Industrial Internship Report on

”FILE ORGANIZER”

Prepared by

[Patel Chesta]

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 about file organizer. Creating a **file organizer** in Python is a great project to manage files in a specific directory by categorizing them into folders based on their file type, date, or any other criteria you choose. 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.

TABLE OF CONTENTS

1 Preface

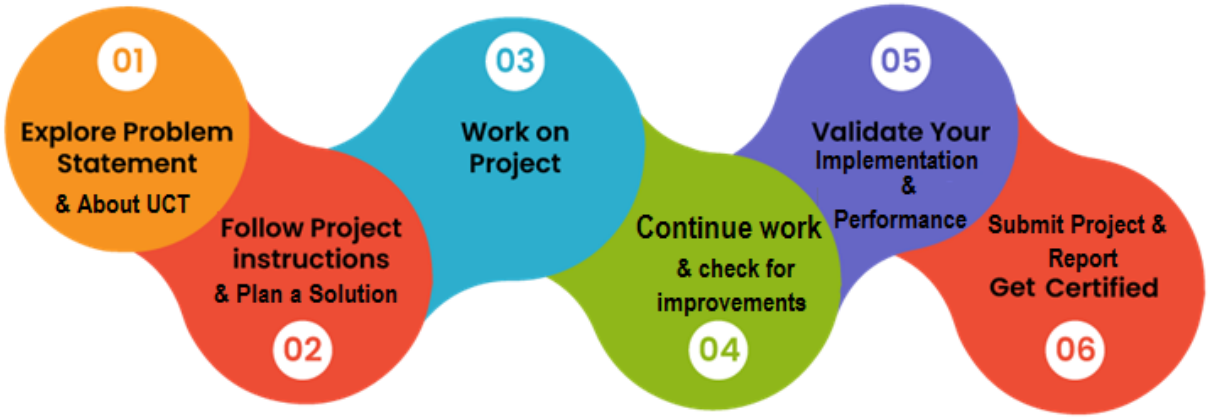
- **Python Syntax and Semantics:** Gained a solid understanding of Python's syntax and key concepts.
- **Data Structures:** Explored lists, tuples, dictionaries, and sets for effective data handling.
- **Functions and Modules:** Learned how to create reusable functions and organize code into modules.
- **Error Handling:** Studied exception handling techniques for robust code development.
- **Libraries:** Familiarized with essential libraries for data manipulation and visualization.
- **Self-Assessment and Review:** Used Quiz 2 results to reflect on the strengths and weaknesses in Python programming.
- **Concept Reinforcement:** Focused on revisiting challenging topics based on quiz feedback to strengthen understanding.
- **Data Structures in NumPy and Pandas:** Improved understanding of structured data handling through arrays and data frames.
- **Efficient Data Processing:** Practiced data processing techniques for efficient analysis, including vectorized operations in NumPy.
- **Data Cleaning Techniques:** Applied data cleaning methods in Pandas to handle missing values and organize data effectively.

This all topic we learn in overall in 6 week.

A **File Organizer** is a Python program designed to manage and arrange files within a specific directory systematically. In today's digital era, users often accumulate a large number of files on their computers, resulting in disorganized directories that can slow down workflows. Manually sorting these files into folders is time-consuming, error-prone, and tedious. T

Opportunity given by USC/UCT they provide a deep knowledge of python librabries, operators, etc. they provide a online platform where we learn about in whatever field we are interested.

How Program was planned



My experience was so nice to work with UCT/USC. I gain so much Knowledge about python language.

Thank to all the members of UCT Pvt Ltd, who have helped me directly or indirectly.

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.

