Implementation of Robotic Process Automation (Rpa) in Education domain

Dr. Prakash K R[1], Nidish S[2]

[1]*Professor, Dept of Mechanical Engineering, National Institute of Engineering, Mysuru, India*
[2]*M.Tech in Industrial Automation & Robotics, NIE Mysuru, India*

Abstract: **Automation is the future for organizational processes. Robotic Process Automation (RPA) is the solution for software automation in various domains like Supply chain Finance, IT and accounting, and so on. In this paper we propose RPA solution for education domain. This paper shows the automation process for result analysis of student's examination results. The automation process takes the university result in pdf form as the input. We performed automation on this input file using Automation anywhere tool. Our result shows that all the work is error free. Also, time required for this analysis is around 94.44% less as compared to manual analysis by human.**

Index Terms: **RPA, Automation Anywhere.**

I. INTRODUCTION

In this 21st century, competition among the organizations forcing them to reinvent faster methods to market their products and services. They need to increase their revenue while keeping expenses under control. Automation is the key to achieve this. Nowadays organizations are concentrating more on automation. Process Automation is mainly divided into two parts- (1) Hard Automation (2) Soft Automation. Hard automation refers to machines or robots that perform task which is specific or fixed but required repetitive steps. Whereas soft automation is advanced version of hard automation which allows different tasks to be performed as per requirements. Robotic Process Automation (RPA) comes under soft automation. *Blue prism* invented the term Robotic process automation (RPA). By mid-2017, this term is accepted by many software providers and now there were around 50 automation tools. These tools differ on many dimensions e.g. Efficiency, Operating costs, functionality. According to Institute for Robotic Process Automation (IRPA), RPA is nothing but the application of technology. By this technology, employees in any organization can configure software or robot, manipulate data, can communicate with other systems, can give responses, can process transactions automatically. RPA technology is used in digital environment. In organizations, humans perform specific digital tasks. Those tasks can be automated or action of human can be copied by using RPA technology. Manual processes which are done by human workers can be automated through RPA which is simply software. That software BOT is programmed to perform multiple steps such as read data, write data, modify data, numerical calculations on data and so on. According to Santiago et al, RPA is Robotic process automation is a form of business process automation technology based on metaphorical software robots or on artificial intelligence /digital workers. It is sometimes referred to as software robotics. ManualProcesses in business organization includes dealing with Enterprise Resourcing Planning (ERP), Customer Relationship Management (CRM), spreadsheets. Repetitive tasks in these processes include copy data from other file, paste copied data, extract data from files, merge into single file, transferring data .

Benefits of RPA is as follows:

I. Benefits of RPA

Parameter	Increase ⬆/ Decrease ⬇
Cost	⬇
Confidentiality	⬆
Accuracy	⬆
Execution Time	⬇
Security	⬆

Robotic Process Automation helps various organizations to complete their tasks efficiently in less time. for e.g. helps commercial industries for back office tasks completion, IT industries for remote management tasks, etc.

In paper, they mentioned detailed areas where RPA can be applied. Below fig.1 shows different areas of RPA.

Fig 1. Areas for RPA implementation

Though RPA can be applied effectively in various domain, there is risk associated with it, they have mentioned some of the risk as –

- If there is some minor error in logic then RPA can make mistakes faster and with certainty
- There may be no human check while automating tasks.
- According to RPA vendors their tools are straight forward and no expert is required for implementation but for fully efficient automation RPA experts are required.

Processes having features as Rules based, Manual repetitive & time consuming, structured data, High Volume and frequency, Minimum Scale, Transactional can be automated.

II. RELATED WORK

Audrey Bourgouin et al, proposed new method to identify processes which can be automated. His method is applicable to automate processes from different business verticals. The end user need not have the expertise in RPA for using the automated processes. They classified processes into categories that are not Suitable for RPA, less Suitable for RPA, moderately suitable for RPA and Highly Suitable for RPA. His four step processes is as follows:

1) Validation of process for RPA eligibility based on level of maturity and standardization
2) Evaluation of RPA potential of a process
3) Evaluation of RPA relevance
4) RPA Classification of process

SsuChieh Lin et al proved application of RPA in factory is successful. According to them operator could be replaced and aim of unmanned factory can be achieved.

