Introduction to
Robotic Process Automation

AUTOMATED PROJECT HOSTING AND REPOSITORY INSIGHTS

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Abstract

- "This project employs Robotic Process Automation (RPA) to streamline GitHub repository management, automating repository creation, folder uploads, and commit insights retrieval. Integrating UiPath, VS Code, and email services enhances workflow efficiency, reduces manual errors, and ensures real-time updates, making it a robust developer solution."

Need for the Proposed System

- Manual GitHub repository management is prone to errors and time-consuming.
- Existing tools lack user-friendly automation features for non-technical users.
- Difficulty in scaling repository management tasks as project demands increase.
- Gaps in real-time communication of commit updates to stakeholders.

Advantages of the Proposed System

- Fully automates repetitive tasks like repository creation and file uploads.
- Reduces errors and improves accuracy in development workflows.
- Enables real-time commit notifications via email, ensuring stakeholders are updated.
- Provides a cost-effective and scalable solution using RPA tools such as UiPath.

Literature Survey

- **Paper 1:** "Robotic Process Automation for GitHub Workflows"
- **Advantages:** Demonstrates significant time savings in repository management.
- **Disadvantages:** Dependency on tool-specific features like UiPath can limit flexibility.

- **Paper 2:** "Integration of RPA in Software Development"
- **Advantages:** Highlights the seamless integration of automation tools with development platforms.
- **Disadvantages:** Challenges in handling dynamic web elements during browser automation.

