Industrial Internship Report on

” Home Automotion”

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 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 was (Tell about ur Project) This internship gave me a very good opportunity to get exposure to Industrial problems and design/implement solution for that. It was an overall great experience to have this internship.

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1 Preface

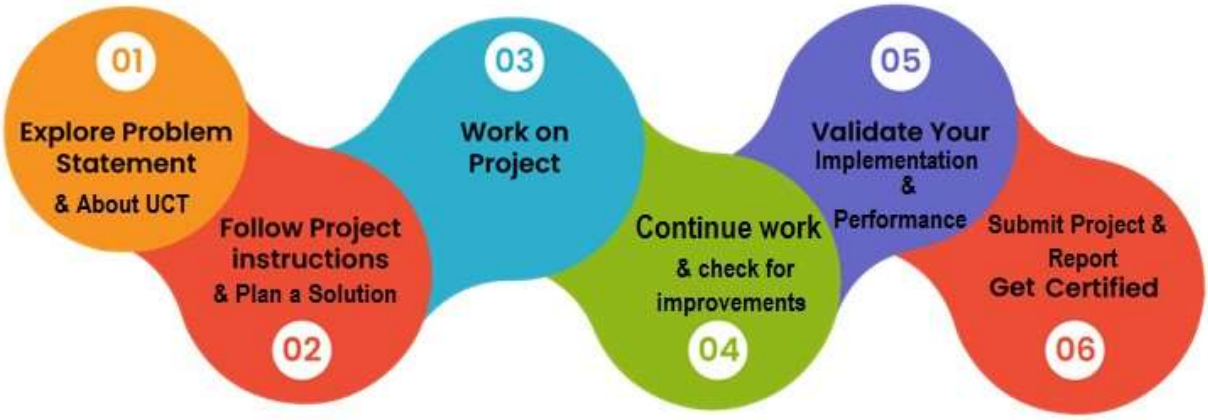
Summary of the whole 6 weeks' work.

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.

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 (Insight)

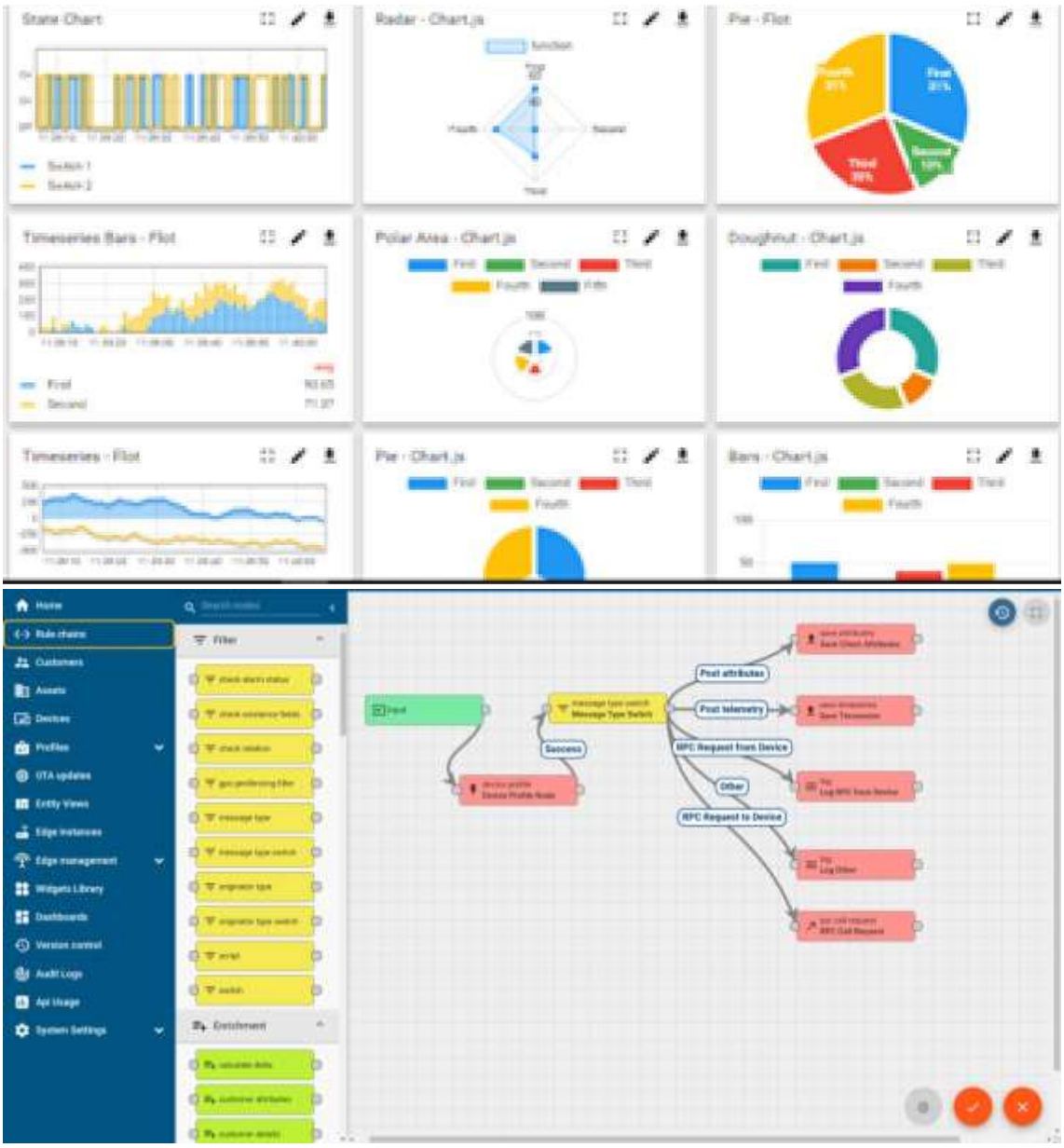
UCT Insight is an IOT platform designed for quick deployment of IOT applications on the same time providing valuable "insight" for your process/business. It has been built in Java for backend and ReactJS for Front end. It has support for MySQL and various NoSql Databases.