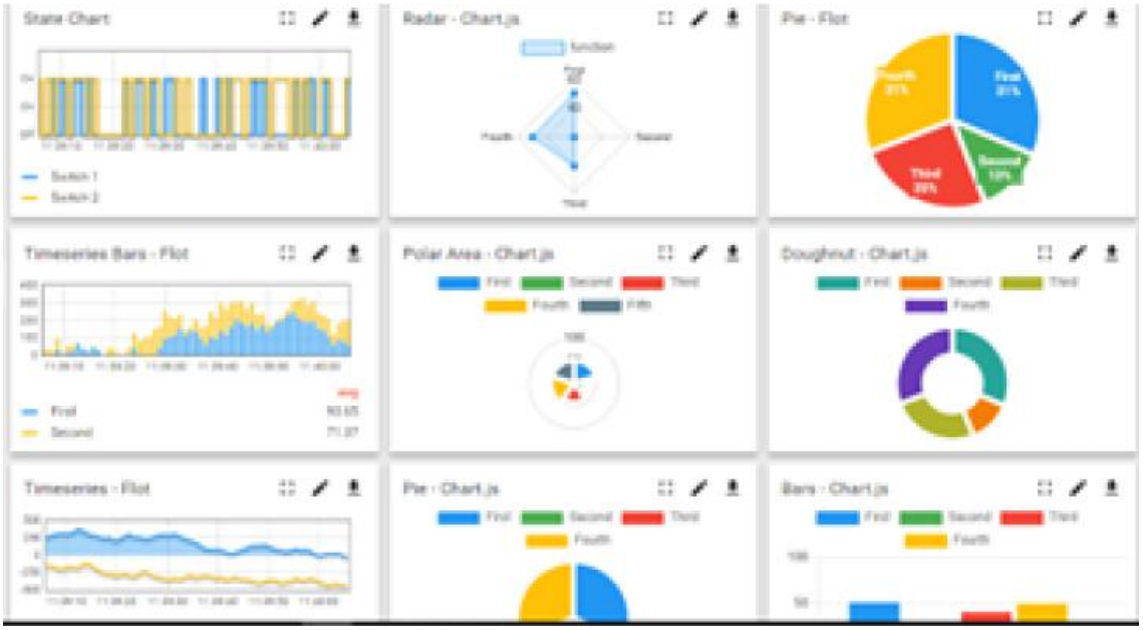
i. UCT IoT Platform (UCT Insight)

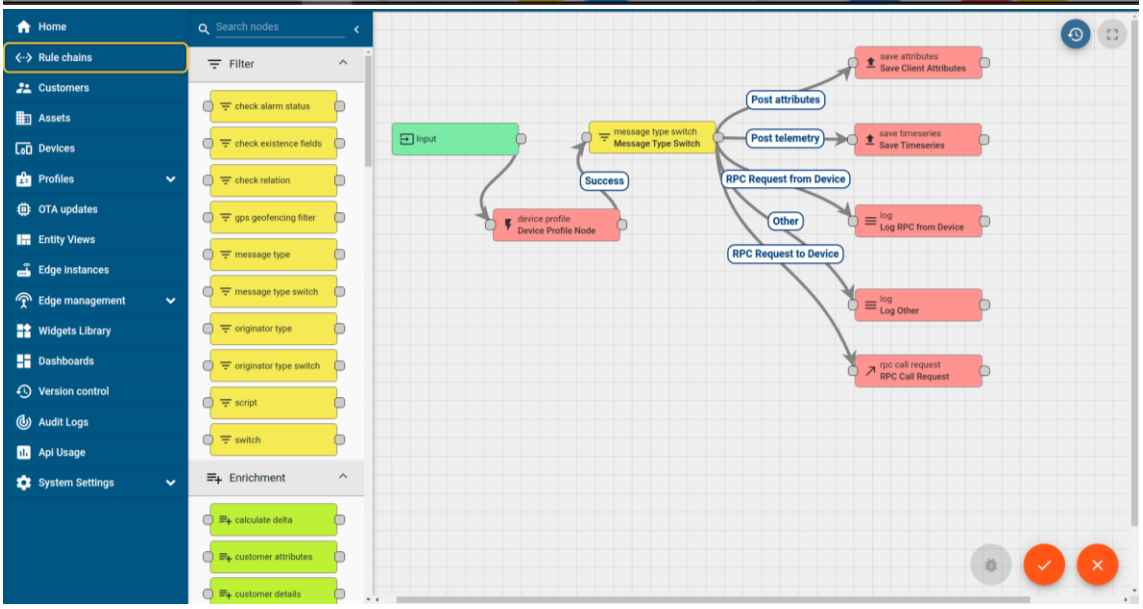
UCT Insight is an IOT platform designed for quick deployment of IOT applications on the same time providing valuable "insight" for your process/business. It has been built in Java for backend and ReactJS for Front end. It has support for MySQL and various NoSql Databases.