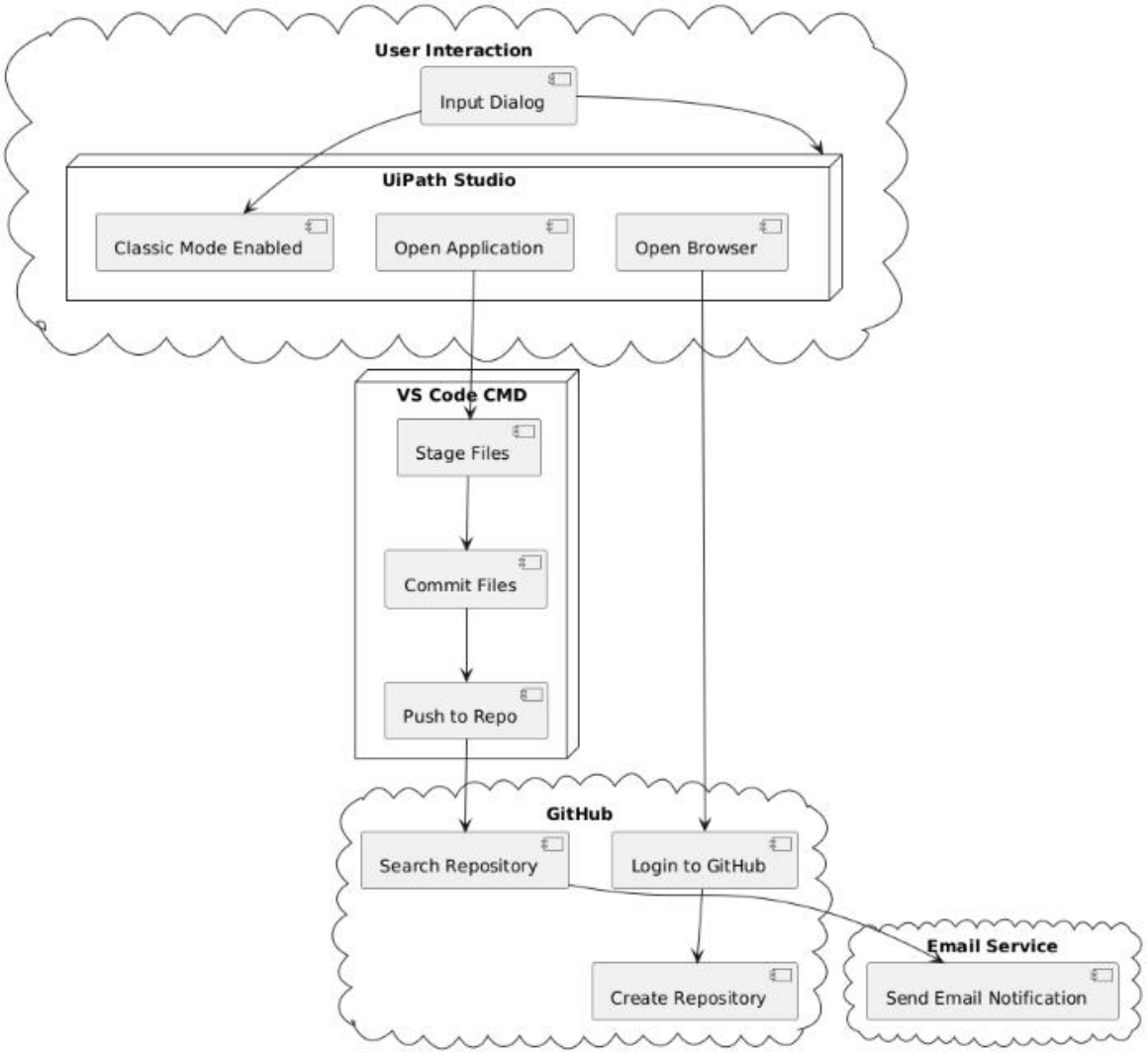
Main Objective

- Automate GitHub repository creation and folder uploads.
- Retrieve commit insights and send automated email updates.
- Streamline repetitive tasks to enhance developer productivity.

Architecture

- User Interface for task initiation.
- UiPath Orchestrator for task automation.
- Integration with GitHub and VS Code for repository management.
- Data storage (Excel) for task logs.
- Email system for notifications.

Architecture Diagram



System Requirements

- **Hardware:**
- CPU: Intel Core i5 or higher.
- RAM: 8GB minimum.

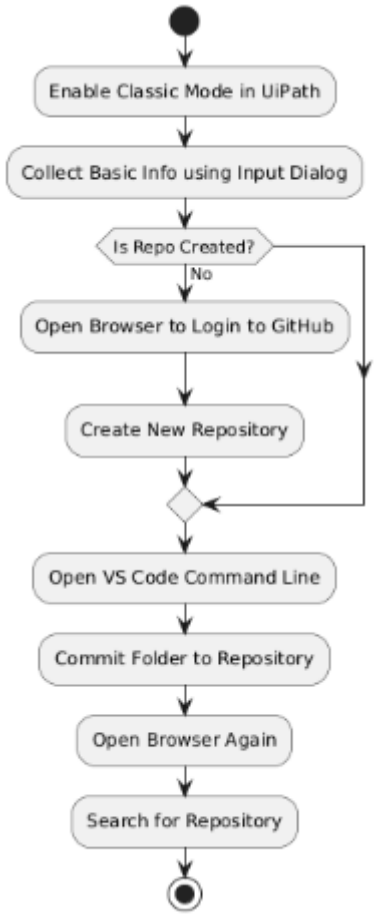
- **Software:**
- UiPath Studio.
- GitHub CLI.
- Python 3.9+ (optional for advanced integration).

