

# Smart Education System using Robotic Process Automation (RPA)

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## ABSTRACT

Robotic Process automation (RPA) is a technology which helps to build a software robot (bot) which emulate and integrate works of human what he do with digital system for business process. This paper describes tasks performed by software bots in Education Institutions. One use case demon is course registration for fresh joined students in university portal, here bot opens web form, gets student details from excel file and fills registration form and submits and this task repeated for more than minimum of 500 students. RPA bots will finish these works within few seconds to few minutes without human intervention.

**Keywords :** Smart education, RPA bot, UiPath studio, Orchestrator, UiPath Robot.

## I. INTRODUCTION

Robotic Process Automation (RPA) is an application of technology helping in building software robots called “bot” which is emulated and integrated to do repetitive tasks performed by humans in digital system. Here bot will process transactions in organization, banks etc , manipulating the data, triggering responses received and interact with other digital systems. RPA bots never sleeps and makes zero errors.

Here software bots are made up of set of activities which are provided by the RPA platform tool which imitates the work normally humans will do while interacting with system such as click, type, opening apps, browsers, excel cell read, menu selection etc.

### A. List of tasks that can be repeated in day today life

- Log into any application
- Connect to system API
- Copy and Pate

- Move files and folders
- Extract and process structured and semi structured content from documents, PDF's, emails and forms.
- Read and write to database
- Open emails and attachments
- Scape data from web and documents
- Make calculations and etc.

RPA use cases includes, customer service, invoice processing, sales orders, payroll, price comparisons, storing customer information, processing HR information, processing fast refunds, Recruitments, Extract data from different formats, healthcare, government, education etc.

### B. Business benefits from RPA.

- Cost reduction: Up to 30% of operational cost can be reduced. Expenditure on Bot is lesser than human employees.
- High Accuracy: RPA gives 100% work accuracy and there are no chances of errors like humans.

- Better customer experience: Bots are deployed to time consuming routine tasks and human are deployed to serve customer which enhances customer experience and satisfaction.
- Productivity boost: With RPA work can be accomplished successfully in very short span of time.
- Working on existing IT infrastructure: For developing RPA bots there is no technology.

RPA is the step for improving business and reduces employees who work on rule-based, repetitive and high volume tasks. It rather, makes employs to deploy on more strategic tasks needed for business.

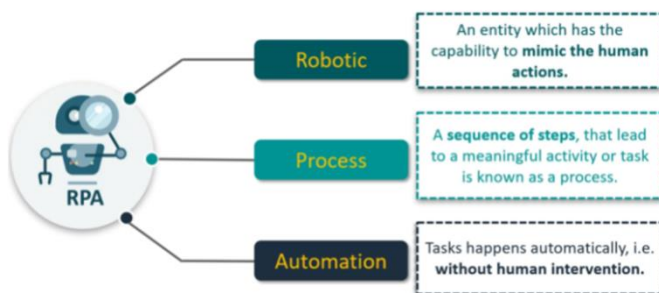


Figure 1: Robotic Process Automation in words

### C. RPA tools

Here listed three top marketing leaders in RPA tools.

Feature	UiPath	Blue Prism	Automation Anywhere
Accuracy	Great for citrix automation designed for bpo	Desktop, web and citrix automation	Reasonable accuracy
Robots	Front office & back office	Back office	Front office & back office
Learning	Visual	Ability to develop and control	Basic developer
Reusability	Yes	Yes	Yes
Cognitive Capability	Medium	Medium	Medium
Recorder	Yes	No	Yes
Architecture	Web based orchestrator	Client server architecture	Client server architecture
Reliability	Moderate	Very High	High
Process Designer	Visual designer	Visual designer	Script based
Technology	Microsoft – sharepoint wf , elasticsearch, kibana	C #	Microsoft
Certification	Yes and Free online	Yes	Yes
Pricing	Entry level pricing	Higher cost of deployment	High cost of acquisition

