Industrial Internship Report on

”File Organizer”

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 4 weeks’ time. My project was to make a File Organizer which organizes a given directory and categorizes files based on their type. 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

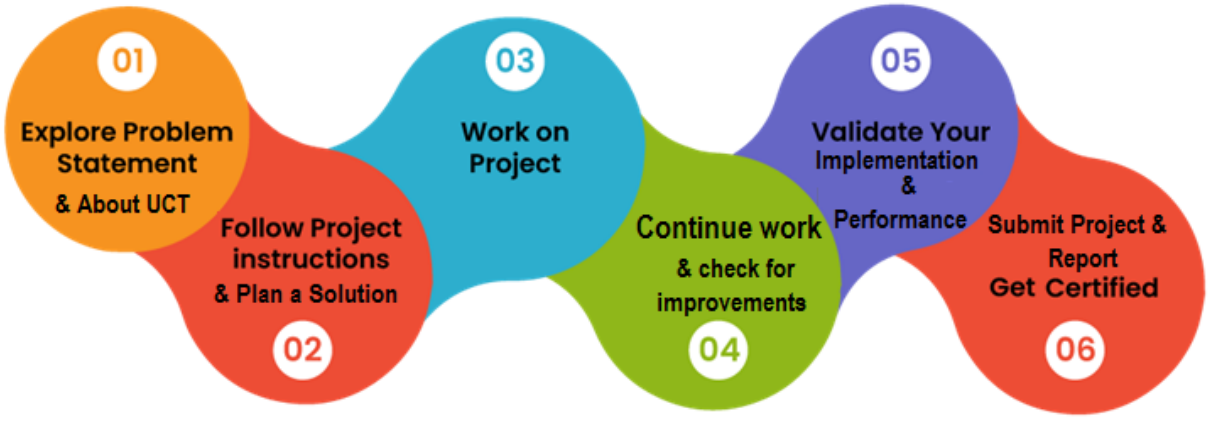
This project was created over a span of 4 weeks. The first week was focused on exploring the problem statements and choosing one to implement. I also gained a lot of information about UCT and its numerous contributions. The second week was focused on gaining a deeper understanding of the selected project, planning a solution and building a pseudocode. The implementation of the code was done in the third week while the fourth week was utilized to improve the code and overcome possible errors.

Internships are important for your career. They give you hands-on experience, help you learn industry-specific skills, and connect what you study with real-world work. This experience makes you more employable and lets you build a professional network..

My project was to build a File Organizer which organizes a given directory and categorizes files based on their type.

This opportunity not only provides me with valuable hands-on experience but also offers a certification and validation that will undoubtedly enhance my professional development and contribute positively to my future career. UCT's commitment to providing practical learning experiences underscores the significance of this internship in equipping me with skills and credentials that can open doors in my chosen field of software programming.

I started by figuring out what I needed and learned about it for a week. Then, I spent a week making a plan. After that, I worked on the actual project for a week and used the last week to fix issues and make it better. I used modules called os and shutil for handling files in Python. This step-by-step approach helped me create the File Organizer project successfully.



Throughout the File Organizer project, I gained valuable insights into Python programming and file manipulation. Researching and implementing the os and shutil modules expanded my understanding of efficient file handling. The four-week timeline allowed for a well-rounded experience—choosing and

gaining knowledge, planning, hands-on implementation, and refining. Facing and solving challenges during the process enhanced my problem-solving skills. Overall, the project was a practical learning journey that deepened my programming expertise and project management abilities..

I extend my heartfelt gratitude to Archana, Santosh, and Anit Kumar for their direct support and guidance throughout the File Organizer project. Special thanks to Upskill, IoT Academy, and UCT for providing valuable resources and opportunities that contributed to my learning journey. Your collective support, has played a significant role in my growth and success. Thank you all for being an integral part of my learning experience.

To my juniors and peers,

Embarking on the File Organizer project was a rewarding experience that significantly enhanced my programming skills. My advice is to embrace the learning process, don't shy away from challenges, and always seek to expand your knowledge. Breaking down tasks and planning ahead proved crucial, so don't underestimate the power of a well-structured plan. Collaboration and seeking help when needed are key, and remember that every obstacle is an opportunity to learn and grow. Best of luck in your coding endeavors!.

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.

