Industrial Internship Report on

”Password Manager”

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 :

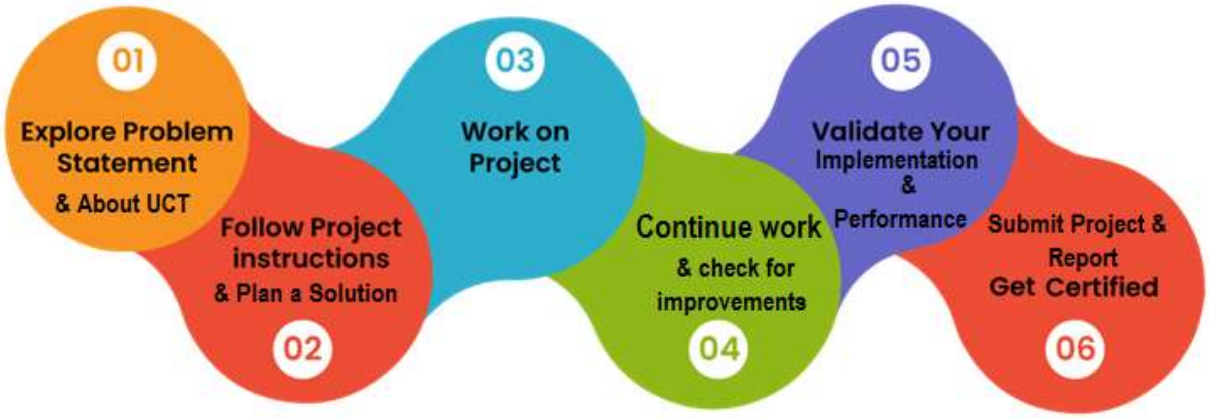
During the 6-week internship, I worked on developing a password manager application using Python. The project aimed to securely store and manage user passwords, generate strong passwords, and retrieve passwords when needed.

Opportunity given by USC/UCT

This internship was provided by upskill Campus and The IoT Academy in collaboration with UniConverge Technologies Pvt Ltd (UCT). It was a valuable opportunity to gain industrial exposure and work on a real-world project.

How Program was planned.

The program was structured to include initial training on necessary tools and technologies, followed by project development phases including design, implementation, testing, and documentation.



About the need for relevant Internship in career development.

Internships provide practical experience and exposure to real-world problems, bridging the gap between theoretical knowledge and practical application. This internship helped me understand the complexities of software development and enhanced my problem-solving skills.

Thanks to all who have helped you directly or indirectly.

I would like to thank to sir Nitin Tyagi for their guidance and the USC/UCT team for providing this opportunity.

Your message to your juniors and peers.

I encourage juniors to actively seek internship opportunities and make the most of the learning experiences they provide. Always be curious and open to new challenges.

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.

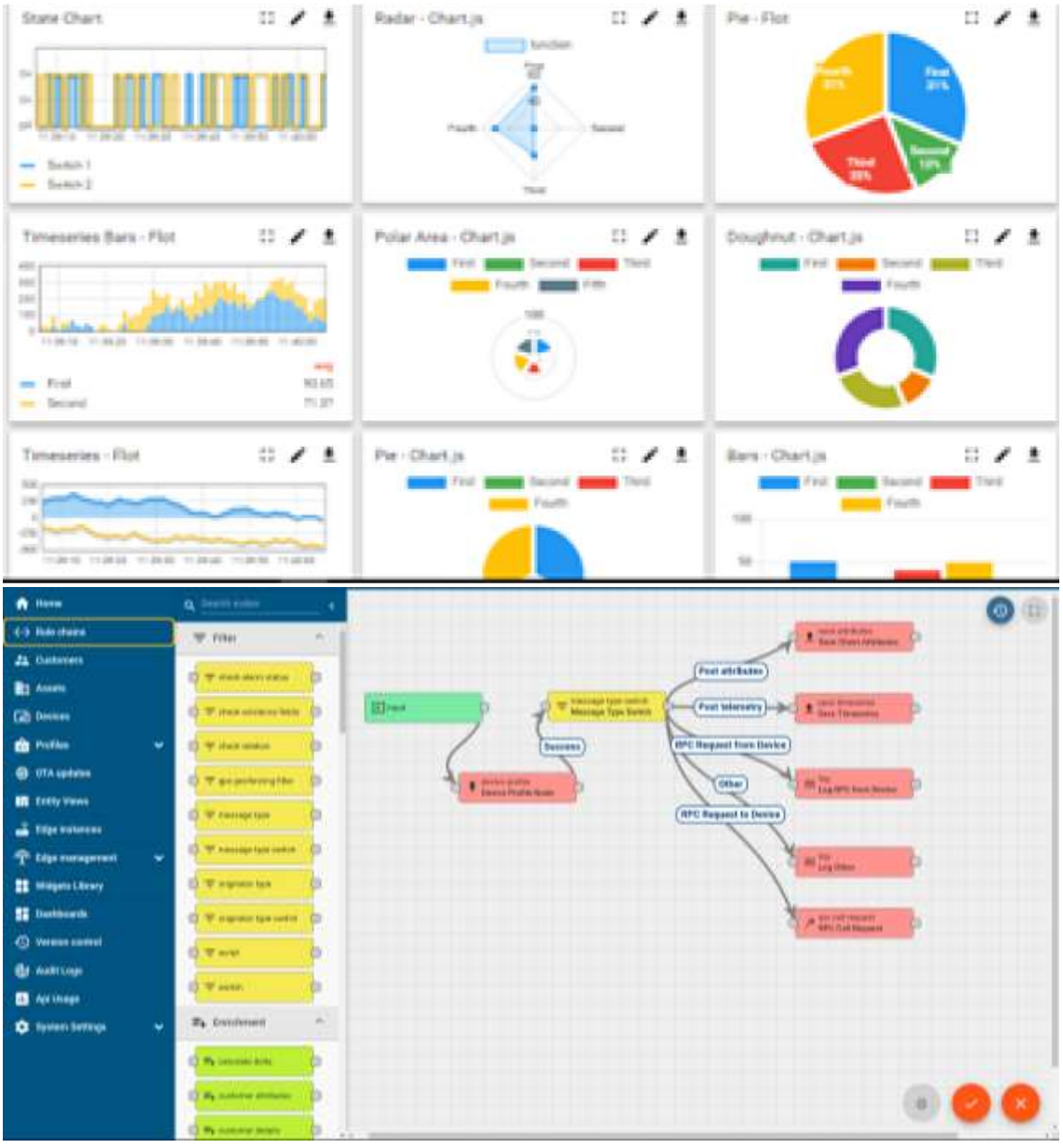
i. UCT IoT Platform (uct Insight)

