

Industrial Internship Report on Banking Information System

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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 which is based on Java provided by UCT. We had to finish the project including the report in 6 weeks' time.

My project was Banking Information System.

This internship gave me a very good opportunity to get exposure to Industrial problems and 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:

- During the first week of the internship, I selected a project on Banking Information System. I researched the key components and functionalities they encompass. The benefits and challenges associated with banking information systems and highlight emerging trends in the field. Researched and evaluated various technologies and frameworks suitable for the project and finalize the technology stack for project including java as programming language, MySQL as the database.
- In the second week I created the initial project structure including packages and classes and interfaces following best design practices.
- Moving towards third week, I researched various data using googling that what all necessary details are needed in a database and tried to design a database schema for banking records.
- In the fourth week, continuing with the database I focused on the login page containing Login. Servlet file which provides connection with the database and login.html page.
- By the fifth week the systems enable customers to access their accounts, make transactions, pay bills, and perform other banking activities through online platforms, offering convenience and accessibility.
- During the final week of the internship, I focused on improving data security. bust security measures, including encryption, access controls, and authentication protocols, help protect sensitive financial data and prevent unauthorized access or fraud. Dealing with the time constraint during the integration of the payroll module taught me the importance of prioritizing tasks and managing my time efficiently. I learned to focus on

delivering the essential features first
subsequent iterations.

and allocate time for refinements in

At the end of the internship, I submitted the final report with code, showcasing the progress made throughout the six weeks.

About need of relevant Internship in career development:

1. **Practical Experience:** Internships provide an opportunity to gain practical, hands-on experience in a specific field or industry. They allow you to apply the theoretical knowledge you've acquired in a real-world setting, helping you develop a deeper understanding of the work involved and the skills required.
2. **Skill Development:** Internships offer a platform to enhance and develop valuable skills that are relevant to your desired career path. You can learn industry-specific tools, technologies, and best practices, as well as develop transferable skills such as communication, teamwork, problem-solving, and time management.
3. **Industry Exposure:** Internships provide an insider's view of the industry or profession you're interested in. You can gain exposure to the day-to-day operations, company culture, and industry trends. This exposure helps you make informed decisions about your career path and can guide your future choices.
4. **Networking Opportunities:** Internships allow you to connect and network with professionals in your chosen field. Building relationships with mentors, colleagues, and industry experts can open doors to future job opportunities and provide valuable guidance and advice.
5. **Resume Building:** Having relevant internship experience on your resume demonstrates to potential employers that you have practical experience in the field and are proactive in your professional development. It can make your resume stand out and increase your chances of securing future employment.

6. Clarifying Career Goals: Internships can help you explore different areas within a specific field, giving you a clearer understanding of your interests and strengths. They allow you to test the waters and gain insight into whether a particular career path aligns with your goals and aspirations.

Brief about Your project/problem statement:

1. Identify the problem: The purpose of this report is to provide an overview of banking information systems, their importance in the banking industry, and the key components and functionalities they encompass.

2. Definition: A banking information system refers to the integrated set of hardware, software, and networks used by banks and financial institutions to manage their operations, process transactions, and store and retrieve financial data.

3. Customer Relationship Management (CRM): CRM systems help banks maintain customer information, track interactions, and provide personalized services, contributing to improved customer satisfaction and loyalty.

4. Importance: Banking information systems play a crucial role in the efficient functioning of banks, enabling them to provide various services to customers, such as account management, transactions, loan processing, and online banking. These systems streamline internal processes, enhance data security, and facilitate effective decision-making.

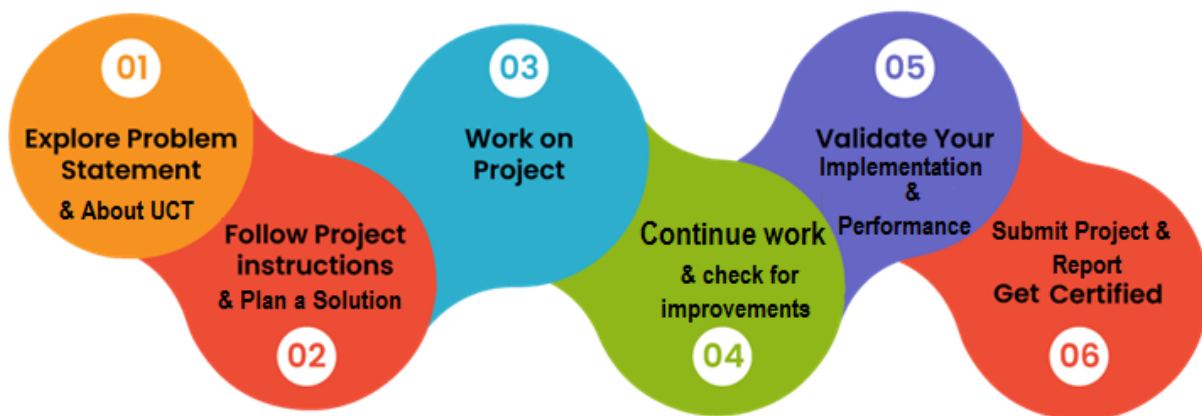
Opportunity given by USC/UCT:

Upskill Campus (USC) or The IoT Academy in collaboration with UniConverge Technologies PvtLtd (UCT) as of my knowledge cutoff in September 2021, internships and collaborations with industry partners generally offer valuable opportunities for professional growth and development.