- 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.

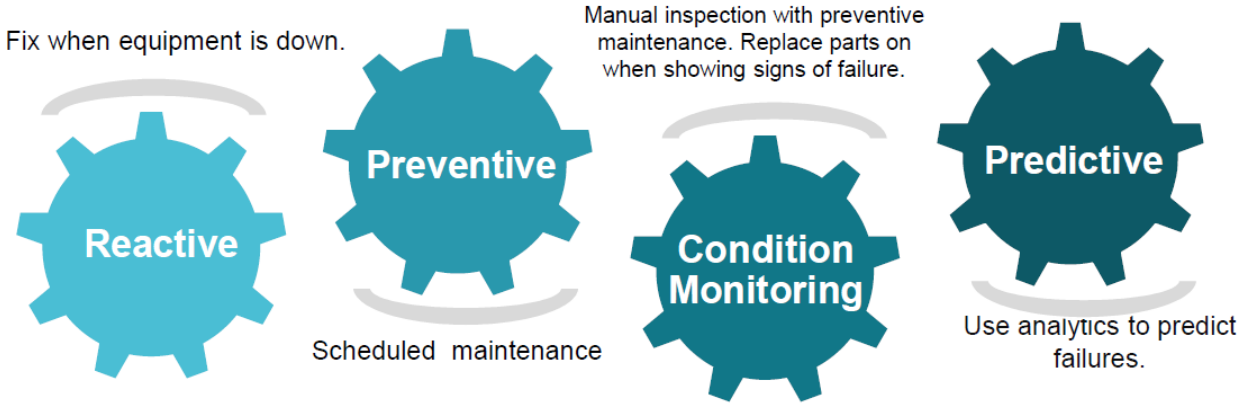
Machine	Operator	Work Order ID	Job ID	Job Performance	Job Progress		Output		Rejection	Time (mins)				Job Status	End Customer
					Start Time	End Time	Planned	Actual		Setup	Pred	Downtime	Idle		
CNC_S7_81	Operator 1	WO0405200001	4168	58%	10:30 AM		55	41	0	80	215	0	45	In Progress	i
CNC_S7_81	Operator 1	WO0405200001	4168	58%	10:30 AM		55	41	0	80	215	0	45	In Progress	i

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

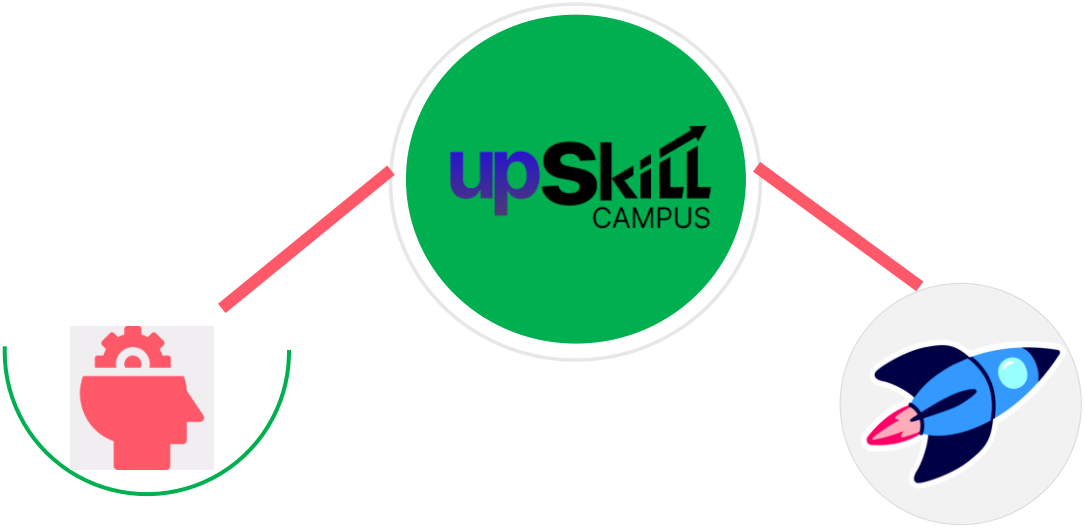
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.



