Industrial Internship Report on

” SmartScheduler Application ”

Prepared by

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Executive Summary
This report provides a detailed account of the Industrial Internship conducted through Upskill Campus and The IoT Academy, in collaboration with **UniConverge Technologies Pvt Ltd (UCT).** The internship focused on completing the **SmartScheduler** application within a six-week timeframe, encompassing backend development, feature implementation, and final testing. The **SmartScheduler** project aimed to create a comprehensive task management system that supports real-time scheduling and analytics. This opportunity allowed me to tackle real-world industrial problems, gain hands-on experience, and develop practical solutions. The experience has been invaluable for understanding industry challenges and applying theoretical knowledge to practical scenarios.

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1. Preface

The six-week internship provided a deep dive into industrial problem-solving and practical development. The internship was crucial for career development, offering insights into real-world applications of software development. The SmartScheduler project, focusing on creating an efficient task management system, was completed with thorough testing and documentation. The program was well-structured, offering substantial learning opportunities. I am grateful to the mentors and team members who supported me throughout this process. This experience has enhanced my skills and prepared me for future challenges in the tech industry.

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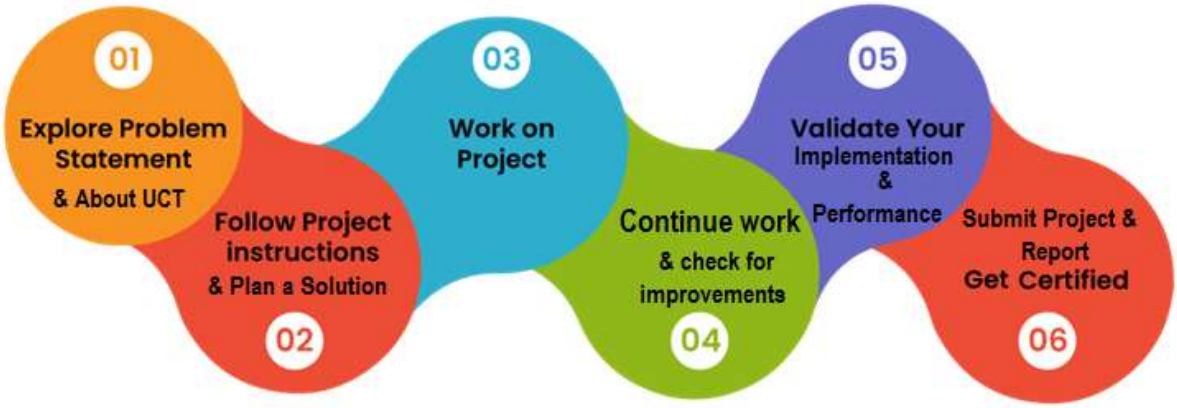