Participating in an internship or collaboration program with USC/UCT could provide the following opportunities:

- 1. Industry Exposure:** Working with a renowned institution and industry partner gives you exposure to real-world industrial problems, challenges, and practices. It allows you to gain insights into the operations and dynamics of the industry, which can be invaluable for your career.
- 2. Practical Experience:** Internships and collaborations offer hands-on experience, enabling you to apply your knowledge and skills in a practical setting. Working on projects or problem statements provided by industry partners helps bridge the gap between theory and practice, enhancing your understanding and proficiency in your chosen field.
- 3. Networking:** Collaborating with USC, UCT, and their industry partner gives you the opportunity to build a professional network. You can connect with professionals, mentors, and experts in the industry, which can lead to future job prospects, references, and valuable connections.
- 4. Skill Development:** Engaging in projects and problem-solving within the context of an Internship or collaboration provides an avenue for skill development.

How Program was planned:



Learnings and overall experience:

1) Technical Challenge:

- One of the main challenges this week was handling data synchronization issues when multiple users simultaneously updated their profiles. To address this, I implemented optimistic locking mechanisms and introduced version control in the database schema to prevent data inconsistencies.
- As banking operations expand or new services are introduced, information systems must be scalable and adaptable to accommodate growth and changing customer needs.

2) Time Constraint:

I faced a time constraint when integrating the payroll module into the system. To overcome this challenge, I prioritized the essential features and implemented them first, ensuring that the core functionality was delivered on time.

3) Enhanced problem-solving skills: The data synchronization issue I encountered provided an opportunity to further develop my problem-solving skills. By researching and implementing optimistic locking mechanisms, I learned how to handle concurrency issues effectively.

4) Prioritization and time management: Dealing with the time constraint during the integration of the payroll module taught me the importance of prioritizing tasks and managing my time efficiently. I learned to focus on delivering the essential features first and allocate time for refinements in subsequent iterations.

5) Enhanced Customer Experience: Banking information systems enable personalized services, round-the-clock access, and faster transaction processing, leading to higher customer satisfaction.

6) Improved Data Security: Robust security measures, including encryption, access controls, and authentication protocols, help protect sensitive financial data and prevent unauthorized access or fraud.

Thanks to Upskill Campus (USC) in collaboration with UniConvergence Technologies Pvt Ltd (UCT) for this internship opportunity.

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.