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.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Utilization


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0.0%
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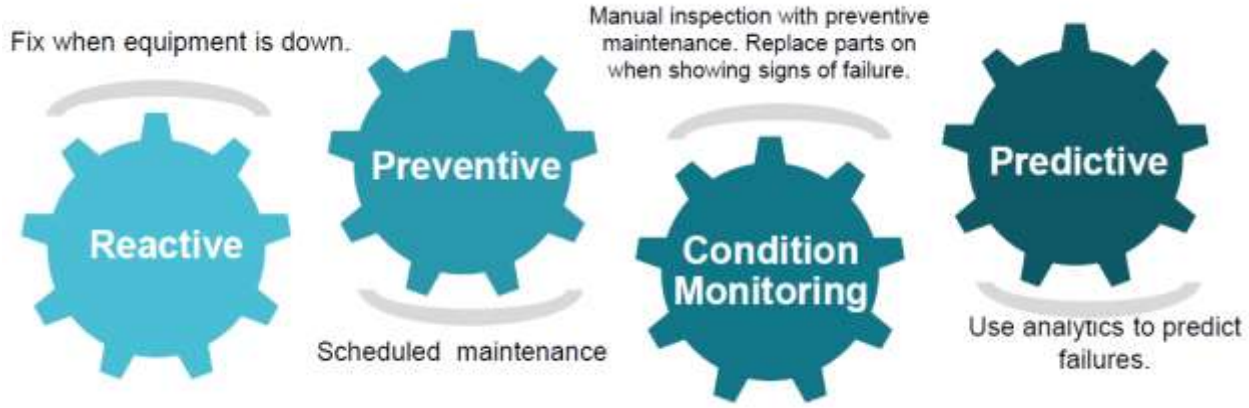
62.35%
62.35%
Availability
Performance
Quality
OEE

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

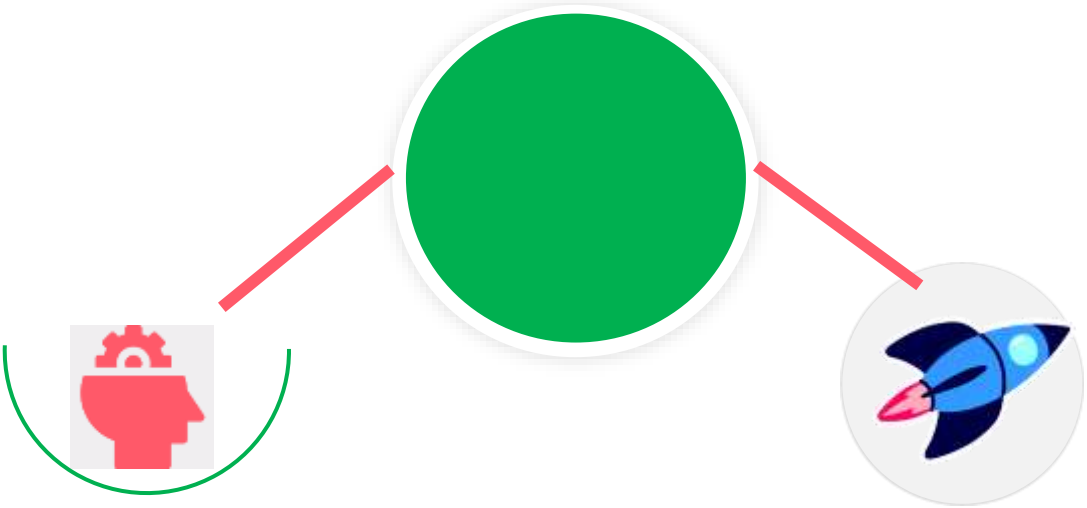
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.