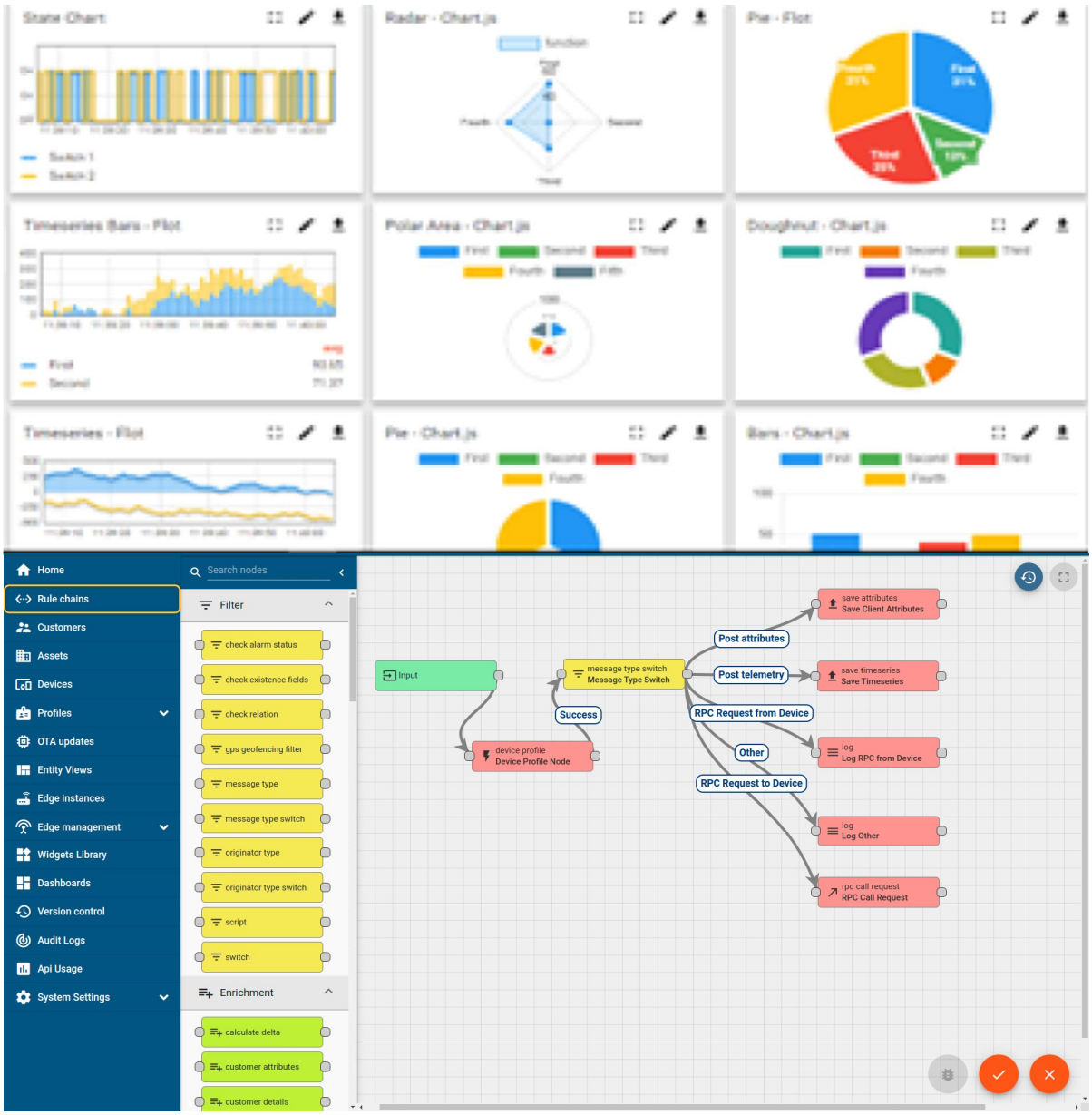
2. Introduction

2.1 About UniConverge Technologies Pvt Ltd

UniConverge Technologies Pvt Ltd (UCT), established in 2013, focuses on Digital Transformation and provides industrial solutions with an emphasis on sustainability and Return on Investment (RoI). UCT leverages cutting-edge technologies such as Internet of Things (IoT), Cyber Security, Cloud Computing, Machine Learning, and various full-stack development tools to develop its products and solutions.

i. UCT IoT Platform (UCT Insight)

UCT Insight is an IoT platform designed for quick deployment of IoT applications while providing valuable insights for business processes. It supports various IoT protocols and allows for cloud and on-premises deployments, featuring customizable dashboards, analytics, reporting, and third-party integrations.



ii. Smart Factory Platform (FACTORY WATCH)

This platform provides scalable solutions for production and asset monitoring, offering predictive maintenance and digital twin capabilities. It helps users

harness the full potential of machine-generated data to improve key performance indicators (KPIs).

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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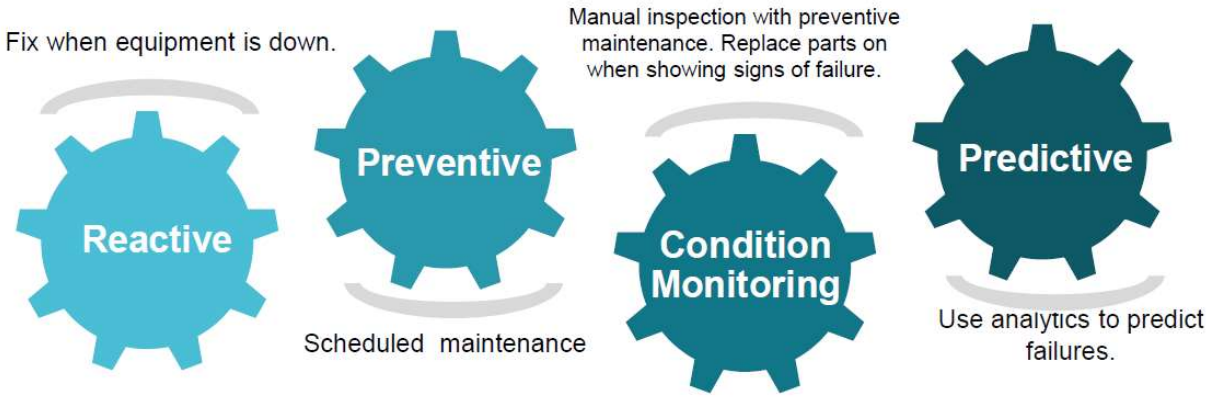
iii. LoRaWAN *based Solution*

UCT is a pioneer in adopting LoRAWAN technology, providing solutions in areas like Agritech, Smart Cities, and Industrial Monitoring.

