Industrial Internship Report on

"HR Management System"

Prepared by

S.P.Nakshatra

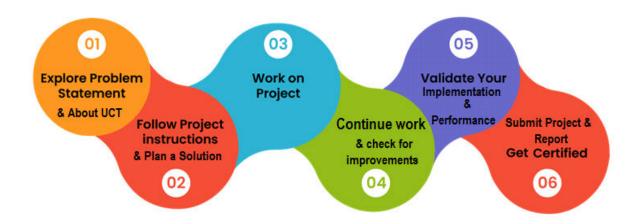| Executive Summary |
|---|
| This report provides details of the Industrial Internship provided by upskill Campus and The IoT Academy in collaboration with Industrial Partner UniConverge Technologies Pvt Ltd (UCT). |
| This internship was focused on a project/problem statement provided by UCT. We had to finish the project including the report in 6 weeks' time. |
| My project is HR Management System. This report details the development of an HR management system using Spring Boot. The system aims to streamline HR processes by providing functionalities for employee management, potentially including features like adding, editing, and deleting employee records, as well as functionalities for other HR tasks (depending on the project scope). |

TABLE OF CONTENTS

- ## **Preface**

Summary of the whole 6 weeks' work.

About need of relevant Internship in career development.

Brief about Your project/problem statement.

Opportunity given by USC/UCT.

How Program was planned

Your Learnings and overall experience.

Thank to all (with names), who have helped you directly or indirectly.

Your message to your juniors and peers.

- ## **Introduction**

- ## **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.

- # **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
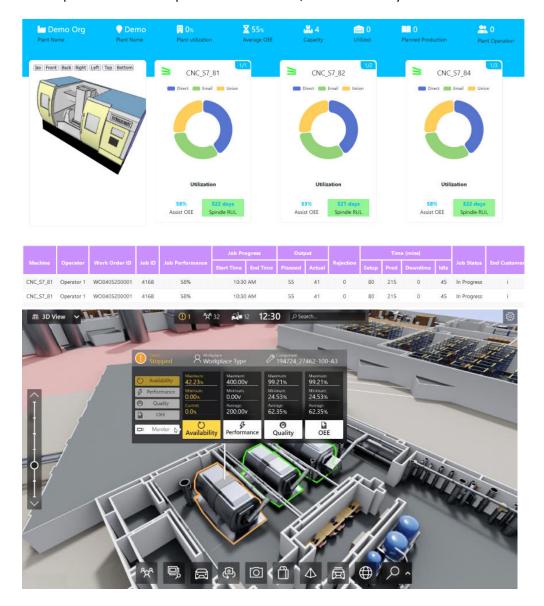- Integration with third party application(Power BI, SAP, ERP)
- Rule Engine

- **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.

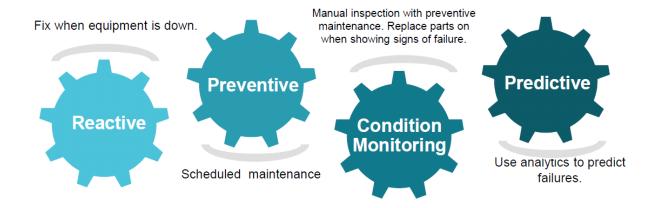Its unique SaaS model helps users to save time, cost and money.

- **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.

- 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.

Fix when equipment is down.

Manual inspection with preventive maintenance. Replace parts on when showing signs of failure.

Preventive

Reactive

Scheduled maintenance

Condition Monitoring

Predictive

Use analytics to predict failures.

- **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

https://www.upskillcampus.com/

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

- **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.

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- **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.

- **Reference**

[1]

[2]

[3]

- **Glossary**

Terms	Acronym

- **Problem Statement**

Traditional HR processes can be cumbersome and time-consuming, often involving manual data entry and paper-based workflows. This can lead to errors, inefficiencies, and difficulty in accessing employee information.

- ## **Existing and Proposed solution**
  - Manual data entry and management.

  - Lack of real-time updates and integration.

  - Limited user accessibility and intuitive interfaces.

Proposed Solution:

  - HR Management System using Spring Boot:

  - Centralized database for employee records.

  - Automated workflows for leave management, attendance tracking, and payroll.

  - Role-based access control for enhanced security.

  - User-friendly web interfaces for improved usability.

- ## **Code submission (Github link)**

https://github.com/Nakshatra-s-p/UpskillCampus.git

- ## **Report submission (Github link)   :** first make placeholder, copy the link.

- ## **https://github.com/Nakshatra-s-p/UpskillCampus.git**

- ## Proposed Design/ Model

Architecture:

- Backend: Spring Boot with Spring Data JPA for data persistence.

- Frontend: React.js for responsive and intuitive user interfaces.

- Database: MySQL for relational data storage.

- Security: JWT for secure authentication and authorization.
  Modules:

- Employee Management

- Leave Management

- Attendance Tracking

- Payroll Management

- Reporting and Analytics

- ## High Level Diagram (if applicable)

Figure 1: HIGH LEVEL DIAGRAM OF THE SYSTEM

- ## Low Level Diagram (if applicable)

- ## Interfaces (if applicable)

Web Interface: Responsive UI using React.js for HR managers and employees.

API: RESTful services for seamless integration with other systems.

- ## Performance Test

- Objective: Ensure system reliability and responsiveness under load.

- Tools: Apache JMeter for load testing.

- Metrics: Response times, error rates, and throughput.

- **Test Plan/ Test Cases**

- Unit Testing: Verify individual components (controllers, services).

- Integration Testing: Validate interactions between system modules.

- System Testing: Test end-to-end scenarios (e.g., employee onboarding).

- User Acceptance Testing (UAT): Gather feedback from stakeholders.

- **Test Procedure**

Unit Testing: Use JUnit and Mockito for testing.

Integration Testing: Test API endpoints and database interactions.

System Testing: Execute scripted tests based on use cases.

UAT: Engage stakeholders for usability validation.

- **Performance Outcome**
  - Response Time: Target sub-second response times for critical operations.
  - Throughput: Ensure efficient handling of concurrent user requests.
  - Scalability: Evaluate the system's ability to scale with data and user growth.

- **My learnings**

  - Technical Skills: Enhanced proficiency in Spring Boot, React.js, and RESTful API development.
  - Project Management: Experience in designing, developing, and testing a complex system.
  - Problem-Solving: Addressing real-world challenges in HR management through technology.

- ## Future work scope

  - Enhancements: Implement AI-driven insights for predictive analytics.

  - Mobile Integration: Develop a mobile app for remote employee management.

  - Blockchain Integration: Explore blockchain for secure employee records management.