- 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.


Demo Org
Demo
CNC_S7_81
CNC_S7_82
CNC_S7_84
Utilization
Utilization
Utilization


3D View
12:30
Search...
Stopped
Workplace Type
194724_27462-100-A3
Availability
Performance
Quality
OEE
Monitor
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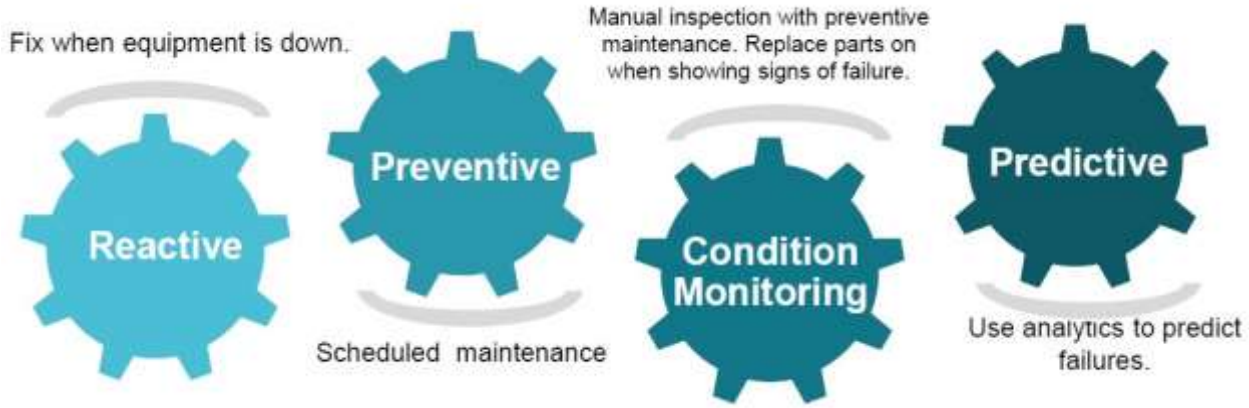
0.00%
0.0%
400.00v
0.00v
200.00v
99.21%
24.53%
62.35%
99.21%
24.53%
62.35%

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

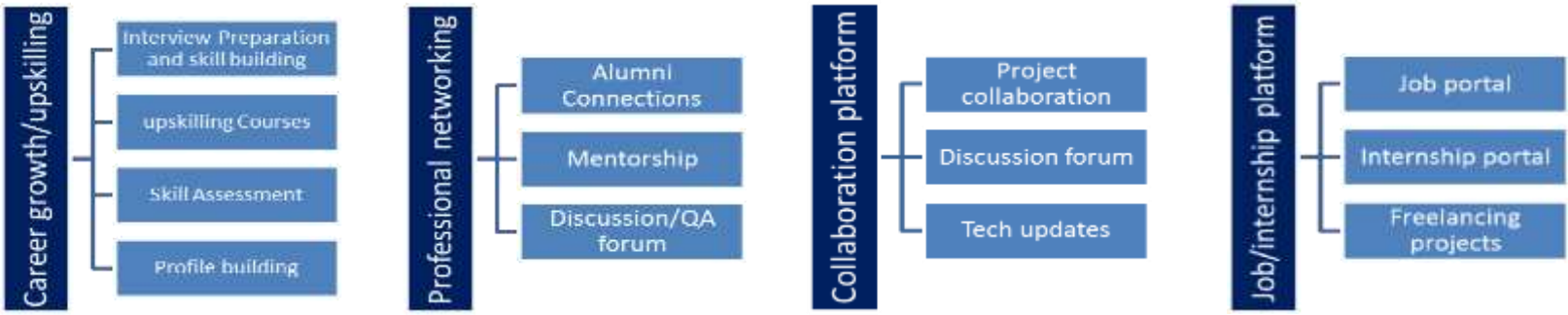
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.