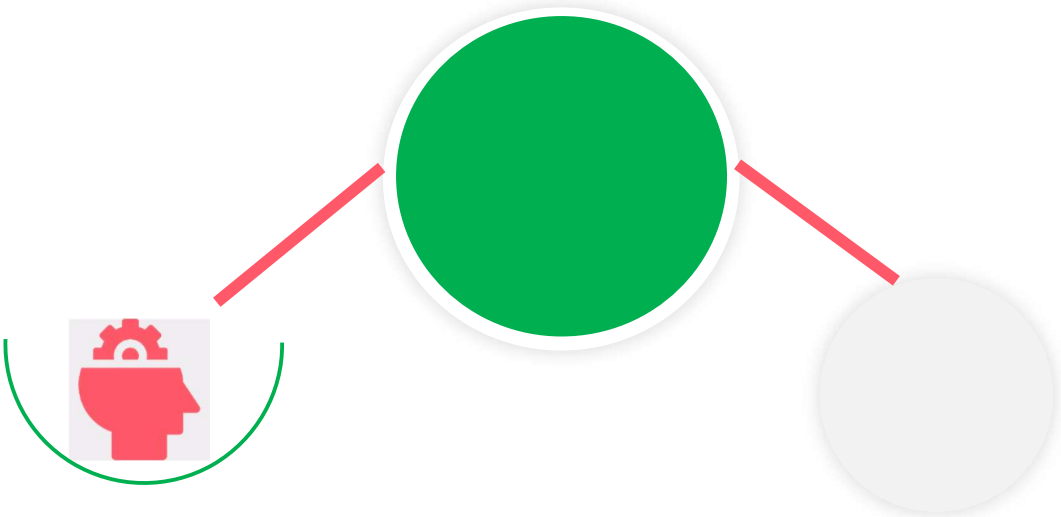
iv. Predictive Maintenance

UCT's predictive maintenance solutions involve Industrial IoT and Machine Learning to monitor machine health and estimate the remaining useful life of production equipment.



2.2 About upskill Campus (USC)

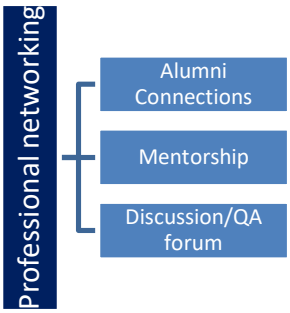
upskill Campus, along with The IoT Academy, facilitated a smooth internship process in collaboration with UniConverge Technologies. It is a career development platform that offers personalized executive coaching, making it more affordable, scalable, and measurable..

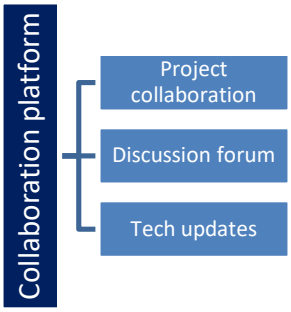


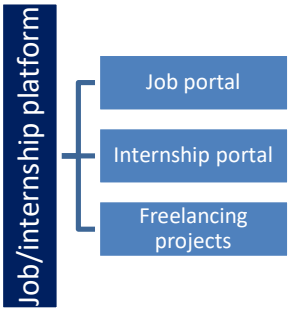
Seeing need of upskilling in self paced manner along-with additional support services e.g. Internship, projects, interaction with Industry experts, Career growth Services

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

https://www.upskillcampus.com/







2.3 The IoT Academy

The IoT Academy, an EdTech division of UCT, offers executive certification programs in collaboration with EICT Academy, IITK, IITR, and IITG in various domains.

2.4 Objectives of this Internship program

The objectives of this internship program were to:

- Gain practical experience working in the industry.
- Solve real-world problems.
- Improve job prospects.
- Enhance understanding of the field and its applications.
- Foster personal growth, such as better communication and problem-solving skills.