Wil M. P. van der Aalst et al, emphasized that RPA can be used to interact with two different types of information systems as if they were human. They have also mentioned some research questions related to RPA:

1. What characteristics make processes suitable to be supported by RPA?
2. How to let RPA agents learn? How to coach RPA agents?
3. How to control RPA agents and avoid security, compliance, and economic risks?
4. Who is responsible when an RPA agent „„misbehaves‟‟?
5. How can RPA agents and people seamlessly work together?

In order to observe and verify benefits and results of RPA, they conducted a case study on BPO provider. According to them productivity is main advantage of RPA but time reduction in time is not achieved in his case study.

M. Ratia et al showed that due to use of RPA technologies in Health care industry, human labor work in daily business work is reduced, quality of the work is improved, scalability is enhanced, productivity increased, costs are reduced, overall efficiency of organization is improved.

There is no point in using RPA if process is not routine or digital. Also if human resource is available in low price for particular task even then RPA is not best choice. For RPA to be implemented data should be large.

Different RPA Providers

RPA tools are nothing but software programs that operate on the GUI of other computer systems as if humans were working.

As per Forrester Wave 2017 report best RPA vendors are: Blue Prism, UiPath, Automation Anywhere, Pega, Contextor.

According to the reports, Automation anywhere has highest score for BOT development and core functions where as UiPath and Blueprism has highest score for Control room, system management, reporting, and resilience.
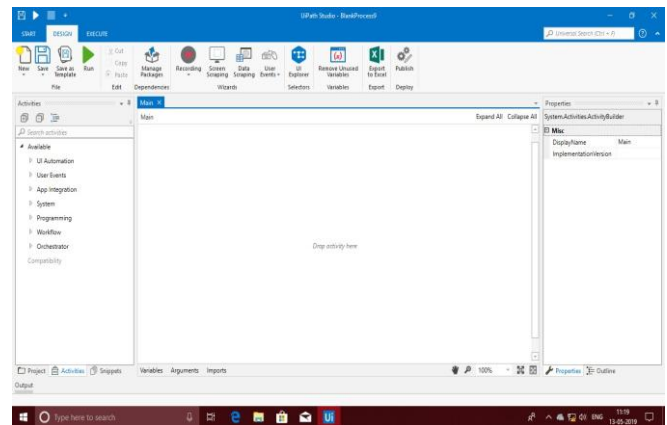