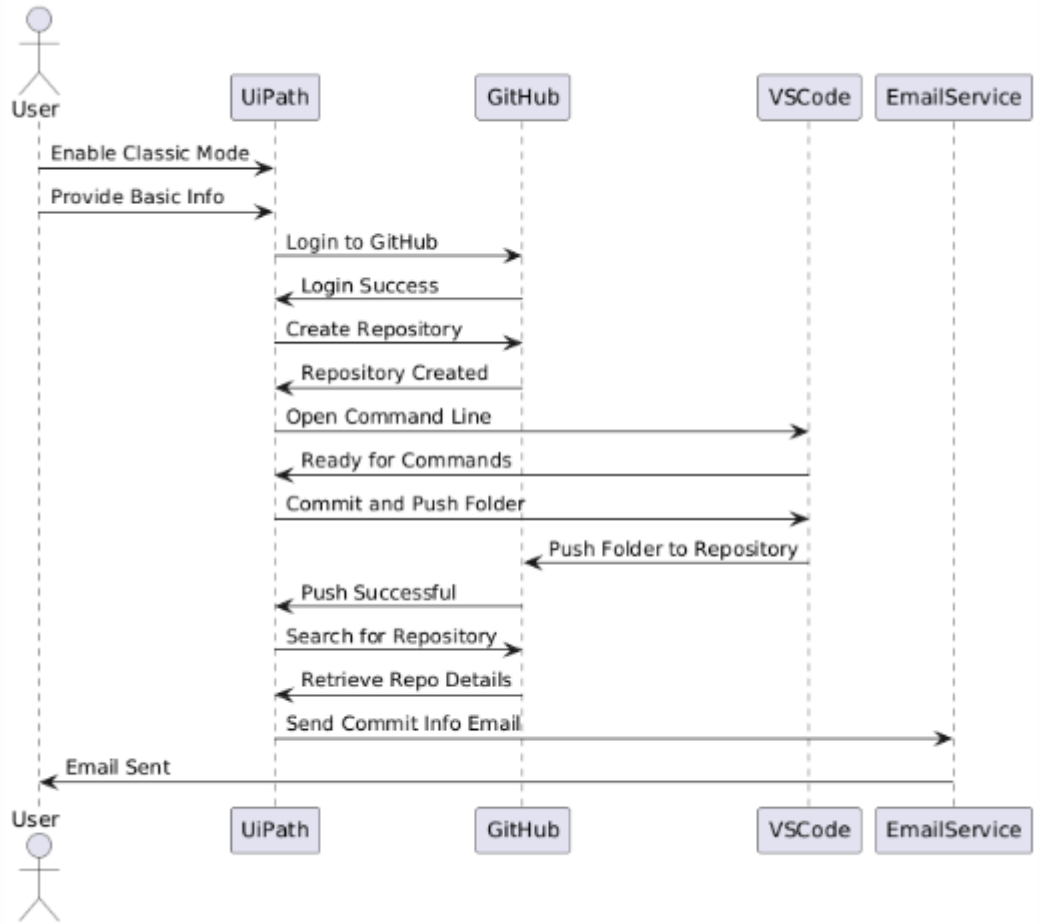
Functional Description

- **Module 1:** User Input and Automation Setup
- Captures repository details, commit messages, and other inputs.
- Initializes UiPath workflows for automation.

- **Module 2:** Task Execution and Data Management
- Automates repository creation, file uploads, and commit retrieval.
- Logs task data in Excel for analysis.