2.5 Reference

a. Upskill Campus

b. The IoT Academy

c. UniConverge Technologies Pvt Ltd

2.6 Glossary

Terms	Acronym
Internet of Things	IoT
Predictive Maintenance	PM
Long Range Wide Area Network	LoRaWAN

3. Problem Statement

The problem statement involved developing a comprehensive task management system with real-time scheduling, monitoring, and analytics capabilities. The goal

was to create a solution that supports efficient task handling and provides actionable insights through advanced analytics.

4. Existing and Proposed solution

4.1 Existing Solutions

Current task management systems lack real-time analytics and robust backend optimization, often leading to inefficiencies in task scheduling and monitoring.

4.2 Proposed Solution

The SmartScheduler application addresses these limitations by integrating real-time analytics, optimized backend operations, and an intuitive user interface. The solution provides enhanced task management capabilities and actionable insights for better decision-making.

4.3 Code submission (Github link) –

https://github.com/subhadipmaity2003/SmartScheduler.git

4.4 Report submission (Github link) :

https://github.com/subhadipmaity2003/TaskManagerApp/blob/main/Subhadip_Maity_SmartScheduler_Project_Report.pdf

5. Proposed Design/ Model

5.1 High Level Diagram

The TaskManagerApp was designed with a modular architecture, allowing for easy scalability and integration with other systems.