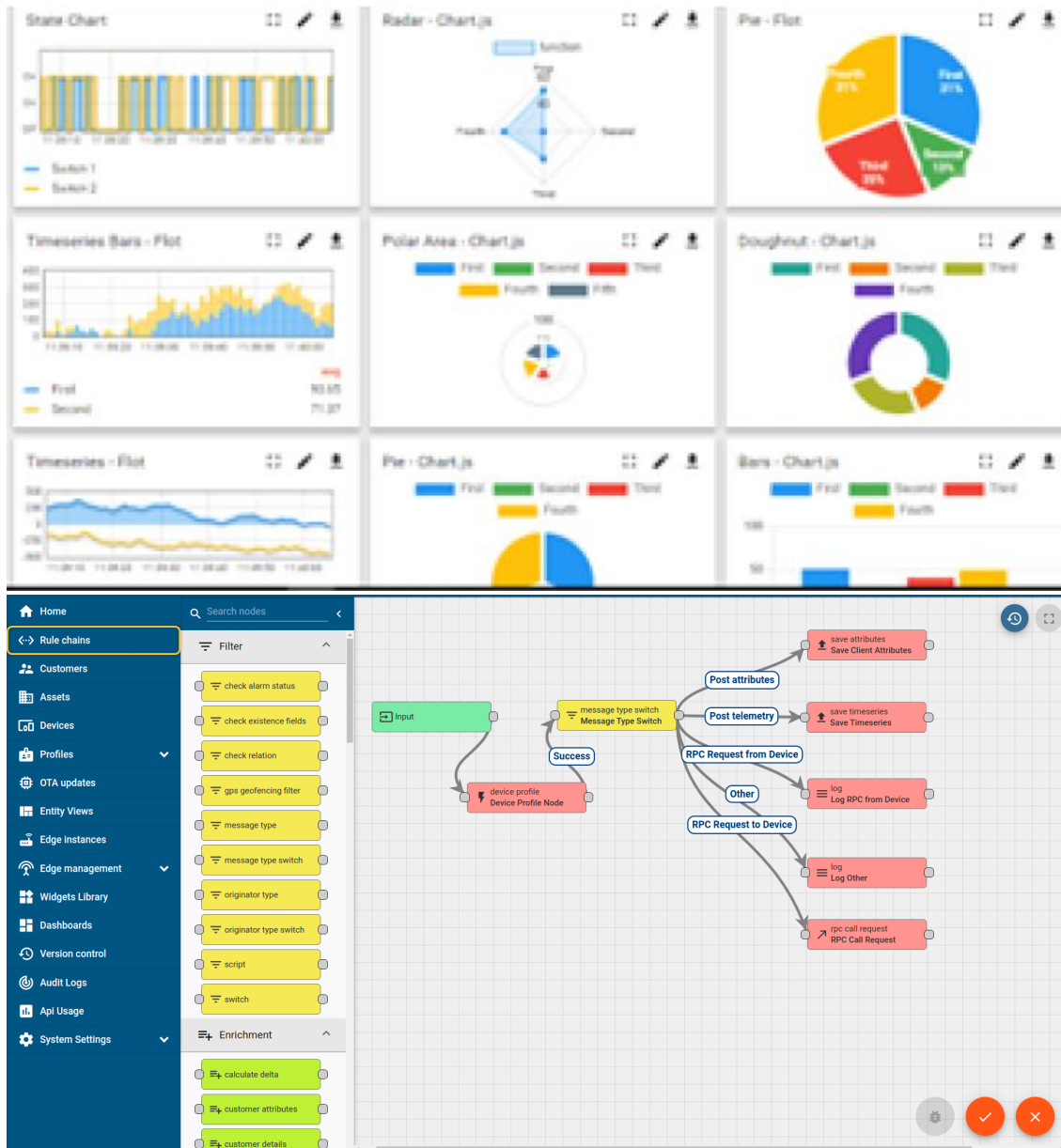
i. UCT IoT Platform (uct Insight)

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



FACTORY WATCH

ii. Smart Factory Platform ()

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 unleash 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 want 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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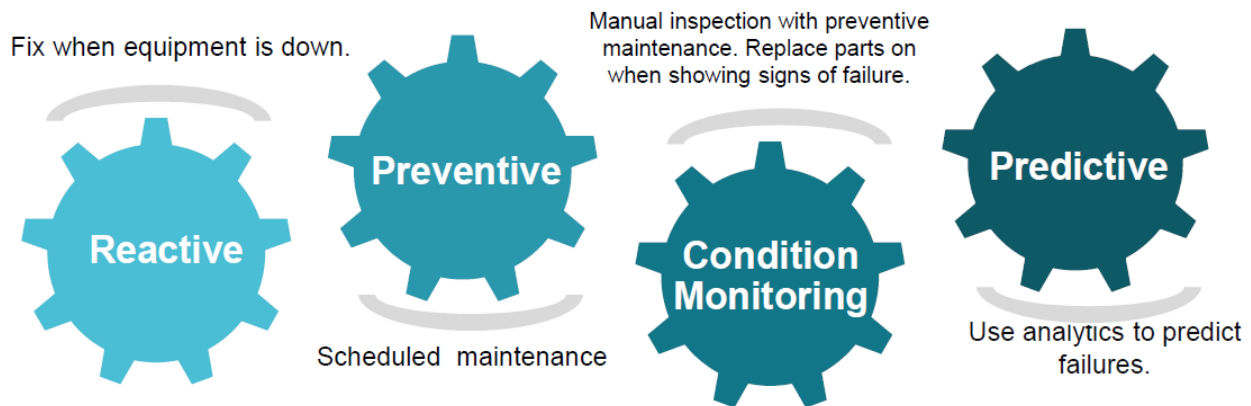