Figure 2: Comparison of top RPA tools in the market

UiPath tool to develop a bot includes following components

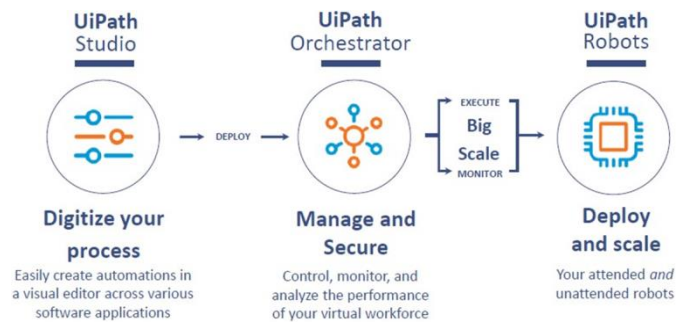


Figure 3: UiPath Components

Activity selection for human manual task while building bot

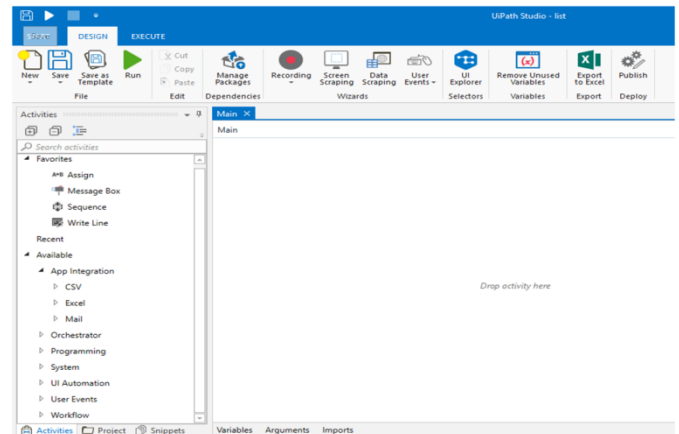


Figure 4: Selecting required activity from activity panel which mimic human work

## II. RPA IN EDUCATION DOMAIN

### A. Traditional education system

In the traditional teaching system, there is still a lack of communication between education and technology. In many educational institutions, a lot of time is spent on educational activities that do not add any value to the core aim of their very existence. Some are listed below.

1. Each Student's course registration by copying one-one value from excel file by office person.
2. University result sheet download by pasting university number.
3. Massive number of applications to be filtered and assessed on standards is the primary task in terms of time taken.

4. Seasonal peaks have staff overburdened with responsibilities, and most being repetitive, it results in numerous errors.
5. The administrative department is usually the one charged with most tasks, and is the one that takes most time for paperwork. Maintenance of records, compilation of attendance reports, communicating with students' parents, issuing memos and circulars, scheduling meetings, reservation, facilitating result and fees & fines related documents to students, managing employees, collaboration, vendors records are only a few of the tasks, the onus of which lies on the administrative staff's shoulders.

Solution for above problems is implementing RPA bot in education sector to replace human doing monotonous repeated tasks.

## B. Use cases of RPA in education



Figure 5: RPA use cases in Education

### 1. Course registration, shortlisting and enrolment

With automation, check student's eligibility criteria, validate information, shortlist candidates to avoid long process manually.

### 2. Attendance management

Manage the attendance; send automated notifications and reports to parent and students.

### 3. IT operations

IT operations can get rid of a lot of time-consuming tickets like password reset, unlock accounts, reboot

systems, restart service, install updates, monitor alerts with automation.

### 4. Meeting scheduling, time table updates, equipment reservation, update scheduling

Institution staff and students have to attend a lot of events and meeting. Notifying students and faculty about meeting, events and sending updates can be easily automated to save time.

### 5. Human resources, Admin, Finance

Automate processes like payroll processing, vendor management, accounts payable-receivable, employee onboarding-offboarding, inventory management, vendor management and many more.

### 6. Chabot

Chabot can help automate the general queries from students, staff and website visitors like admission schedule, admission process, contact person, course information. With NLP and AI, chatbot can understand the natural language, learn from past data and reply to queries like a human.

## III. IMPLEMENTATION OF BOT AND RESULTS

Let's assume Engineering Institute has different technical courses and totally more than 500 students enrolled for different courses. It is tedious task for office staff to submit student's enrolment details to university by entering one by one form, submitting, downloading form, communicating to student.

Solution for this is building a bot which will do all the tasks for human without human intervention in very short time duration

Steps followed:

1. Open University registration portal using attach browser and url activity.
2. Open excel file using excel activity functions.
3. Using anchor tags locate respective fields to fill student data using type into activity.
4. Click activity to submit the form.
5. Download form using click activity and re name it.
6. Mail automation to send form to concern.

