time | End Time | Planned | Actual | | Setup | Pred | Downtime | Idle | | |
| CNC_S7_81 | Operator 1 | WO0405200001 | 4168 | 58% | 10:30 AM | | 55 | 41 | 0 | 80 | 215 | 0 | 45 | In Progress | i |
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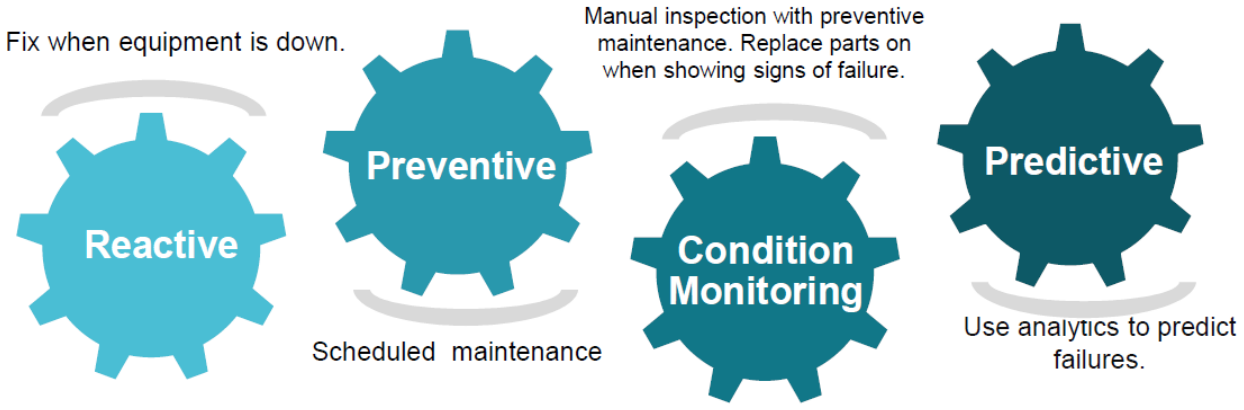
## iii. LoRaWAN based Solution

UCT is one of the early adopters of LoRAWAN teschnology and providing solution in Agritech, Smart cities, Industrial Monitoring, Smart Street Light, Smart Water/ Gas/ Electricity metering solutions etc.

## iv. Predictive Maintenance

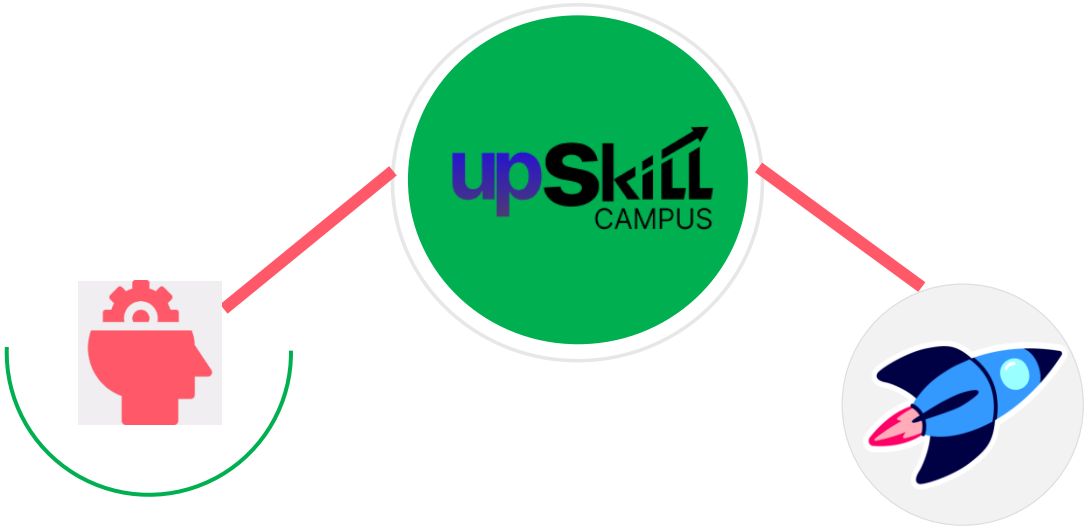
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.



## 2.2 About upskill Campus (USC)

upskill Campus along with The IoT Academy and in association with Uniconverge technologies has facilitated the smooth execution of the complete internship process.

