

How RPA Helps in Simplifying Mundane Tasks – Case Studies

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Abstract—Robotic Process automation (RPA) helps the world with the premise purpose to solve the gap between productivity and lags. Most of the institutions that do the repetitive tasks are involved in creating a robot to overcome the inefficiency of an employee to give a space to produce a fruitful task. This paper shows how robot is utilized in the education sector with effective use cases. A robot is deployed, so whenever the parent or a student wants to check the credits earned by their wards, they can simply enter the credentials of the student like register number and get the complete history of the candidate. It helps the parents to keep track of their wards overall performance. In the other hand the faculty who involved in responding to updation of the student's performance can simply enter the marks of the student for one time and let the robots respond to the parents without any data errors. This makes the faculty and parents life simple. Also this paper deals with another case study of how Birth certificate of a particular child is send to the parent's whatsapp number through robot and helps the faculty in sending bulk whatsapp Birth certificates to the respective persons.

Index Terms— Robotic Process Automation (RPA); Data errors; Overall Performance.

I. INTRODUCTION

Robotic Process Automation [RPA] is the technology that allows people to configure computer software to suits for the environment to work better. Automation is considered to be the buzz word from the last decade. Investors and business analyst are interested in getting quick Return on Investment (ROI). So, they are very keen in finding alternates for simple and repetitive tasks. If robots are deployed for those works, then those human resources can be effectively utilized for new innovative tasks. That is why business analyst and business process manager are also interested in finding better clients who does those effective jobs. There are may use cases which helps the buddies to get an idea of what to be automated and how effective it is. Vendors offering RPA tools like Uiopath, Automation Anywhere, Blue Prism, AutomationEdge and Softomotive which can be chosen by the client based on requirements.

We must see in time that, if automation is done by most of the traditional processes then it will almost make recession on human related jobs. So companies have to keep in mind about the growth of the companies and the employees too. A successful company is one which always focuses on the employee's comfort rather than the profit if we consider it in long term.

Also employee who works in any industry must have a vision about their own growth and also the company's future plans in order to sustain the respective field.

In every decade we are expecting change and it happens in all kind of industries. Especially in the field of education, during the pandemic period we never thought of online classes for schools, colleges and universities for a complete academic year. We were in a situation to adapt to the change and also accepting the change indeed. Many of the startups which focused on education sector were started during this pandemic period and good revenue was also generated with lesser capital. And most of the pioneer in the software industry are interested to create own automation for their repetitive tasks rather making employees to do the simple to moderate complexity tasks. There by the time and energy of the employees are saved for effective utilization. Moreover software giants are giving the automation works to the startups too for quicker task completion. They are using the process automation software for their internal use.

RPA in 2021 is projected to reach \$1.89 billion according to the latest forecast from Garter, Inc. Despite economic pressures caused by the pandemic situation, business analysts are expecting that RPA will double the profit margin through 2024. The major driving force of the RPA is approximately 80-90% of cost can be reduced with almost 100% accuracy of the jobs done by software robots. In this world of automation, people are moving towards more profit with less investment at the inception stage. However, the truth is, in the automation field we have to invest a little bigger amount at the earlier stage and the profit will be higher and higher when we progress through years [3]. Therefore, the attainment of the profit will get higher after few years. “robot” to emulate and integrate the actions of a human interacting within digital systems to execute a business process. RPA robots utilize the user interface to capture data and manipulate applications just as humans do. They interpret, trigger responses and communicate with other systems in order to perform on a vast variety of repetitive tasks. Only substantially better: an RPA software robot never sleeps and makes zero mistakes [4].

UiPath software robots are more intelligent, user friendly, can be used fearlessly as the developer and as a customer wants to work with, enthusiastic to dump with a huge volume of tiresome tasks and it is more reliable too [9]. The robots can be built easily and it can be managed with less effort. So it is easy and a quick job to launch a complete set of robot workforce to effective and error free delivery of the products to the customers with high Return of Investment [ROI] [1], [2]. There are three types of robots which can effectively minimize the task of the humans and let them do the fruitful new jobs. Fig 1 shows the application areas where robots can be used for automating tasks.

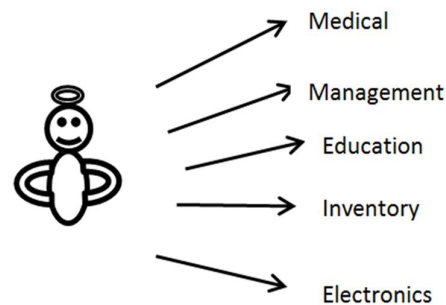


Fig 1 Robot Applications

II. ROBOT TYPES

A. Attended robots

It is a type of robot where we can define and build the robot to do a specific task and in between the execution of the sequence, user has to interfere and does the necessary steps to complete the task. In simple Attended robots will wait for your decision to work. You do the decision in between the process and based on that robot will continue the rest [5].