iii. based Solution

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

iv. Predictive Maintenance

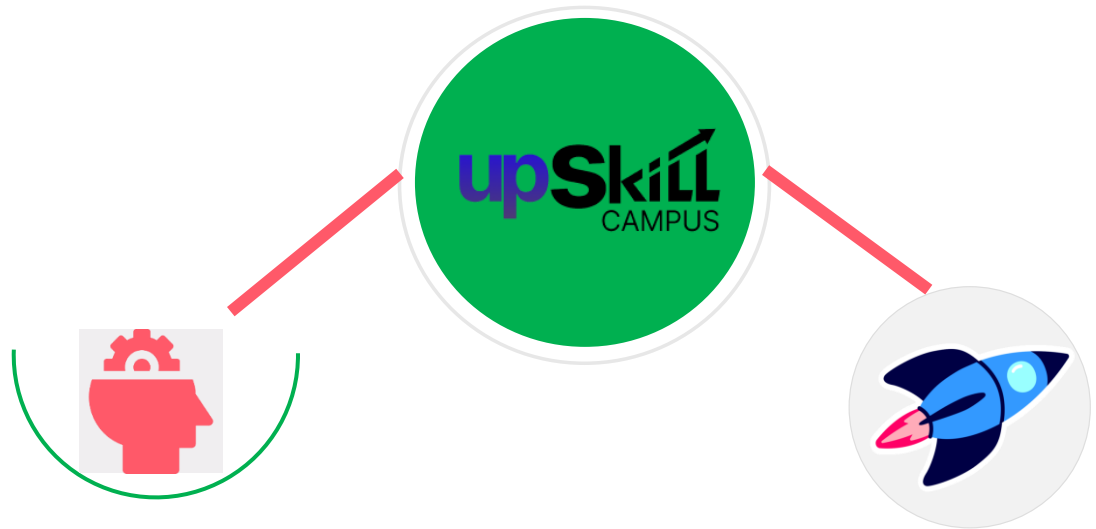
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.



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.

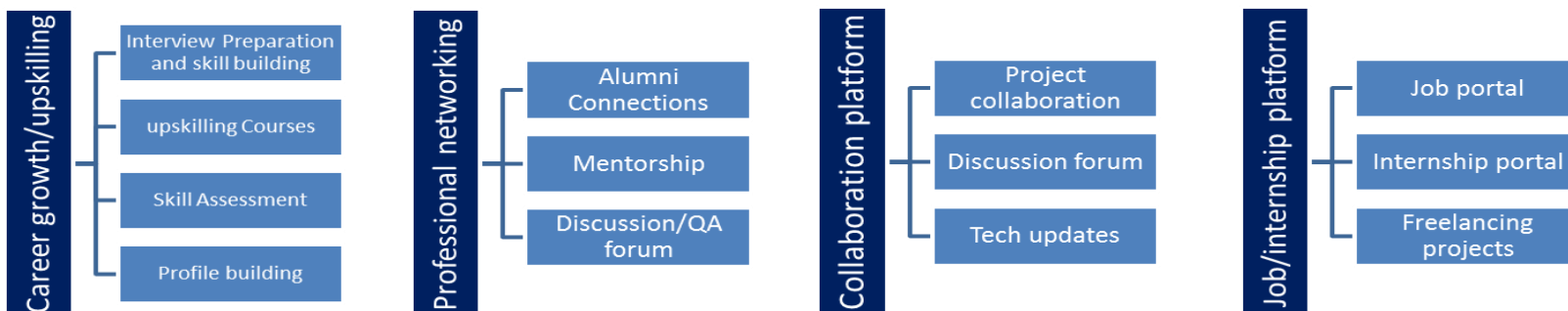
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.



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.

3 Problem Statement

1. Core Banking System: The core banking system forms the backbone of a bank's information system, managing customer accounts, transactions, and other fundamental banking operations.

2. Customer Relationship Management (CRM): CRM systems help banks maintain customer information, track interactions, and provide personalized services, contributing to improved customer satisfaction and loyalty.

3. Online Banking: These systems enable customers to access their accounts, make transactions, pay bills, and perform other banking activities through online platforms, offering convenience and accessibility.

4. Risk Management Systems: Banks employ risk management systems to monitor and mitigate potential risks associated with loans, investments, fraud, and compliance with regulatory requirements.

4 Existing and Proposed solution

Limitations of existing Banking Information System include:

- **Data Integration and Legacy Systems:** Integrating diverse systems and migrating from legacy platforms pose challenges in terms of data consistency, compatibility, and interoperability.
- **Security and Cyber Threats:** The increasing sophistication of cyber threats requires continuous investment in security measures to safeguard customer data and prevent cyber attacks.
- **Regulatory Compliance:** Complying with evolving banking regulations and data privacy laws requires banks to ensure their information systems adhere to industry standards and regulatory frameworks.
- **Scalability and Flexibility:** As banking operations expand or new services are introduced, information systems must be scalable and adaptable to accommodate growth and changing customer needs.

4.1 Code submission (GitHub link)

<https://github.com/soumya140602/upskillcampus/blob/master/LoginServlet.java>

4.2 Report submission (GitHub link) : first make placeholder, copy the link.

https://github.com/soumya140602/upskillcampus/blob/master/BankingInformationSystem_Soumya_USC_UCT.pdf

5 Proposed Design/ Model