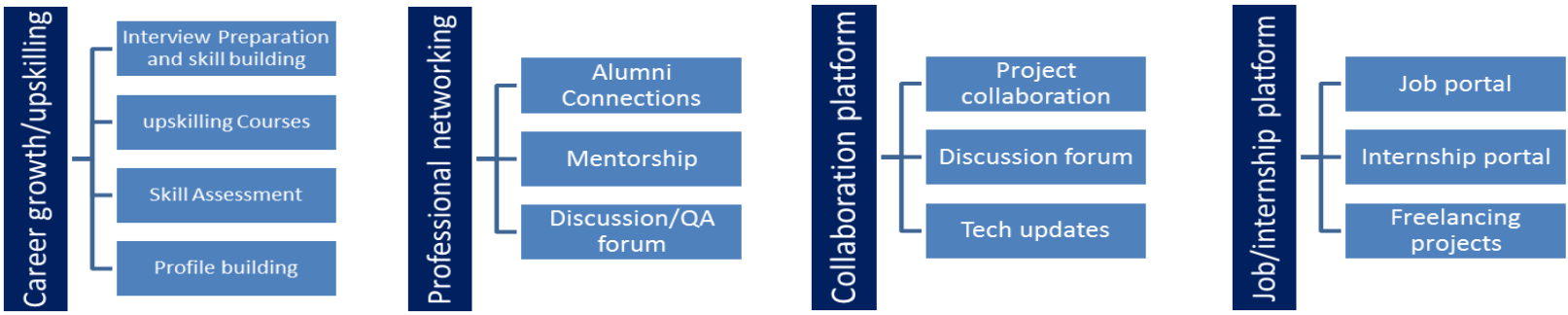
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.



Seeing need of upskilling in self paced manner along-with additional support services e.g. Internship, projects, interaction with Industry experts, Career growth Services

upSkill Campus aiming to upskill 1 million learners in next 5 year

https://www.upskillcampus.com/



## 2.3 The IoT Academy

The IoT academy is EdTech Division of UCT that is running long executive certification programs in collaboration with EICT Academy, IITK, IITR and IITG in multiple domains.

## 2.4 Objectives of this Internship program

The objective for this internship program was to

- ☛ get practical experience of working in the industry.
- ☛ to solve real world problems.
- ☛ to have improved job prospects.
- ☛ to have Improved understanding of our field and its applications.
- ☛ to have Personal growth like better communication and problem solving.

## 2.5 Reference

[1] Node.js Official Documentation

[2] MongoDB Official Documentation

[3] Express.js Documentation

## 2.6 Glossary

| Terms | Acronym |
|---|---|
| Content Management System | C**MS** |
| Application Programming Interface | API |
| Object-Oriented Programming | OOP |
| Representational State Transfer | REST |

# 3 Problem Statement

**Content Management System for a blog**

WordPress and Drupal would be the best examples of full stack web app development project ideas for students. Using the CMS users must be able to design a web page using the drag and drop method. Users should be able to add textual or media content into placeholders that are attached to locations on the web page using drag and drop method.

This way, users should be able to design the whole website. Users must also get an option to publish blog posts. For this, you need to have a text editor component that accepts user input text and converts it into HTML and push into a database.

The website must be published over HTTP and HTTPS protocols such that the blog posts are served from the database and displayed to the visitors in the page template designed by the blog owner.

# 4 Existing and Proposed solution

### Existing Solution

Existing CMS platforms may be complex, expensive, or require heavy customization. Some systems lack flexibility, security, or performance optimization.

### Proposed Solution

The proposed solution is a **custom-built CMS Blog platform** using full-stack technologies that provides:

- Secure admin authentication
- Blog post creation, editing, and deletion
- Database-backed content storage
- Clean and responsive UI
- Modular and scalable architecture