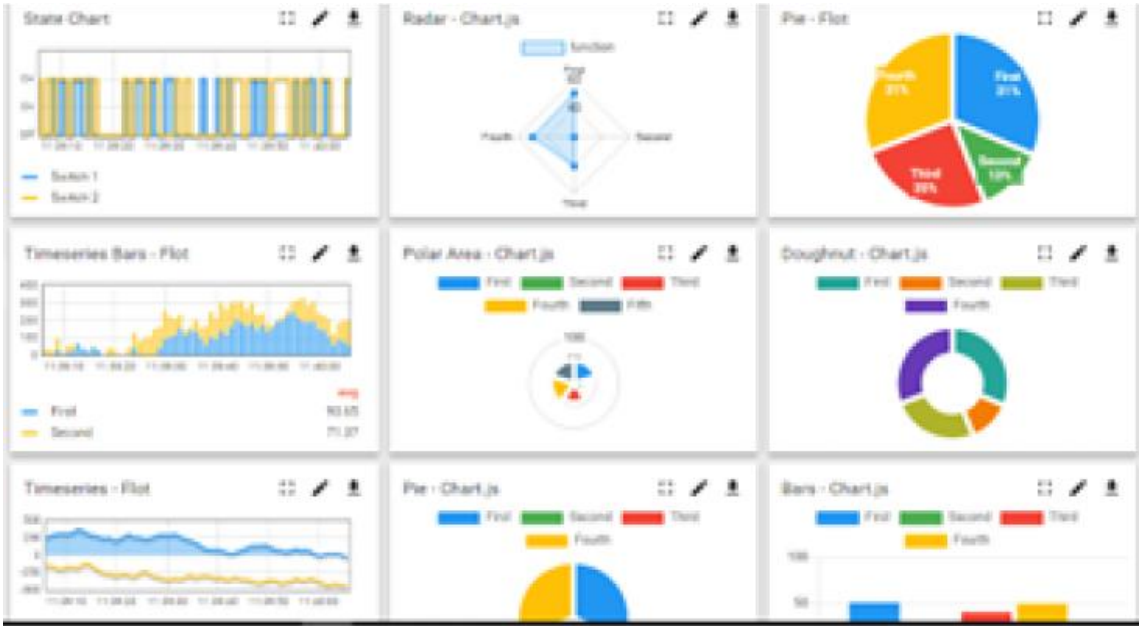
i. UCT IoT Platform (UCT Insight)

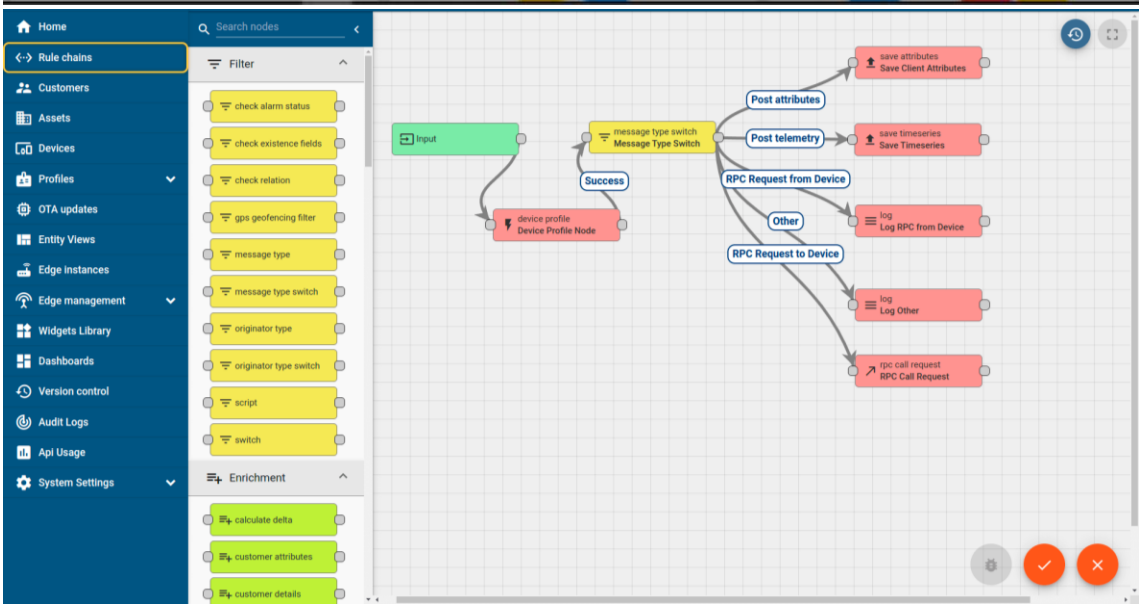
UCT Insight is an IOT platform designed for quick deployment of IOT applications on the same time providing valuable "insight" for your process/business. It has been built in Java for backend and ReactJS for Front end. It has support for MySQL and various NoSql Databases.

