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Integrating Forms Processing into Your RPA Workflow

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RPA (Robotic Process Automation) is becoming increasingly adopted across various industries, a trend that shows no signs of slowing. Its meteoric rise in ubiquity in such a short timespan has spawned the creation of numerous automation vendors, eager to get a piece of the pie. With all the stiff competition, comes continuous improvements to the quality of RPA services provided, as well as a constant demand for new features and updates. Because of this, most RPA solutions offer a little bit of everything, but if your workflow demands handling documents and extracting data quickly and accurately, then a traditional forms processing solution is your best bet.

The good news is that most RPA solutions are easy enough to work with and robust enough to be able to integrate almost any third-party entity into your automated workflow; and we already know that Accusoft's FormSuite is the king of structured forms processing. So to get the best of both worlds, here we'll demonstrate how we can combine the forms processing that FormSuite provides with an automated business process implemented using UiPath.

And the best part is…NO CODING REQUIRED! Now before we get into the project itself, let's set up the scenario that we are automating.

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The Scenario

Meet Todd.

He's fresh out of college with a degree in finance and is now the newest victim… I mean, intern…at *TLL,Totally Legit Loans LLC*: A legitimate loan establishment for legitimate people. As assistant to the loan officer, Todd is responsible for:

1. Sorting stacks of loan application papers that have been filled out by potential clients into three piles. These piles are for **automobile loans, business loans**, and **student loans**.
2. Scanning each pile of applications onto his work computer. (TLL is in the process of going paperless).
3. Reading each loan application and typing the applicant info into TLL's very old (but totally legit) third party credit checking software, **RiskE**. Unfortunately, since there are three different kinds of loans he can encounter, there are three separate software programs he must interact with that correspond to each type of loan: **RiskE Auto, RiskE Business**, and **RiskE Student**.
4. After entering the applicant data, Todd must click the submit button. RiskE will show whether the applicant should be **approved** or **denied** a loan.
5. Todd then has to rename the file of each scanned application on his computer. The name should contain the loan application type, the applicant's name, and whether they were approved or denied.
6. Finally, Todd has to sort the renamed files into separate "Approved" and "Denied" folders on his computer to be reviewed by the loan officer.

Yikes. Between the sorting, scanning, data entry, and file management, it looks like Todd has a lot of boring, tedious work on his plate. Let's help him out.

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What You'll Need

1. FormSuite 5: Download and install the latest version for free right **here**. Make sure the installation goes to the default location. This should be C:\Users\Public\Documents\ Accusoft
2. **Ulipath Community edition**: Sign up for an account and install the software. Follow the instructions to download the UiPath Studio application. I used version 2019.8.0 when making this project but slightly older or newer versions should also work fine.
3. The project materials, **linked for download in the blog**.

I'm also going to assume that...

1. You are somewhat familiar with a typical forms processing workflow and FormSuite. If not, you can check out Accusoft's **forms processing overview**. We'll specifically be using the FormAssist GUI application that comes with the FormSuite installer. This will handle all of the forms processing stuff for this exercise.
2. You are familiar with what RPA is and what its used for. If not, you can check out our blog **Introduction to RPA**.
3. You are familiar with basic programming concepts such as flow of control, conditionals, loops, variables, etc.

How To Run the Project

1. Open UiPath Studio and open the project.josn file found in LoanApplication\LoanBot.
2. Near the bottom of UiPath Studio, click the Arguments tab and change the ProjectRoot argument's default value to the path of where you unzipped your LoanApplications Folder

Name	Direction	Argument type	Default value
ProjectRoot	In	String	"C:\Path\to\LoanApplication"
Create Argument			