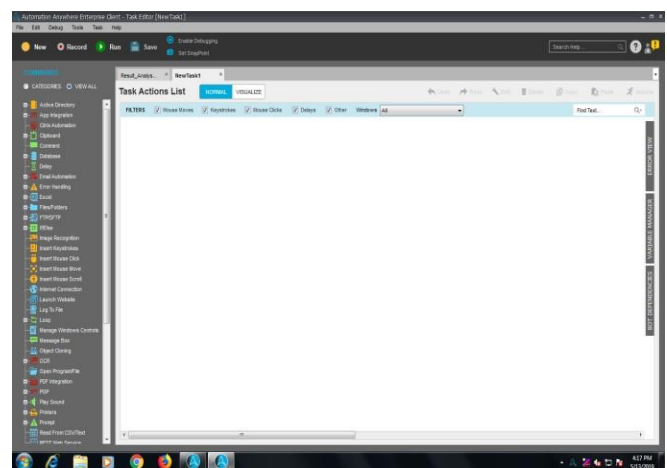Fig 2: GUI of UiPath Community Edition

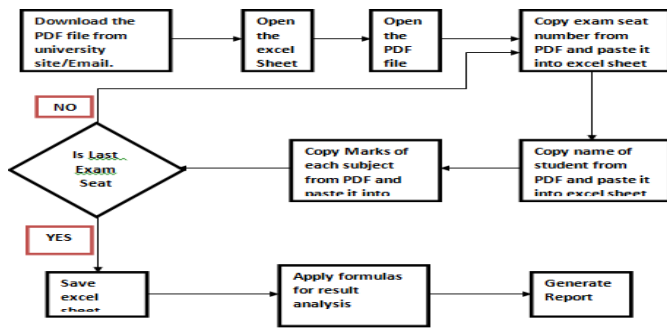Fig 3: GUI of Automation Anywhere Client

Existing Approach

Fig 4: Flowchart for Manual Approach

Proposed Approach

Fig 5: Flowchart of Proposed Approach using Automation Tool

We proposed the new approach for result analysis using automation tool. We have written logic for the same. Though writing script is time consuming, it can be reused every time result is declared.

III. IMPLEMENTATION

This Paper shows the performance of a BOT implemented for the result analysis process. The PDF copy of the result from Savitribai Phule Pune University is the sample input for this system. Result copy is as shown in Fig 6. There are around 650 pages for this PDF. Manually extracting the data is very timing consuming and prone to error.

We have automated this task using Automation Anywhere Tool. This is perfect task for automation as it includes features mentioned in i.e. rule based, structured data, manual repetitive and time consuming, high volume of data.

Fig 6: PDF result copy of SPPU
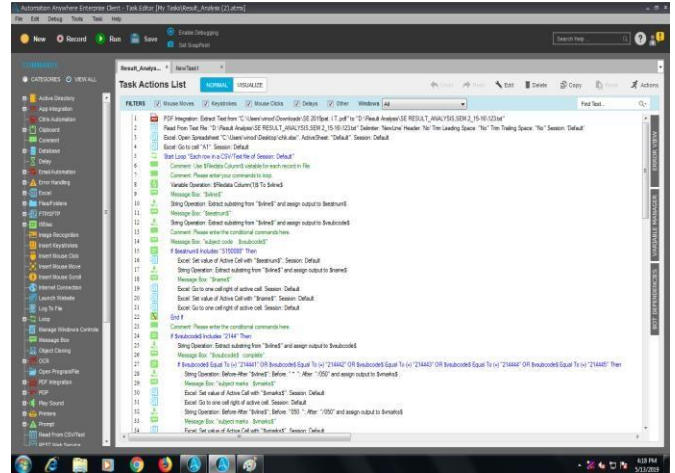
Fig 7: BOT created in Automation Anywhere

Fig 8: Result Entries in Excel by BOT

After successful execution of the task all the entries from PDF to excel are done automatically without human intervention. And from those entries proper analysis can be done for each subject.
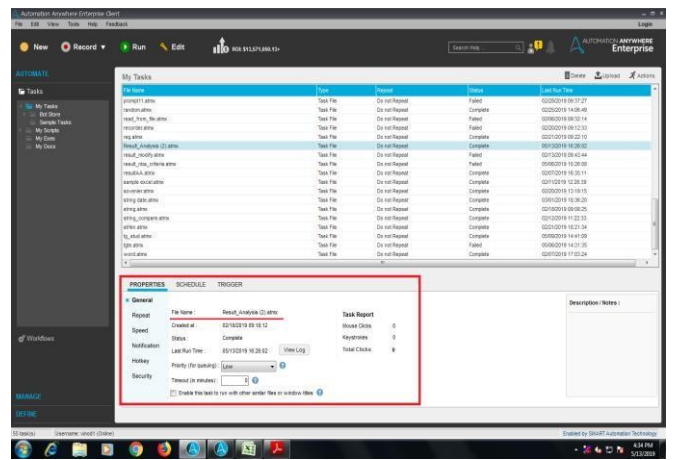