- 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.

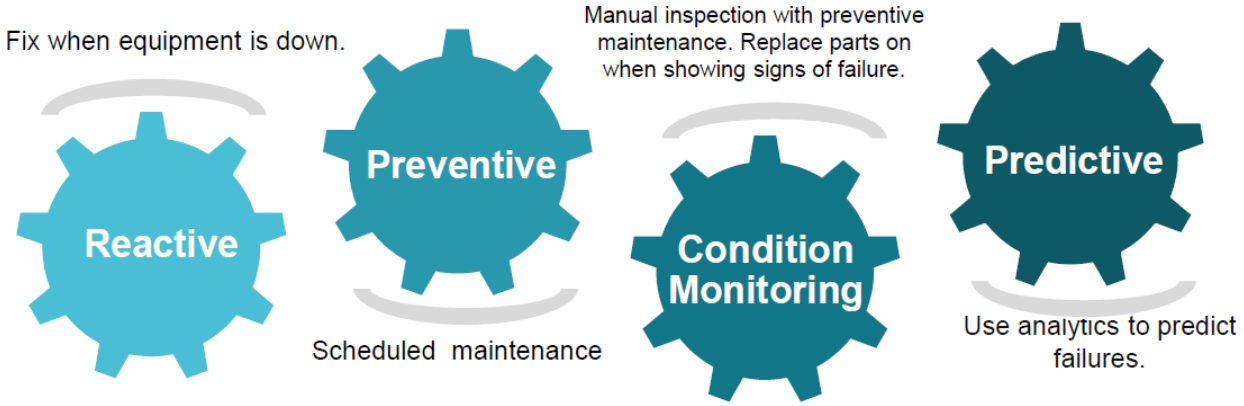
Machine	Operator	Work Order ID	Job ID	Job Performance	Job Progress		Output		Rejection	Time (mins)				Job Status	End Customer
					Start Time	End Time	Planned	Actual		Setup	Pred	Downtime	Idle		
CNC_S7_81	Operator 1	WO0405200001	4168	58%	10:30 AM		55	41	0	80	215	0	45	In Progress	i
CNC_S7_81	Operator 1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

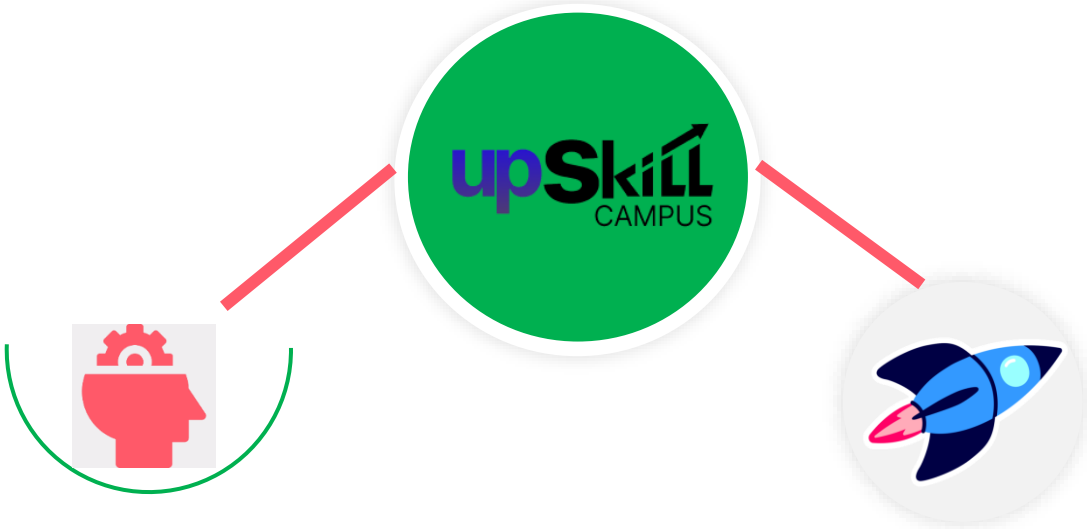
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.



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.