## 4.1 Code submission

https://github.com/Shalz16/upskillcampus

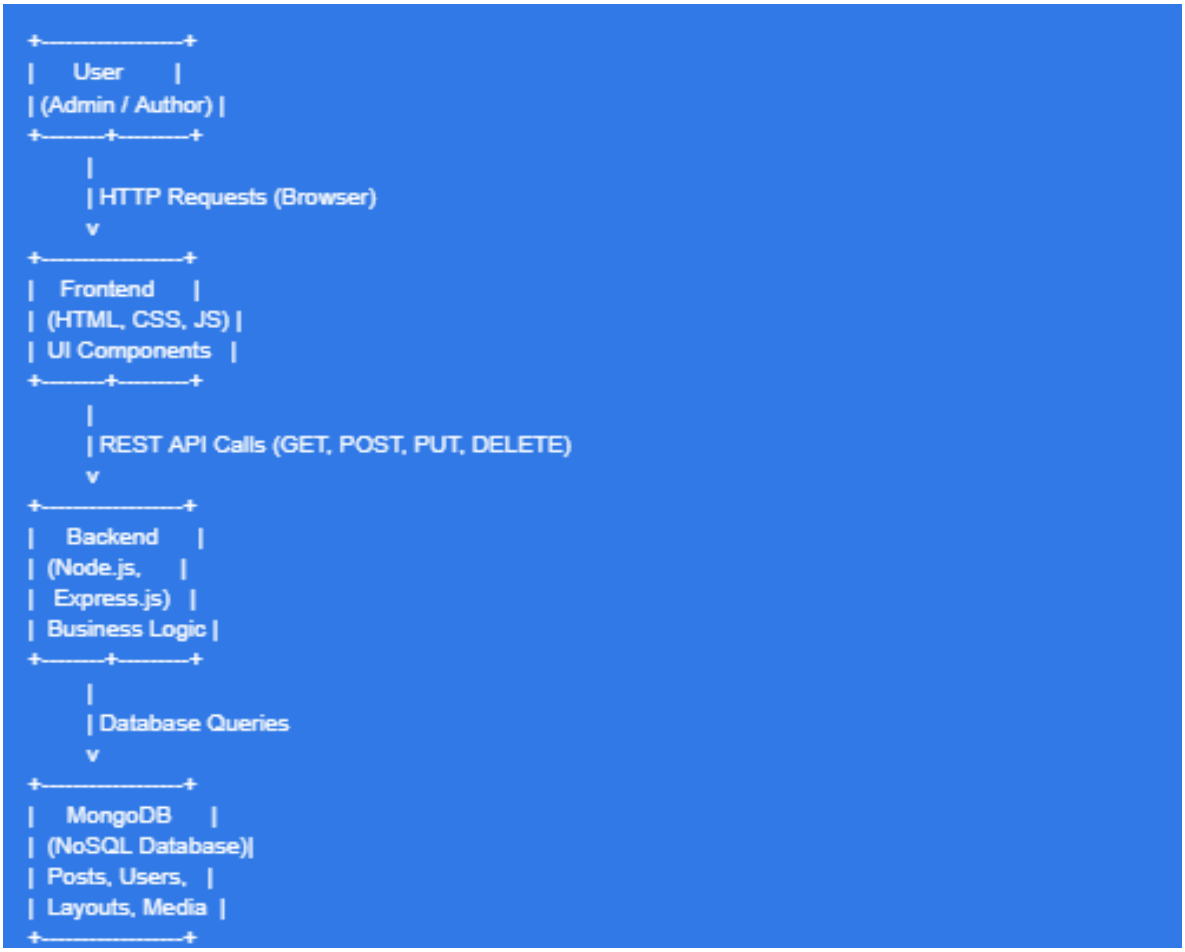
## 4.2 Report submission

https://github.com/Shalz16/upskillcampus

# 5 Proposed Design/ Model

The Content Management System (CMS) follows a **client–server architecture**.
The frontend (client) sends requests to the backend server through REST APIs.
The backend processes the request, interacts with the MongoDB database, and returns responses to the frontend.