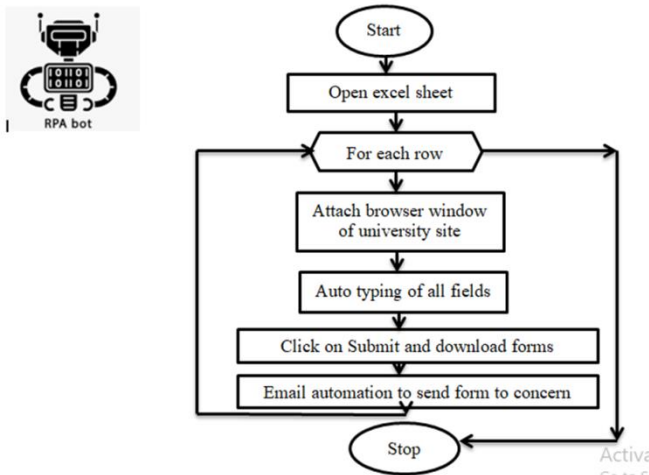


Figure 6: Work flow of university student registration process

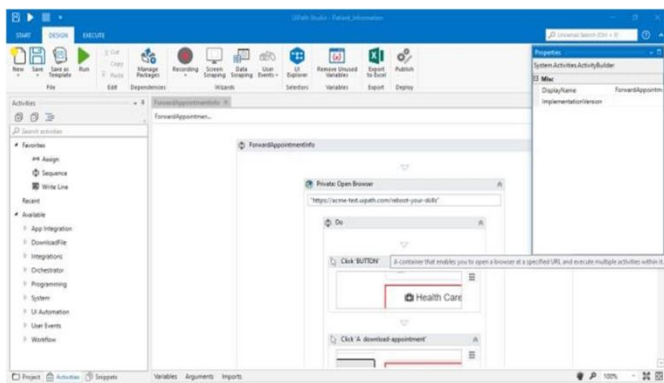


Figure 7: UiPath Tool working window with work sequences and activities

Here is the excel file containing sample student data which can be filled in form automatically by bot.

First Name	Last Name	Branch name	Semester	Address	Email	Phone Number
John	Smith	ISE	1st	98 North Road	jsmith@itsolutions.co.u	40716543298
Jane	Dorsey	ISE	1st	11 Crown Street	jdorsey@mc.com	40791345621
Albert	Kipling	ISE	1st	22 Guild Street	kipling@waterfront.com	40735416854
Michael	Robertson	ISE	1st	17 Farburn Terrace	mrobertson@mc.com	40733652145
Doug	Derrick	ISE	1st	99 Shire Oak Road	dderrick@timepath.co.i	40799885412
Jessie	Marlowe	ISE	1st	27 Cheshire Street	jmarlowe@aperture.us	40733154268
Stan	Hamm	ISE	1st	10 Dam Road	shamm@sugarwell.org	40712462257
Michelle	Norton	ISE	1st	13 White Rabbit Stree	mnorton@aperture.us	40731254562
Stacy	Shelby	ISE	1st	19 Pineapple Bouleva	sshelby@techdev.com	40741785214
Lara	Palmer	ISE	1st	87 Orange Street	lpalmer@timepath.co.u	40731653845

Figure 8: Sample student data in saved in excel sheet

Figure 9: Sample registration form

Here is the comparison between office person doing the task and software bot performing it.

Execution time calculation		
No of students	Time of Manual Task	Time for software bot to do the task
50	30 minutes	7 to 10 Minutes

Table 1: Comparison between human manual work and bot execution

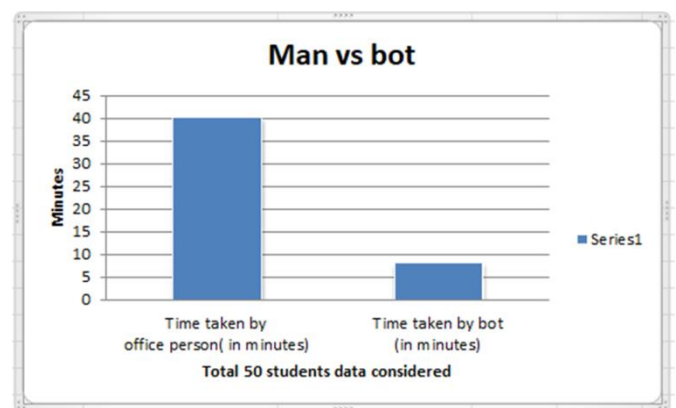


Figure 10: Man vs Bot work graph

#### IV. CONCLUSION

By implementing software bot in education sector, 90% of work can be done faster with less or no man power, less human errors with more accurate and

supporting 24/7/365 days. Here anyone with basic programming knowledge can develop a bot.

Future work can be using orchestrator, where bot can be scheduled, controlled and monitored to run in virtual workforce.

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