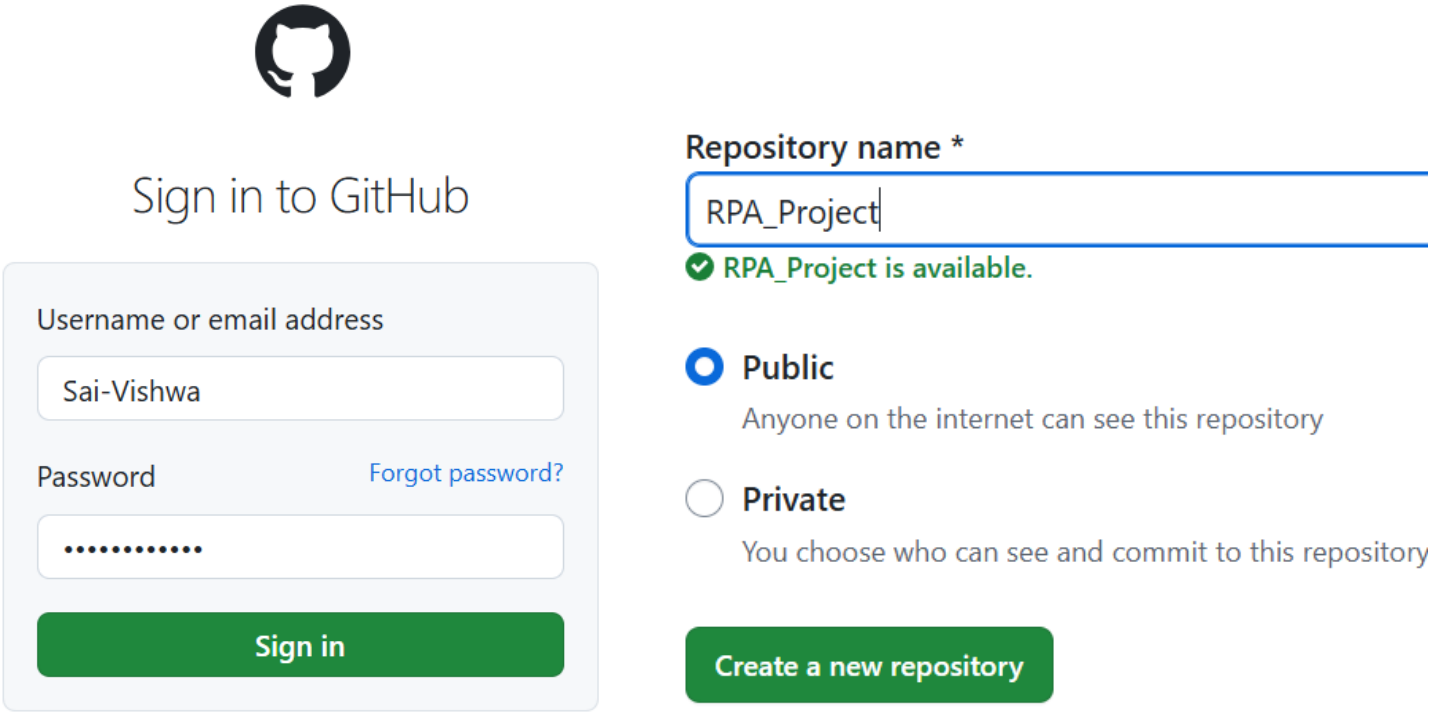
Process Design





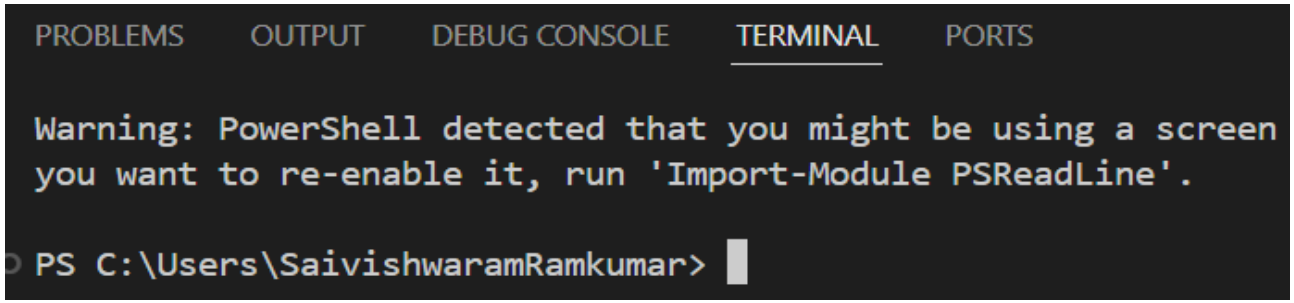
Implementation

- **Module 1:** Repository Creation
- Automates repository creation using browser interactions via UiPath.



Implementation

- **Module 2:** Commit Upload
- Automates file staging, committing, and pushing via VS Code CLI.