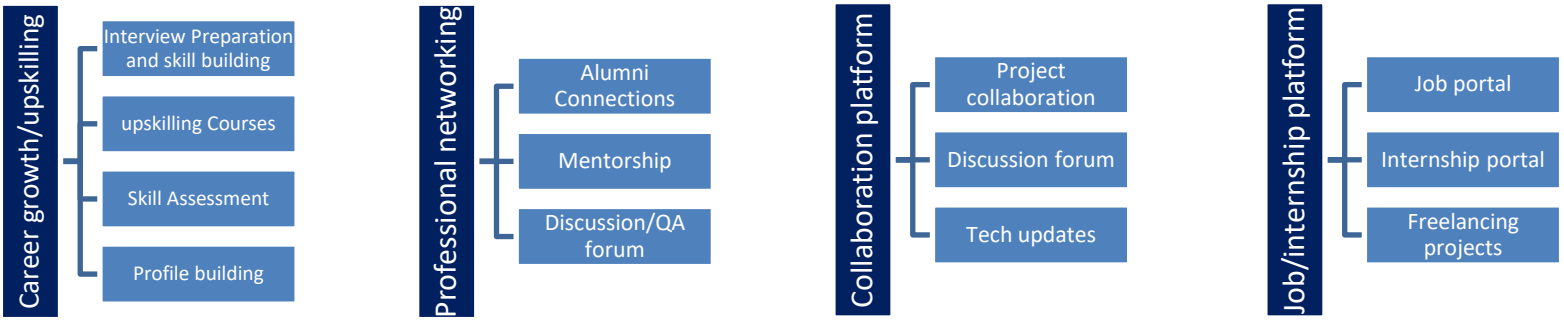
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.



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] Learning Python 4th edition O'REILLY

[2] The IoT Academy (https://www.youtube.com/@Theiotacademy)

[3] UpSkill (https://learn.upskillcampus.com/s/store?redirectToMicroFE=false)

2.6 Glossary

Terms	Acronym
Operating System	os
Shell Utilities	shutil

3 Problem Statement

The problem statement for the File Organizer project was to develop a Python program that assists users in organizing files within a specified directory. The main challenges included designing a user-friendly interface to select the target directory, implementing functions to identify file types, dynamically creating folders for different file categories (e.g., images, documents), and developing an algorithm to move files into the appropriate folders.

The overarching goal was to streamline the file organization process, making it efficient and user-friendly. The use of Python, particularly the os and shutil modules, was crucial for handling file operations. The project aimed to create a practical solution for individuals dealing with cluttered directories, providing a systematic and automated way to categorize and organize files based on their types.

4 Existing and Proposed solution

Existing solutions like Hazel and Belvedere offer automated file organization, but they may cost money and are platform-specific. Built-in features in some operating systems lack customization. Free tools on GitHub might be technical. The File Organizer project aimed to provide a free, user-friendly, and customizable solution using Python to overcome these limitations.

The proposed solution is a Python-based File Organizer program. It offers a user-friendly interface to select a directory, identifies file types using the os and shutil modules, and organizes files into specific folders based on their categories.

The value addition lies in providing a free, customizable, and platform-independent solution to streamline file organization. The program aims to enhance user experience by automating the process, reducing clutter, and offering flexibility in organizing various file types efficiently.

4.1 Code submission (Github link):

https://github.com/Dcosta-Arvin-Arun/upskillcampus/blob/main/FileOrganizer.py

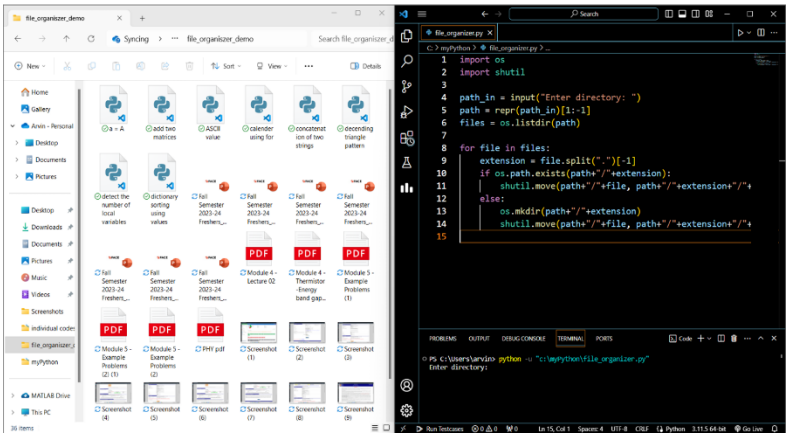
4.2 Report submission (Github link):