Variables Arguments Imports   100%
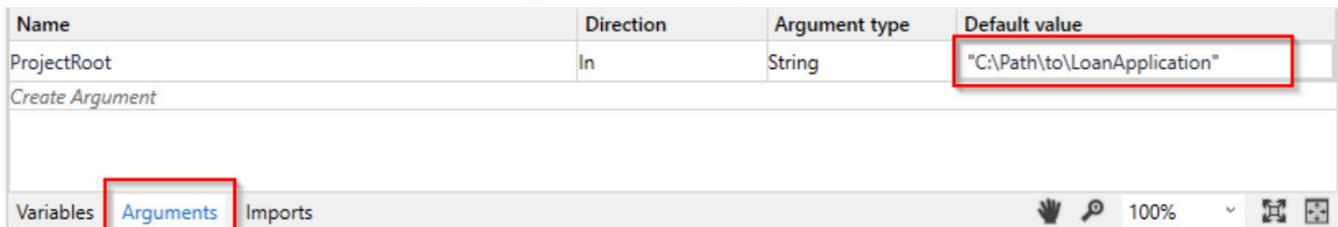
3. Click the start button at the top left.
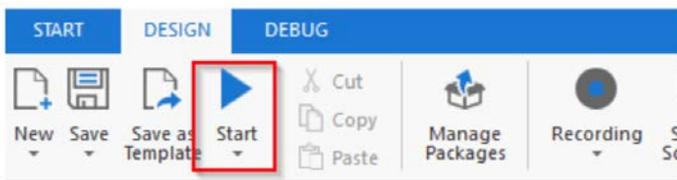
4. The project will start and open up the FormAssist application first. Once it has settled, it will be waiting for new image files to appear in LoanApplication\Incoming. You can copy some images from LoanApplication\FormSet\FilledImages into the Incoming folder and those files will be processed.

Overview of Automation Approach

Thankfully for Todd, all parts of his workflow can be automated. Let's break each of his six steps down and see how they've been taken over by either FormSuite's FormAssist or UiPath's RPA.

1. *Sort Stacks of Loan Applications into Three Piles*
   a. Since FormAssist can automatically identify forms, there is no longer a need for Todd to sort anything by hand.
2. *Scan Each Pile of Loan Applications*
   a. Since he no longer has to sort any papers, Todd can scan the entire stack of unsorted loan applications in one go.
3. *Enter the Data from Each Loan Application into Its Respective **RiskE** Software*
   a. We have UiPath collect a list of images of loan applications that were just scanned in by Todd.
   b. For each file in the list, UiPath calls to action FormAssist's form processing by interacting with FormAssist's GUI controls and specifying the file to process.

UiPath opens FormAssist and clicks the "Process Forms" button
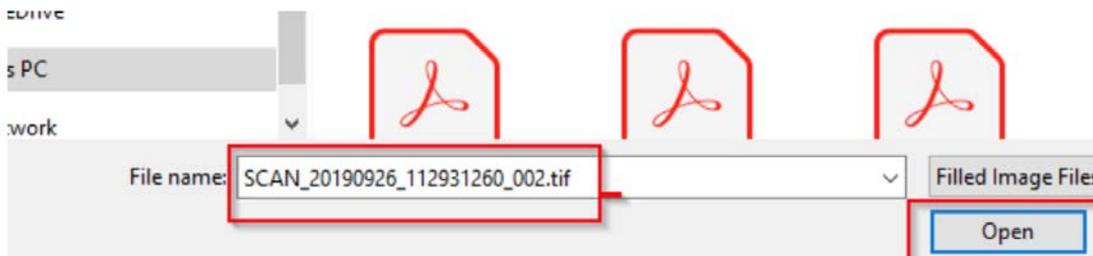
Ui Path enters the file name and clicks open in the file select dialog

c. The image is identified by FormAssist to be one of the three potential loan application types, auto, business, or student. This identification is saved in a variable for later.
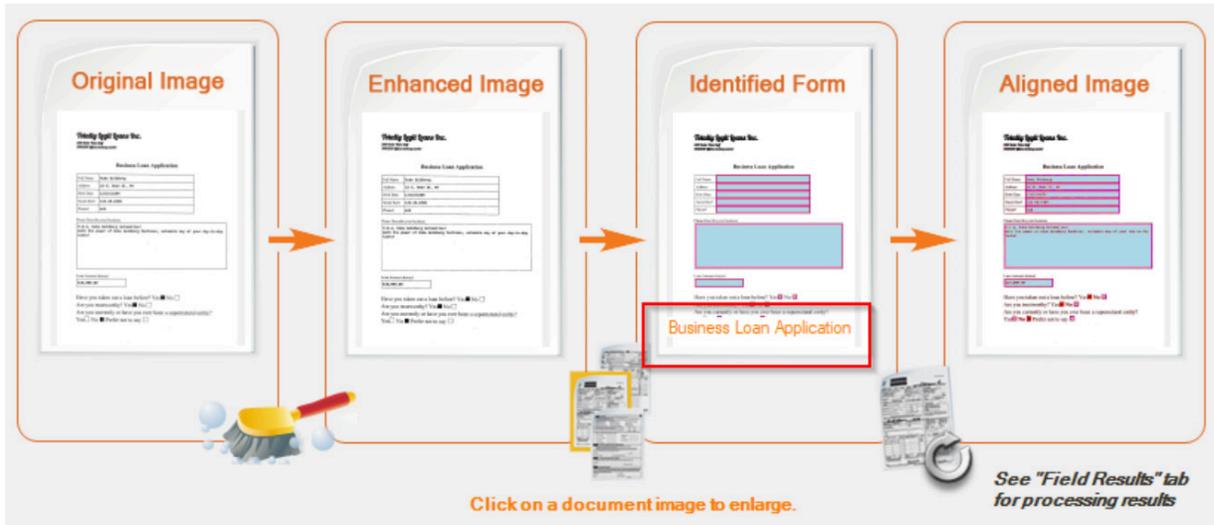
The form is identified as a "Business Loan Application"