B. Unattended robots

This type of robots will work unaided; human interaction is not needed unless it is very necessary. The robots can handle advanced, dumped heavy and even long-running task [8].

C. Hybrid robots

This kind of robots can be deployed in the places where report generation is necessary at the end of the day. The human may interact with the robot to make the tasks done on time and left the report generation to the robots all through the night [7].

III. CASE STUDIES

A. Case Study -1

This case study shows how robot helps in automation of few tasks in government sector.

RCHID - The expansion of RCH is Reproductive and Child Health as defined by the Government of India. All Married/Pregnant Women between the age group of 15 to 49 will be given a unique identification number for the purpose of tracking respective women's health and child's. (RCH ID). This will be provided by the village health nurse / urban health nurse. The pregnant mother can go and approach for the registration of her pregnancy in the nearest e-Seva centre without any fee [6].

We have used Uipath community edition software to create our robot to work. Initially we made a study on how the birth registration certificates are done through website. Later we came to know that is a repetitive task for the faculty who sits in the e-seva corner and does the tasks. So we thought of creating a robot for that purpose and use it effectively.

Fig 2 Birth Certificate Registration web page

Fig 2 is Government of Tamil Nadu – Birth and Death Registration website where each citizen who wants to download the wards birth certificate can do with the help of using RCHID and mobile number. If a faculty in e-seva corner who wants to make use of this service for more number of peoples at a time means, He has to get all the details like RCHID and mobile number of the respective person and then get processed in the website. Finally, the Birth certificate will be generated and given as a printout to the respective person [10].

In the view of e-seva corner, the faculty needs the approval of the person to generate the respective birth certificate. Obviously it is must for the faculty to do so. To avoid paper wastage and most of the applications to be filled today are via online. So it is better to give soft copy of the certificate to the respective person worth spending time. The faculty will simply does the attended automation job of the robot and completes the job done with few clicks. The implementation is shown below.

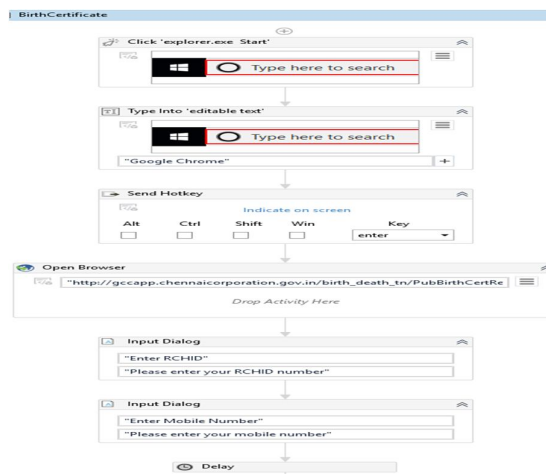


Figure 3 Sequence of Automation environment of getting inputs from user's

Initially, the e-seva faculty will ask for the RCHID number and starts the automation in the system. Once the automation starts, the robot will ask for the RCHID number and starts fillin it in the respective field of the website. After providing the mobile number, the field of the mobile number will be filed by the robot. The verification code provided by the system is copied and pasted in the respective field of the website by the robot. Finally, the birth certificate will be generated in the new tab of the browser. Then the robot will send the respective birth certificate to the person's mobile number who has raised the request for the birth certificate. The certificate will be send to the person's mobile through WhatsApp [12].

The Fig 3 shows the automation of birth certificate generation from the TamilNadu Government website through Uipath community edition software which gets inputs from the user. In order to check whether the RCHID provided by the person who is in need of birth certificate, we have provided a message box which confirms the RCHID number again by the e-seva faculty. And the same procedure is applied for the mobile number also for authentication. To save time and unwanted work load to the robot we can simply pass those value provided by the user.