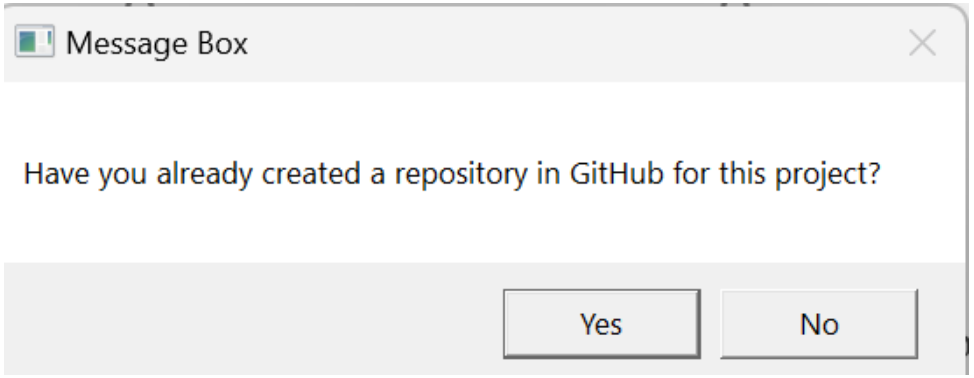


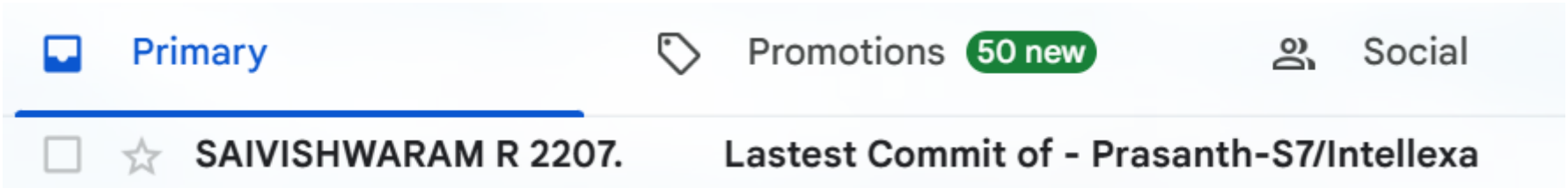

```
PS C:\Users\SaivishwaramRamkumar> cd C:\Users\SaivishwaramRamkumar\OneDrive\Desktop\Rpa_Project_React
```

```
PS C:\Users\SaivishwaramRamkumar> cd git commit -m "This repo is created using RPA automation"
```

Testing

- Validate repository creation and commit upload automation workflows.
- Test error handling for invalid inputs.
- Ensure email notifications are triggered for each completed task.





Conclusions

- The project successfully integrates RPA for GitHub repository management, enhancing efficiency and reducing manual effort.
- Real-time notifications and task logs improve communication and transparency.
- The system's scalability enables future enhancements like branch management and multi-repository tracking.

Future Enhancement

- Integrate branch management and advanced commit analytics.
- Implement AI-based recommendations for repository structuring.

IEEE Paper

- **Paper 1:** "Robotic Process Automation: A Scientific and Industrial Systematic Mapping Study"*

  URL: https://ieeexplore.ieee.org/document/9001110

  Advantage: Provides a comprehensive analysis of RPA's application across industries, focusing on reducing manual effort in repetitive tasks.

  Disadvantage: The paper highlights that adopting RPA at scale may face challenges due to integration complexities in legacy systems.

- **Paper 2:** "Driving Digital Transformation: Leveraging Robotic Process Automation to Enhance Business Process Efficiency"*

  URL: https://ieeexplore.ieee.org/document/10291662

  Advantage: Demonstrates how RPA can drastically improve business efficiency by minimizing manual errors in routine tasks.

  Disadvantage: Points out the need for significant upfront investment in training and tools, which may not be feasible for small organizations.

References

- Avasarala, V. (2020). Robotic Process Automation: Guide for Beginners. Packt Publishing.

  This book provides a comprehensive guide to RPA concepts, tools, and implementation, which can be useful for understanding the fundamentals of automating business processes.

- Lacity, M. C., & Willcocks, L. P. (2018). Robotic Process Automation and Cognitive Automation: The Next Phase. BPTrends.

  This book offers insights into the impact of RPA on businesses and how cognitive automation can be integrated into existing business processes.

Queries

Demonstration

Thank You