d. During form processing, FormAssist extracts data from each field in the loan application using OCR and OMR recognition. The extraction results are presented to the user but they are hidden behind some more FormAssit UI. You'd normally have to click on each field in the treeview in order to see that field's recognition results.

e. Since the types of fields can vary from form type to form type, instead of telling the bot to look for specific ones, we simply point it to the treeview and tell it to detect all of the child elements belonging to the tree. These elements are stored in a list and are sequentially clicked on to show the recognition results for each field in the results text box. The results found in the box are stored as values in a dictionary with the corresponding keys being the name of the field.
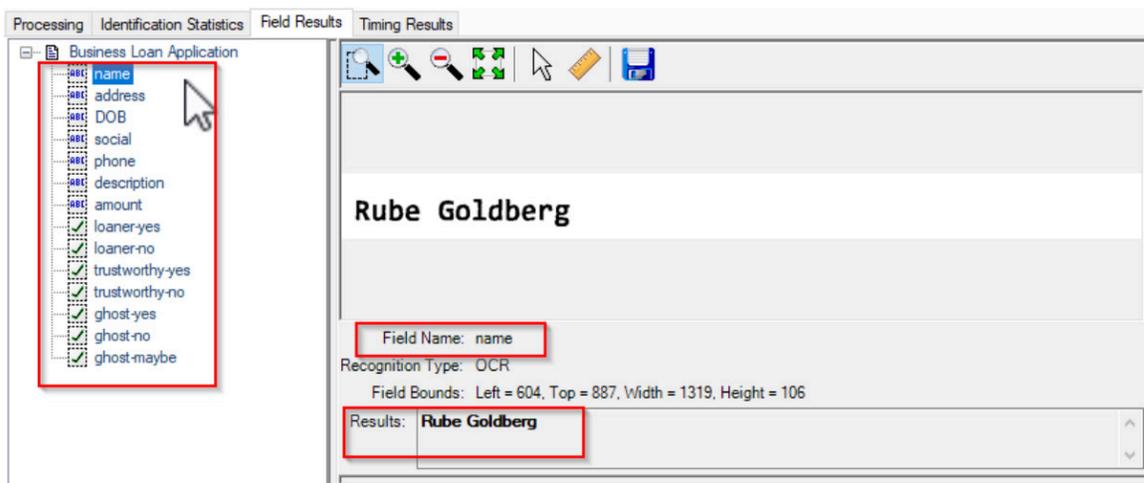
UiPath selects each field in the tree window and records the field name and field results in a dictionary object

f. Next, we diverge to three different paths based on what the form was identified as earlier on in step C. The identification made then, will let UiPath decide which RiskE loan program to open up. Either RiskE auto, business, or student.

g. UiPath starts the correct RiskE application for the current form and begins pulling field result data that was provided by FormAssist out of the dictionary. The keys in the dictionaries are used to inform UiPath which field on the RiskE application the results should go into.