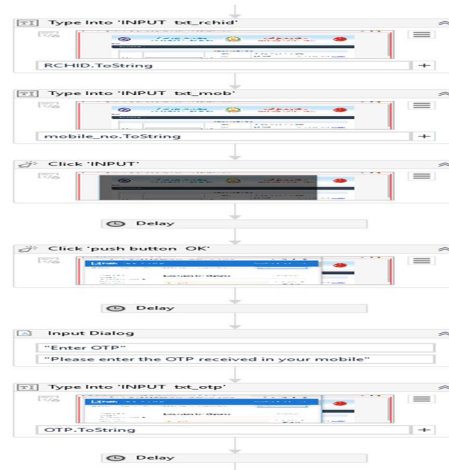


Fig 4 Sequence of Automation environment of validating inputs

Fig 4 shows how the inputs entered by the users are validated in the sequence of events. So if there is any mismatch, it will be taken care by the robot. ie., it will ask the user to enter the details again and it get proceeded further.

It can be noted that, as a public also we can use this robot to get the birth certificate downloaded, if we are planning to do it for large number of data sets (RCHID and Mobile numbers are needed). So no to wait for data entries waiting time for each member. They can simply prepare a excel sheet, so that all values will be taken care by robots. Starting from the entry till the generation of the Birth certificates and sends it to the respective peoples who requested with mobile numbers.

Fig 5 shows the generation of certificates from the robot and opened in the new tab. It will then have forwarded to the respective mobile number through WhatsApp number.

Fig 6 shows the execution time for the generation of birth certificate through robotic process automation which is less time when compare with human interaction process. With the help of the automation we can reduce the time and energy invested for these simple tasks in the e-seva corner faculty members and they can be utilized for more fruitful jobs.

B. Case Study-2

This case study discusses about how robot helps the education institution to deal with automation of few tasks. In the issue of hall ticket is automated using robots we developed.

Fig 7 module of automation is all about the pdf file containing of all the students whose hall tickets are merged as a single file which was given by the controller of examination to the respective class counselors. The job of the class counselor is to send the hall ticket to the respective student's email. Here the robot finds the hall ticket of the respective student from the excel sheet we provided and finds the respective students hall ticket and save it as an individual pdf file.

Fig 8 is a module which sends the hall ticket we stored with student's register number and send it to the email id we mapped in excel file.



Fig 5 Sequence of automation on generating certificates

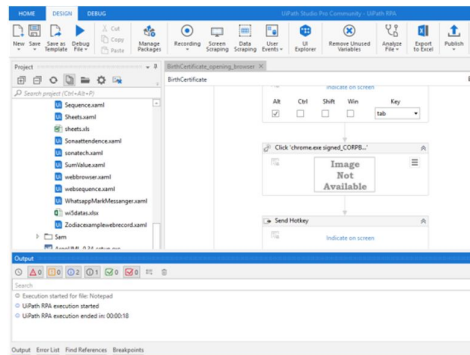


Fig 6 Total time taken for the sequence is 18 seconds

If a class counselor wants to send the hall ticket of the individual student means, he / she has to save the individual student hall ticket as a separate pdf and send the pdf to the respective students email id. It takes almost 55 seconds to do it for a single student. When we do it for 120 students in a department it will be around 6600 seconds. It will be around 1 hour 10 minutes. If we consider it for a whole college consisting of 5000 students, then it will be around 275000 seconds (77 hours) to do the task. The fruitful time of the faculty members are wasted in doing the mundane task. There may be chance that the faculty can attach different hall ticket to the respective student.

Fig 9 shows the execution of the sequence (sending the hall ticket to 99 students is 37 minutes). So for each student the robot takes 23 seconds to complete the job. If we ask the robot to do the task means the correctness and completeness of the job will be 100%. For 5000 students it will be around 32 hours. Simply we can schedule the job in the queue of the orchestrator and rest will be taken care by the robot.

C. Case Study - 3

Nowadays chatbot is very popular among many verticals. Like banking sectors, medical sectors, insurance details and so on. SuperBot is a chatbot which can be integrated with 50+ Platforms including platforms like Whatsapp, Facebook Messenger, Line, Viber, Google Assistant, Alexa, Google Home, etc developed by

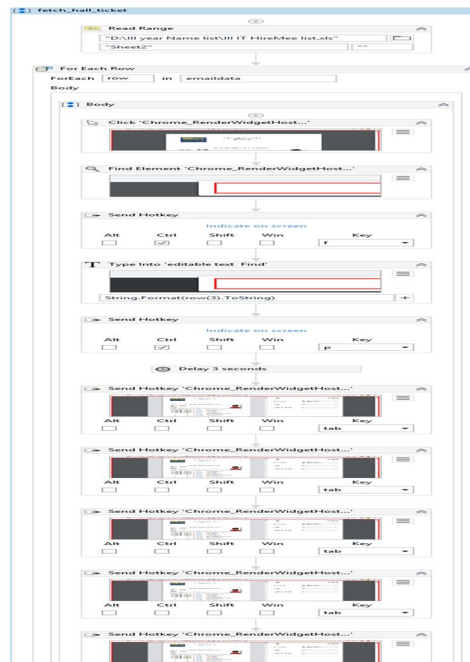


Fig 7 Sequence of register number module reader by the robot



Fig 8 Hall tickets sending to the email id module

Pinnacleworks. In education sector there are chatbots available in the market to give worth information to the newbies. EdSights is the Text-Based Chatbot That Solves the College Dropout Crisis [11]. Fig 10 is the chatbot designed for engineering college which gives basic information like courses, departments, placements and static