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.

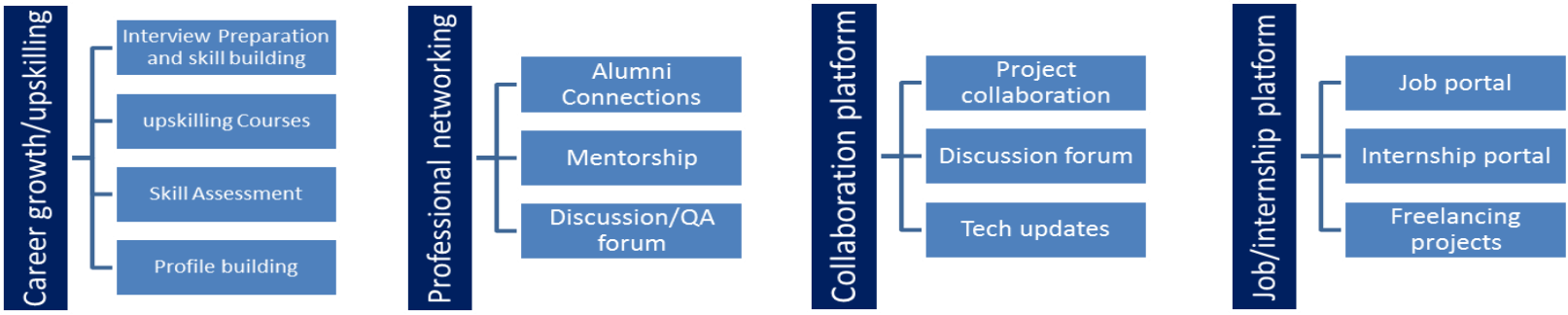
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.



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.

2.5 Reference

[1] Official Documentation of Python.

[2] NumPy and Pandas Online Tutorials.

[3] Case Studies on file Organizers.

2.6 Glossary

Terms	Acronym
Internet of Things	IoT
Python	
Application Programming Interface	API

3 Problem Statement

In today's digital era, users often accumulate a large number of files on their computers, resulting in disorganized directories that can slow down workflows. Manually sorting these files into folders is time-consuming, error-prone, and tedious. This disorganization can lead to:

- Difficulty in locating important files.
- Wasting time navigating cluttered directories.
- Increased risk of losing or misplacing critical documents.

4 Existing and Proposed solution

Many users rely on manual file organization methods or third-party tools to manage their file systems. These existing approaches come with limitations:

- **1. Manual File Management**
- Users manually sort files into folders by type, date, or custom criteria.
- **Challenges:**
    - Time-consuming and inefficient.
    - Prone to errors, like misplacing or overlooking files.
    - Requires consistent effort to maintain organization.
- **2. Third-Party File Management Tools**
- Tools like File Juggler, Hazel (macOS), or DropIt offer file automation.
- **Challenges:**
    - Many are paid tools with limited free features.
    - Often require a learning curve for configuration.
    - May not be customizable for all user-specific requirements.
    - Platform-dependent, with limited cross-platform support.
- **Existing Solution for File Organizer**

Many users rely on manual file organization methods or third-party tools to manage their file systems. These existing approaches come with limitations:

- **1. Manual File Management**
- Users manually sort files into folders by type, date, or custom criteria.
- **Challenges:**
    - Time-consuming and inefficient.
    - Prone to errors, like misplacing or overlooking files.
    - Requires consistent effort to maintain organization.

- **2. Third-Party File Management Tools**
- Tools like File Juggler, Hazel (macOS), or DropIt offer file automation.
- **Challenges:**
    - Many are paid tools with limited free features.
    - Often require a learning curve for configuration.
    - May not be customizable for all user-specific requirements.
    - Platform-dependent, with limited cross-platform support.

- **Proposed Solution: Python-Based File Organizer**

A **Python-based File Organizer** provides a flexible, automated, and customizable solution tailored to individual needs. In this project when program run it ask for a path provide a valid path then all the file organize in Video, Audio, Document, Image, Other folder. From this we can easily get the file in just few minutes ans oit also save the time and load of Humans.