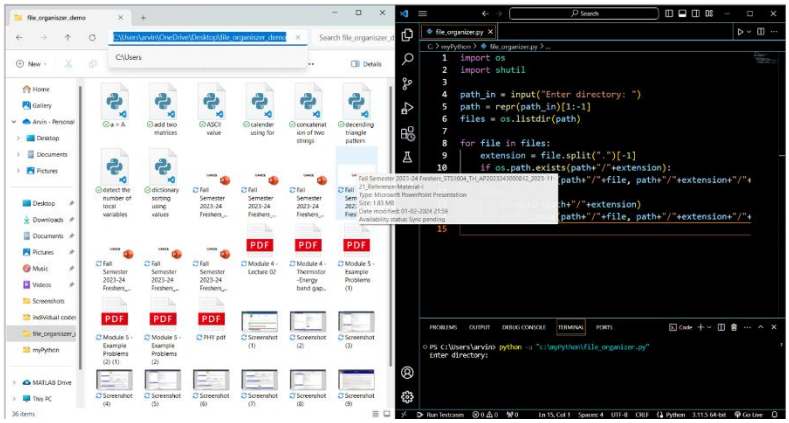
https://github.com/DcostaArvinArun/upskillcampus/blob/main/FileOrganizer_ArvinArunDcosta_UCT.pdf

5 Proposed Design/ Model

The following is a demo of the project:

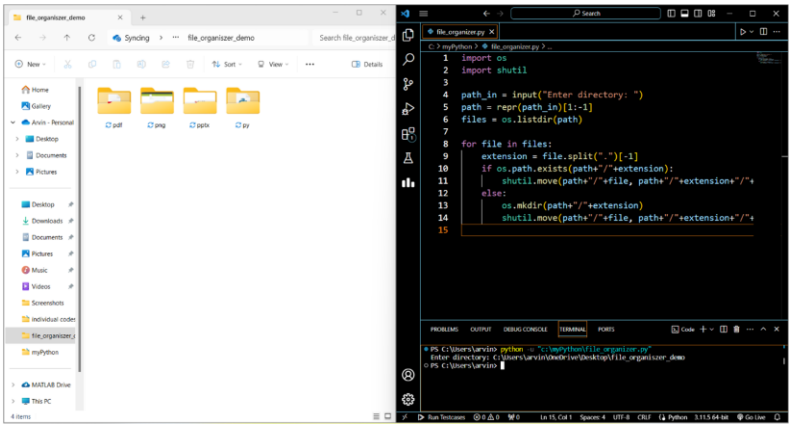
As we can see there is a directory with random files in it.





The user just has to enter the directory name when asked without worrying about the type of input data. Here we are going to copy and paste the directory.

The file organizer scans the specified directory and categorizes files based on their type.



6 Performance Test

6.1 Test Plan/ Test Cases

- Constraints: Find potential problems like using too much computer memory or taking too long for big tasks.
- Memory Test: Check how the program handles many files without slowing down or crashing.
- Speed Test: See how fast the program works with different folder sizes.
- Scalability Test: Check if the program keeps working well as you add more files.

6.2 Test Procedure

- Memory Test: Try using the program with a big folder and check if your computer memory stays okay.
- Speed Test: Measure how long it takes for the program to organize files in small and big folders.
- Scalability Test: Gradually make folders bigger and check if the program still works well.

6.3 Performance Outcome

- Memory Test: Check if the program uses computer memory well even with lots of files.
- Speed Test: See if the program is fast enough for different folder sizes.
- Scalability Test: Check if the program keeps working as you add more files.

7 My learnings

Taking on the File Organizer project has been a great learning experience for me. Through this journey, I've deepened my understanding of Python programming, especially in dealing with file operations and creating effective algorithms. The four-week process of choosing tools, planning, implementing, and refining has honed not just my technical skills but also my ability to tackle real-world problems.

This hands-on experience is invaluable for my career growth. It has equipped me with practical knowledge that goes beyond theoretical concepts. The structured approach to planning and execution taught me the importance of breaking down tasks and managing time effectively. These skills are not just applicable to coding projects but are transferable to various aspects of professional life.

Moreover, overcoming challenges during the project has boosted my problem-solving confidence. The ability to adapt and learn from unexpected issues is a skill that I believe is crucial in any career path.

As I move forward, the File Organizer project stands as a testament to my capabilities in software development. It has broadened my skill set and made me more versatile in handling diverse programming tasks. I am confident that these learnings will be instrumental in my career growth, providing a solid foundation for future challenges and opportunities.

8 Future work scope

While working on the File Organizer project, I had some cool ideas that I couldn't include due to time constraints. One idea was to use machine learning to make the file sorting even smarter. Another thought was to expand the tool to organize files in cloud storage. I also wanted to include more file types and make the interface even easier to use. Even though I couldn't do these things now, they're on my radar for future improvements to make the File Organizer even better!