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.



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.

3 Problem Statement

In the assigned problem statement

The problem statement for the "Home Automotion" project revolves around creating an integrated system that enhances automation and control within residential spaces. As technology continues to advance, there's an increasing demand for smart home solutions that offer convenience, efficiency, and security to homeowners. However, many existing solutions are fragmented, complex, and lack interoperability, making it challenging for users to manage various aspects of their homes seamlessly.The aim of this project is to develop a comprehensive home automation system that addresses these challenges by providing a unified platform for controlling and monitoring various home devices and systems. The system should be user-friendly, scalable, and customizable to accommodate different user preferences and lifestyles.

Key components of the problem statement include:

1. Integration: The system should integrate various devices and technologies commonly found in modern homes, such as lighting, HVAC (heating, ventilation, and air conditioning), security cameras, door locks, and entertainment systems.

2. Interoperability: It should ensure interoperability among different devices and protocols, allowing seamless communication and interaction between them. This interoperability will enable users to control and automate multiple devices through a single interface.

3. Customization: The system should offer flexibility and customization options to accommodate different user preferences and home environments. Users should be able to personalize automation routines, schedules, and settings based on their specific needs and lifestyle.

4. User Interface: A user-friendly interface is essential for ease of use and accessibility. The system should provide intuitive controls and visual feedback to users, allowing them to monitor and manage their homes effortlessly from any device, including smartphones, tablets, and computers.

5. Security and Privacy: As home automation systems involve the collection and transmission of sensitive data, robust security measures should be implemented to protect user privacy and prevent unauthorized access to home devices and systems.

4 Existing and Proposed solution

Existing home automation solutions are often fragmented and lack interoperability, leading to complexity for users. Our proposed solution integrates various devices and technologies seamlessly, offering a userfriendly interface for easy control and customization. By ensuring interoperability, customization options, and robust security measures, we aim to provide a comprehensive home automation system that enhances convenience and efficiency for homeowners.

What value addition are you planning?

Our solution aims to streamline home automation, providing seamless integration, enhanced customization, and robust security for optimal user experience.

4.1 Code submission (Github link)

https://github.com/aniiiketa/upskillcampus

4.2 Report submission (Github link) : https://github.com/aniiiketa/upskillcampus

5 Proposed Design/ Model

Our proposed design/model for the home automation system involves a centralized control hub that communicates with various smart devices and sensors throughout the home. This hub serves as the brain of the system, coordinating the actions of different devices based on user inputs, preset schedules, and sensor data. The design emphasizes modularity, scalability, and interoperability to accommodate future expansions and advancements in smart home technology. Additionally, user-friendly interfaces such as mobile apps and voice assistants enable intuitive control and customization of automation routines.

6 Performance Test

The performance test evaluates the responsiveness, reliability, and efficiency of our home automation system. We assess the system's ability to execute commands promptly, handle simultaneous tasks effectively, and maintain stability under various conditions. Key metrics include response time, resource

utilization, and error rates. Through rigorous testing scenarios, we ensure that the system meets performance expectations and delivers a seamless user experience.

7 My learnings

Throughout this internship, I've gained invaluable insights into the complexities of real-world industrial problems and the intricacies of designing and implementing solutions in the field of home automation. I've honed my technical skills in IoT and embedded systems, learning to navigate challenges and innovate effectively. Moreover, I've developed essential soft skills such as communication, problem-solving, and teamwork, which are crucial for success in any professional environment. This experience has not only expanded my knowledge but also enriched my overall growth as a future engineer.

8 Future work scope

Moving forward, there are several avenues for further development and enhancement of our home automation system. This includes expanding compatibility with additional smart devices and protocols, integrating advanced features such as machine learning algorithms for predictive automation, and refining security measures to ensure robust protection against emerging threats. Additionally, exploring opportunities for energy efficiency optimization and incorporating user feedback to tailor the system to evolving needs will be key priorities. Continuous research and innovation will drive the evolution of our home automation solution to meet the ever-changing demands of modern homeowners.