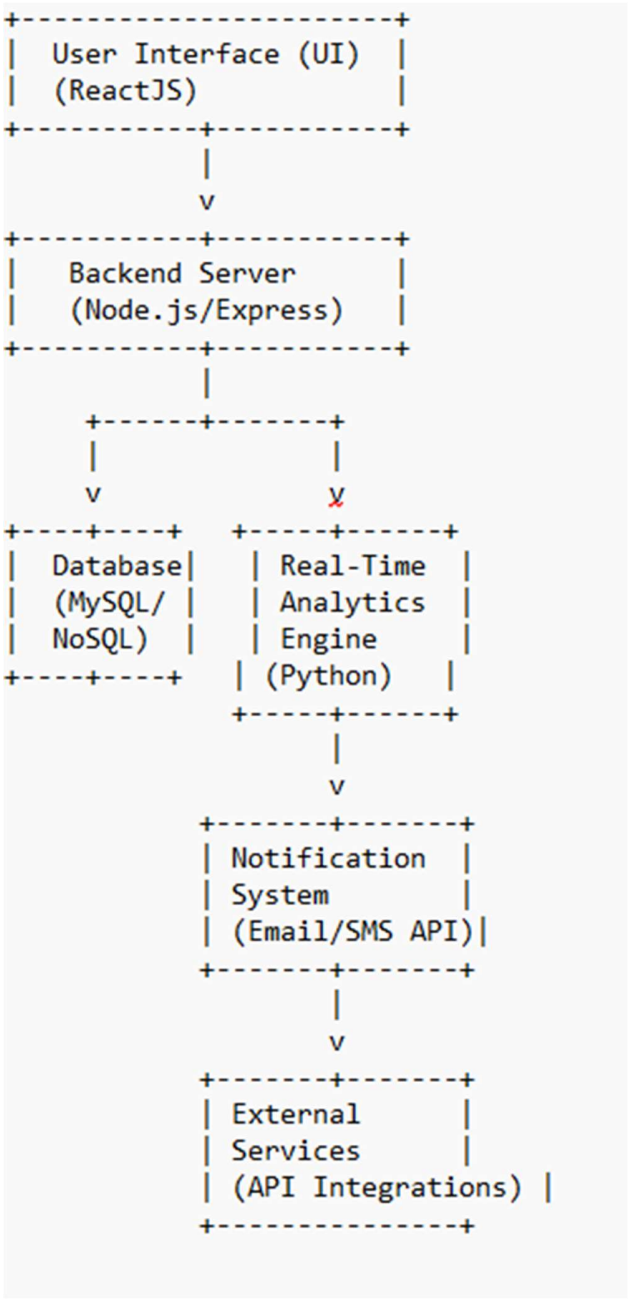


Figure 1: HIGH LEVEL DIAGRAM OF THE SYSTEM

5.2 Low Level Diagram

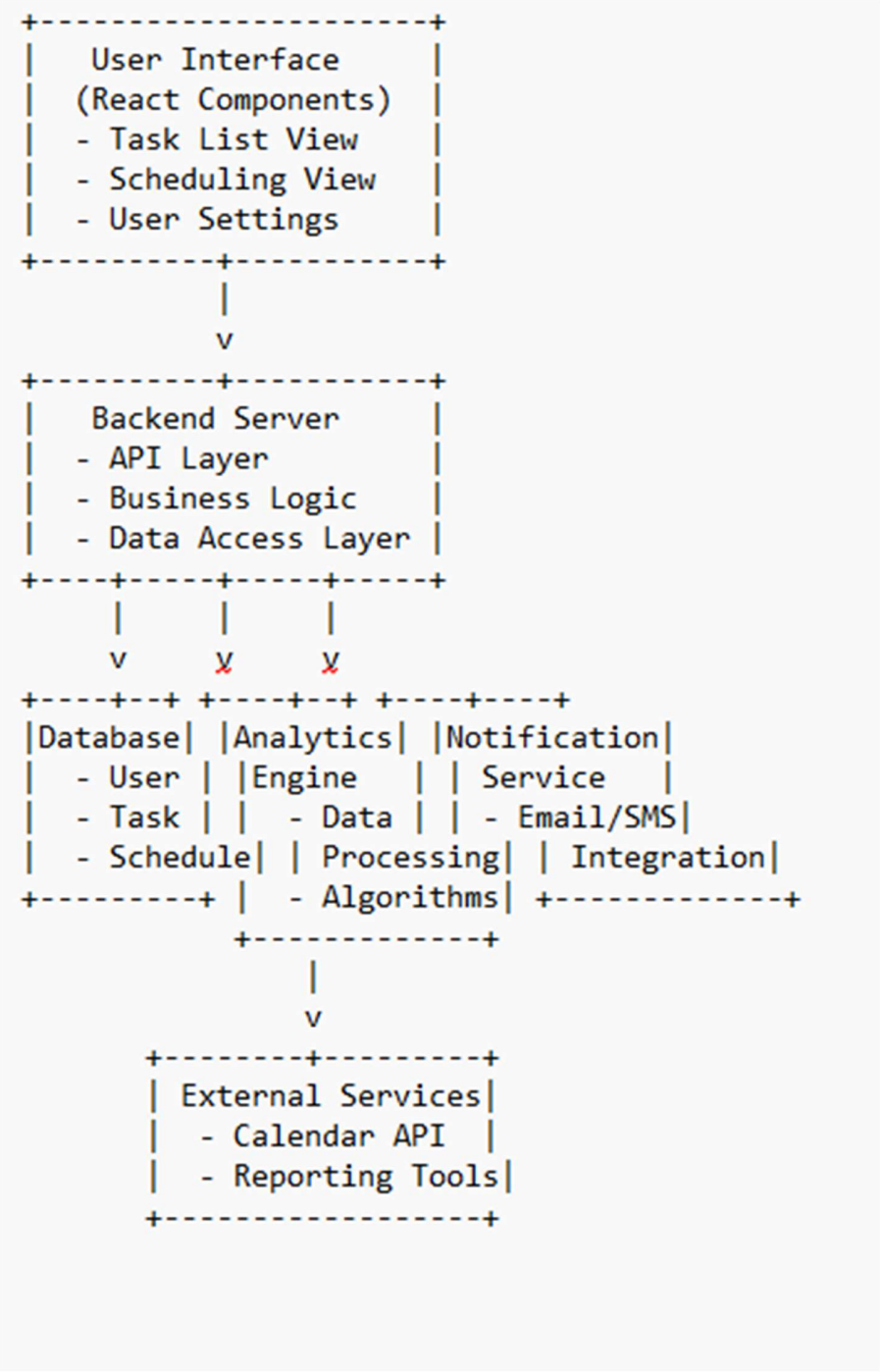


Figure 2: LOW LEVEL DIAGRAM OF THE SYSTEM

5.3 Interfaces

- **Block Diagrams:** Illustrates system components and their interactions.
- **Data Flow:** Outlines how data moves through the application.
- **Protocols:** Details communication protocols used in the application.
- **Flow Charts:** Visual representation of process flows within the system.

6. Performance Test

6.1 Test Plan/Test Cases

Test cases included functionality, performance, and stress tests to ensure system reliability under different conditions.

6.2 Test Procedure

Tests were conducted across various environments, focusing on real-world scenarios to validate the system's performance and stability.

6.3 Performance Outcome

The application met performance criteria with optimized load times and robust error handling. All identified issues were resolved, ensuring a reliable and scalable solution.

7. My learnings

The internship provided valuable insights into industrial software development, including practical problem-solving, real-time analytics implementation, and performance optimization. The experience has significantly contributed to my career growth, enhancing my skills in full-stack development and project management.

8. Future work scope

Future improvements could include integrating advanced AI features for predictive task management, expanding analytics capabilities, and exploring additional third-party integrations to further enhance the SmartScheduler application.