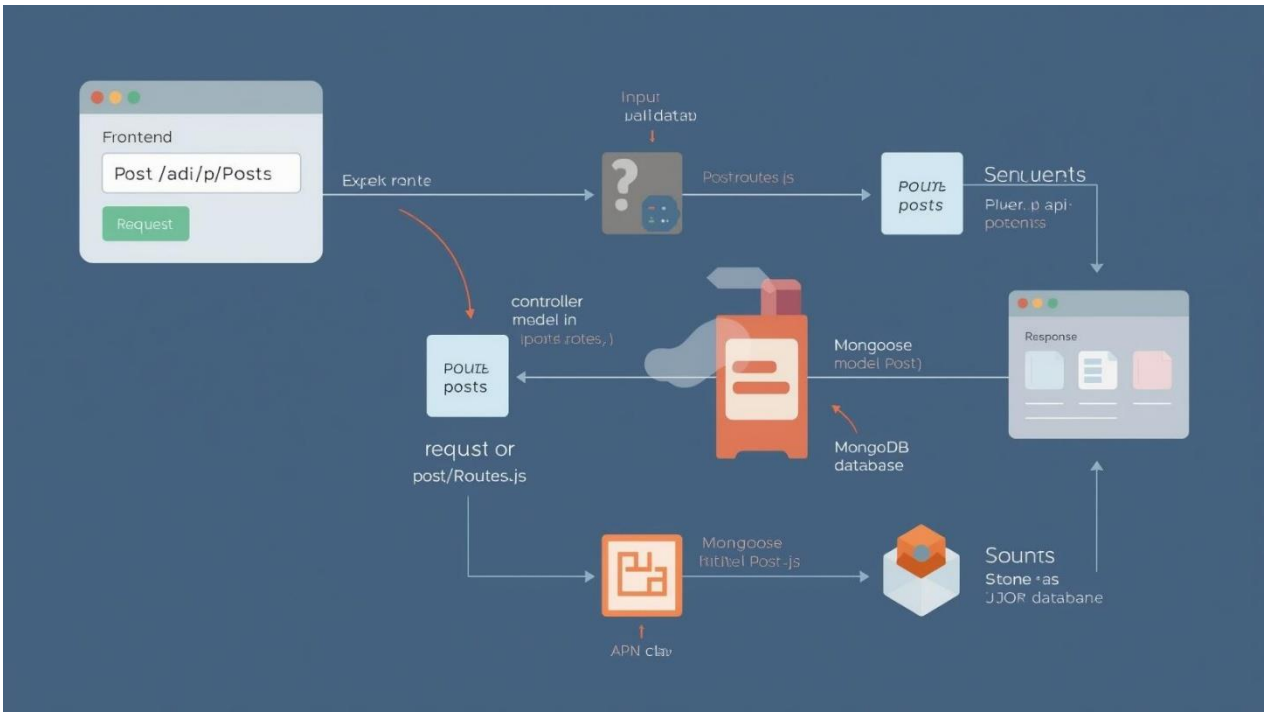
### 5.1 High Level Diagram



**Explanation:**

- **User** interacts with the CMS via a web browser
- **Frontend** handles UI and sends requests
- **Backend** processes requests and enforces business logic
- **MongoDB** stores all CMS data

## 5.2 Low Level Diagram




**Explanation:**

- **User submits a form from frontend**
- **Request is sent to backend API**
- **Backend validates data**
- **Data is stored/retrieved using Mongoose**
- **Response updates frontend dynamically**

### 5.3 Interfaces

#### 5.3.1 User Interface

- **Web-based dashboard**
- **Forms for:**
  - **Create Post**
  - **Edit Post**
  - **Delete Post**
  - **Upload Media**
- **Responsive and user-friendly UI**

#### 5.3.2 Backend Interfaces (REST APIs)

| Method | API Endpoint | Description |
|---|---|---|
| GET | /api/posts | Fetch all blog posts |
| GET | /api/posts/:id | Fetch post by ID |
| POST | /api/posts | Create new post |
| PUT | /api/posts/:id | Update existing post |
| DELETE | /api/posts/:id | Delete post |

#### 5.3.3 Database Interface

- MongoDB collections:
  - **Users**
  - **Posts**
  - **Layouts**
  - **Templates**
- Data interaction via **Mongoose ORM**
- Schema-based data validation

# 6 Performance Test

Performance testing was conducted to validate the system under various constraints such as response time, database operations, and authentication flow.

## 6.1 Test Plan / Test Cases

- API response validation
- CRUD operation testing
- Authentication testing

## 6.2 Test Procedure

Testing was done using Postman and browser-based testing.

## 6.3 Performance Outcome

The system performed efficiently with acceptable response time and stable database operations.

# 7 My learnings

This industrial internship provided me with valuable hands-on experience in full-stack web development and helped me understand how real-world web applications are designed and implemented. I independently worked on the Content Management System (CMS) project, which allowed me to gain in-depth technical knowledge and practical exposure.

During this internship, I learned to design and develop frontend interfaces using HTML, CSS, and JavaScript, and to implement backend services using Node.js and Express. I gained experience in creating RESTful APIs and integrating them with a MongoDB database for efficient data storage and retrieval.

Working individually on the project improved my problem-solving skills, debugging ability, and understanding of application architecture. I learned the importance of authentication, input validation, and secure data handling in web applications.

This internship enhanced my confidence in full-stack development and helped me understand industrial development practices such as structured coding, testing, and documentation. Overall, the internship played an important role in strengthening my technical foundation and preparing me for future professional opportunities.

# 8 Future work scope

Although the Content Management System (CMS) was successfully developed and tested, there are several enhancements that can be implemented in the future to improve its functionality and scalability.

In the future, advanced role-based access control can be added to support multiple user roles with customized permissions. The system can be extended with rich text editors, media optimization, and version control for content management.

Performance can be further improved by implementing caching mechanisms and optimizing database queries. The CMS can also be integrated with cloud services for deployment, storage, and scalability.

Additional security features such as token-based authentication, encryption, and activity logging can be implemented to enhance system security. Support for analytics, reporting dashboards, and SEO optimization can also be added to improve usability and insights.

Overall, these enhancements will make the CMS more robust, scalable, and suitable for large-scale industrial applications.