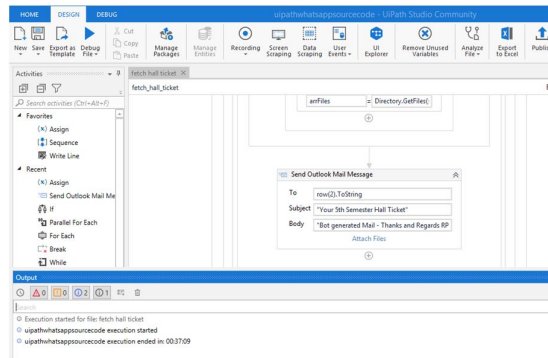


Fig 9 Total time taken for the robot to send 99 hall tickets is 37 minutes

information about the respective institution. Once it is integrated with the college website, it will be easy for anyone who wants basic information about the college. If they want to chat in person, it also can be integrated through whatsapp. This chatbot was developed using UiPath Community edition and it was integrated in Google's Dialogflow.

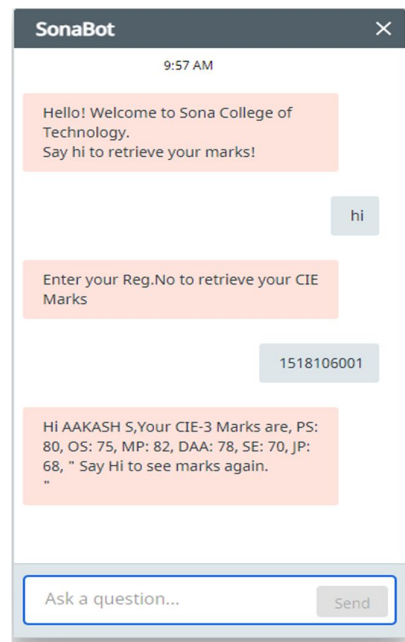


Figure 10 Chatbot for College

Fig 11 chatbot helps student to retrieve their marks obtained in their weekly tests and collective details of the internal tests where stored in the database and it can be easily retrieved by the student or the parent whenever they want. In simple the complete history of the students can be retrieved in simple clicks.

IV. CONCLUSIONS

The discussed case studies show how robot helps in simplifying the tasks of faculties of different working environment by so that their fruitful time can be efficiently utilized for new opportunities. The graph shows the detailed time utilization of the jobs done by both human and robot. In future, we will integrate all the modules to give it as a complete product for public use.

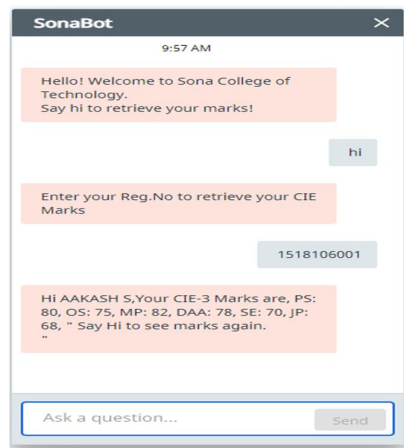


Fig 11 Chatbot for student's mark database

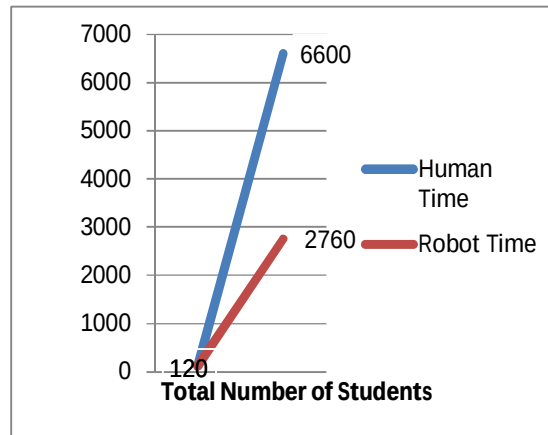


Fig 12 Time Comparison of job - Human Vs Robot

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