4.1 Code submission (Github link)

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

5 Proposed Design/ Model

5.1 High Level Diagram (if applicable)

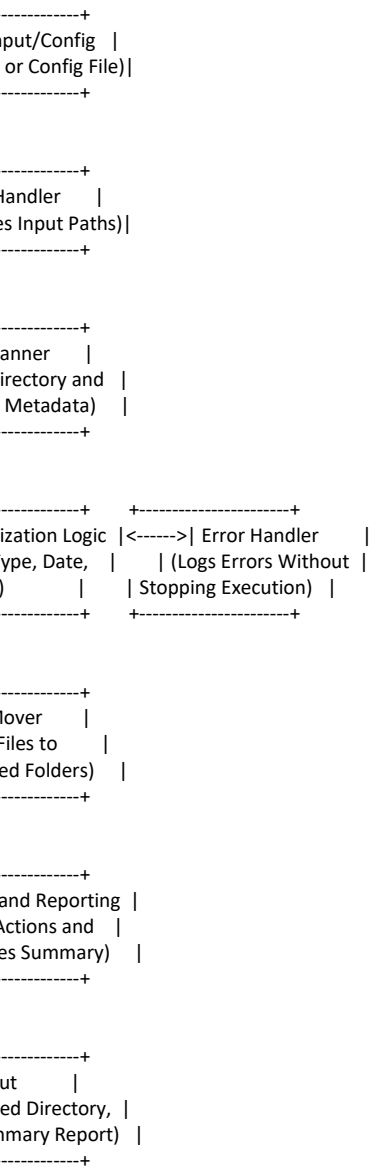


Figure 1: HIGH LEVEL DIAGRAM OF THE SYSTEM

5.2 Interfaces (if applicable)

1. **Data Flow:**
   User Input ---> Input Handler ---> File Scanner ---> Categorization Logic ---> File Mover ---> Output
2. **User Interface:** Command-Line interface(CLI) for user interaction.

6 Performance Test

6.1 Test Plan/ Test Cases

Test Case ID	Test Scenario	Input	Expected Output	Result
TC_001	Validate folder path	Invalid folder path (`/invalid_path`)	Error message: "Invalid path"	Pass/Fail
TC_002	Scan directory with files	Directory with 10 files	List of 10 files	Pass/Fail
TC_003	Categorize files by type	Mixed file types	Files grouped by Images, Docs, etc.	Pass/Fail
TC_004	Move files to categorized folders	Test folder with files	Files moved to respective folders	Pass/Fail
TC_005	Handle inaccessible files	File with restricted permissions	Error logged for inaccessible file	Pass/Fail

6.2 Performance Outcome:

The **File Organizer** should operate efficiently on systems with:

- **File Count**: Over 10,000 files in a directory.
- **File Size**: Files ranging from small documents to large video files.
- **Memory Usage**: Should not exceed 500MB during processing.
- **Processing Time**: Organizing and moving files should take no more than 30 minutes for directories containing up to 10,000 files (with a total size of 10GB).

2

7 My learnings

Skills Gained:

o Python Programming: Developed an interactive, command-line application.

o Data Handling: Learned how to read and write JSON files in Python.

o System Design: Gained experience in designing a simple, user-friendly quiz game.

o Problem Solving: Improved analytical skills by addressing challenges in quiz logic and user interaction.

• **Career Impact:**

o Enhanced technical skills in Python and project development.

o Improved understanding of user experience (UX) design for command-line applications.

o Gained practical experience in data handling and system performance optimization.

8 Future work scope

- **Smart File Deduplication.**
    - Implement intelligent deduplication features that not only look at filenames but also file contents, file sizes, and metadata.
    - Provide an option for users to preview duplicates before deletion.
- **Advanced AI and Machine Learning for Categorization**
    - Train machine learning models to classify documents (e.g., invoices, reports, emails) or images (e.g., portraits, landscapes).
    - Implement an intelligent recommendation system to suggest folder structures based on past user actions.
    -
- **Mobile App or Cross-Platform Support**
    - Develop a companion mobile app for both Android and iOS, allowing users to organize files directly on their mobile devices.
    - Use cloud synchronization to keep files organized consistently across devices.