Fig 9: Properties of BOT Created

The BOT we created work without any mouse or keyboard

click. In properties, it clearly shows the task report in which total clicks mentioned is "0". We can Schedule this BOT to be executed on particular date/time. We can execute this BOT based on some trigger.
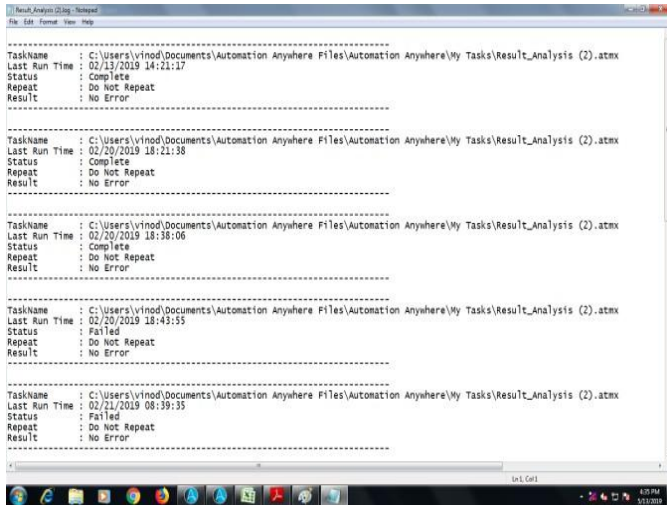

Fig 10: Log File for BOT

After the successful execution of BOT, log file for the same is created which includes information of task name, last run, status and results, which gives the details of the existing errors, if any.

IV. EXPERIMENTAL RESULTS

Below graph shows the experimental results for manual approach. It shows that the number of employees have been increased as the time required is reduced. But on an average the time required is 3 hrs.
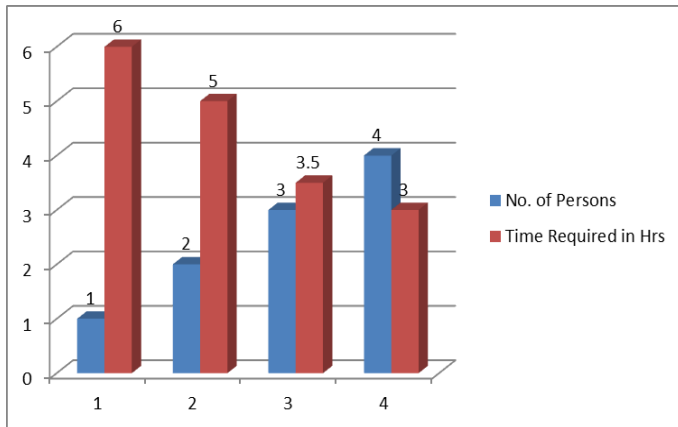

Fig 11: Graph for Number of Persons vs Time required

This graph in Fig 12 shows the comparison of time taken

by single employee and BOT. It clearly shows that result analysis using automation tool takes 94.44% less time as compared to the manual process.
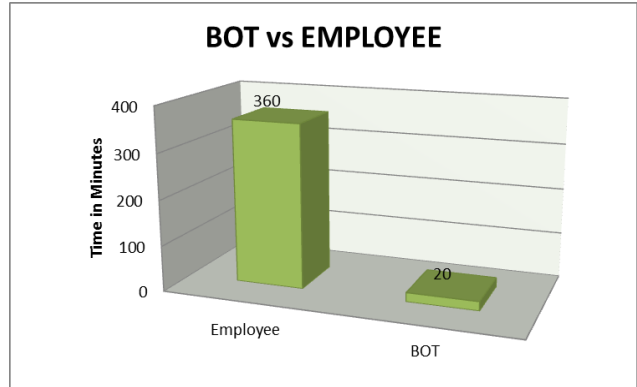

Fig 12: Graph for BOT vs Employee

V. CONCLUSION

Application of Robotic process automation in any organizations is interesting area of research. This paper shows the successful implementation of RPA for result analysis of university results in an academic institute. This automation will help the organization to utilize less human resources for such automated processes with effective time saving results with error free analysis.

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