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.

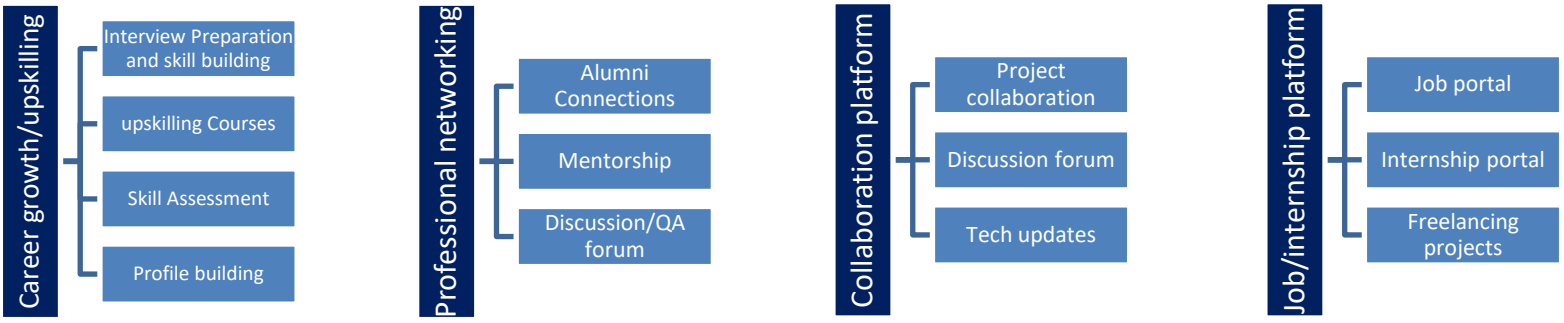
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.



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.

3 Problem Statement

The goal was to develop a password manager that securely stores and manages user passwords, generates strong passwords, and retrieves passwords when needed.

4 Existing and Proposed solution

Provide summary of existing solutions provided by others, what are their limitations?

Many existing password managers like LastPass, 1Password, Dashlane, and KeePass offer secure password storage and management with features like password generation and multi-device support. However, they each have limitations. LastPass has faced security breaches and has a complex interface; 1Password requires a subscription and has limited free features; Dashlane is costly and has performance issues; and KeePass, while free and secure, has an outdated and less intuitive interface. These drawbacks highlight the need for a password manager that balances security, affordability, and ease of use.

What is your proposed solution?

My proposed solution includes implementing encryption algorithms to secure password storage, designing a user interface to input and retrieve passwords, and developing functions to generate strong passwords and store/retrieve them from a database.

What value addition are you planning?

4.1 Code submission (Github link) :

https://github.com/Amaan2514/Password_Manager.git

4.2 Report submission (Github link) :

https://github.com/Amaan2514/Password_Manager.git

5 Proposed Design/ Model

Given more details about design flow of your solution. This is applicable for all domains. DS/ML Students can cover it after they have their algorithm implementation. There is always a start, intermediate stages and then final outcome.

5.1 High Level Diagram (if applicable)

5.2 Low Level Diagram (if applicable)

5.3 Interfaces (if applicable)

6 Performance Test

This is very important part and defines why this work is meant of Real industries, instead of being just academic project.

Here we need to first find the constraints.

How those constraints were taken care in your design?

What were test results around those constraints?

Constraints can be e.g. memory, MIPS (speed, operations per second), accuracy, durability, power consumption etc.

In case you could not test them, but still you should mention how identified constraints can impact your design, and what are recommendations to handle them.

6.1 Test Plan/ Test Cases

6.2 Test Procedure

6.3 Performance Outcome

7 My learnings

- **Encryption Techniques:** I learned about implementing encryption algorithms using the cryptography library in Python, specifically the Fernet encryption scheme.
- **Database Management:** I improved my skills in managing databases with SQLite, including creating tables and performing CRUD operations.
- **User Interface Design:** I gained experience in designing intuitive and user-friendly interfaces.
- **Security Best Practices:** I learned the importance of securing user data and implementing privacy measures in software design.
- **Problem-Solving and Debugging:** I enhanced my problem-solving and debugging skills through practical application and troubleshooting.
- **Teamwork and Communication:** Collaborating with team members and mentors improved my communication and teamwork skills.

8 Future work scope

- **Multi-Factor Authentication (MFA):** Implementing MFA to add an extra layer of security.
- **Biometric Authentication:** Integrating biometric methods like fingerprint or facial recognition for improved security and user experience.
- **Secure Password Sharing:** Developing a feature for secure password sharing with trusted contacts.
- **Browser and Mobile Integration:** Expanding the password manager to support integration with popular web browsers and mobile applications.
- **Additional Features:** Continuously exploring and adding new features to enhance the functionality and security of the password manager