4. *After entering the applicant data, Todd must click the submit button. RiskE will show whether the applicant should be approved or denied a loan.*

a. Once all fields have been filled, UiPath clicks the submit button

b. UiPath reads the text from the status box

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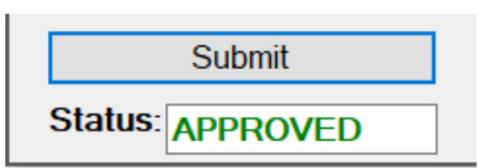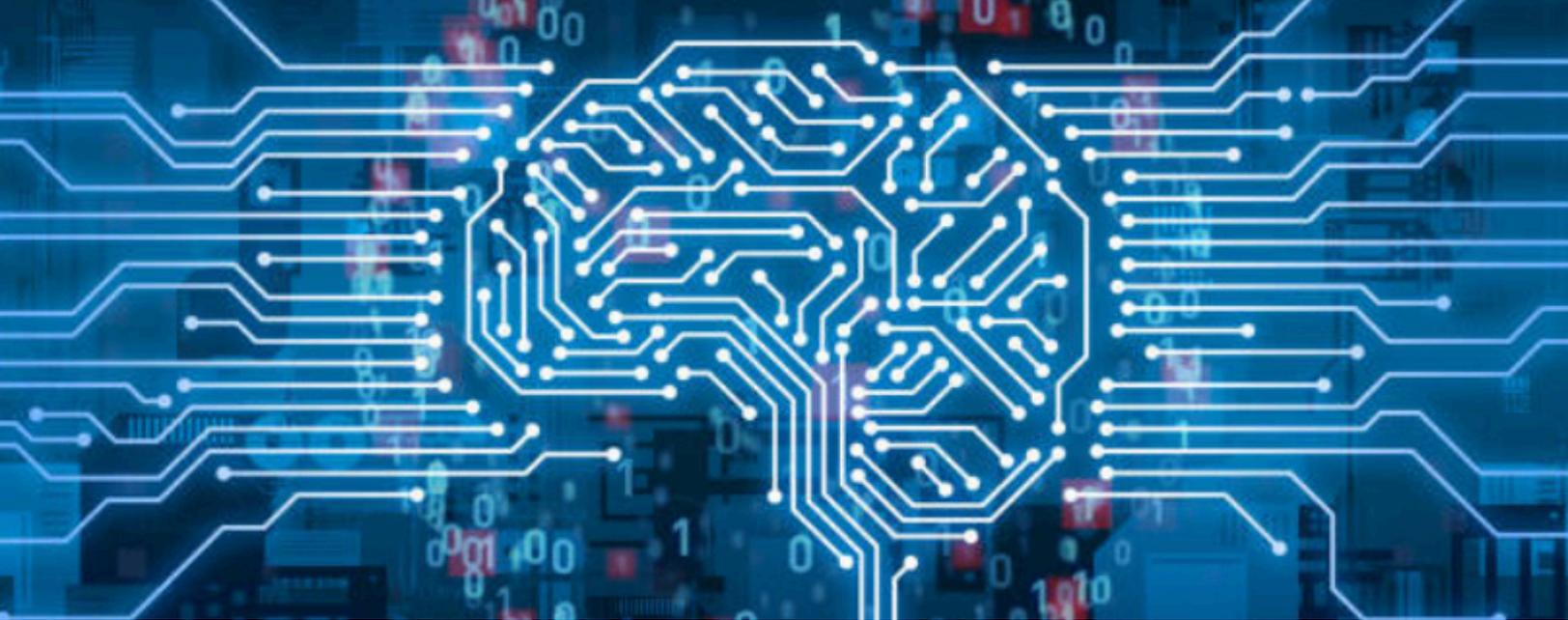
5. *Todd then has to rename the file of each scanned application. The name should contain the loan application type, the applicant's name, and whether they were approved or denied.*
   a. Depending on what text is read ("APPROVED" or "DENIED"), UiPath renames the file using the information it has saved along the way. This information includes the loan application type from when the form was first identified, the applicant's name from when the name field was processed, and the application status retrieved in the previous step.
6. *Finally, Todd has to sort the renamed files into separate "Approved" and "Denied" folders on his computer to be reviewed by the Loan Officer.*
   a. The application status retrieved from step four is used to decide which folder the file is moved to. UiPath transfers the files from the incoming folder to the Approved or Denied folder.

All that's left for us to do is to point UI path to the folder where Todd's scanner outputs its files to. We can wrap our entire workflow in a loop that will continuously look for new files as they appear in the incoming folder. So after we initialize the UiPath procedure the first time, if at any point it detects that new files have appeared in the folder, it will kick off its routine to identify, process, and sort, without any management by Todd. The only thing Todd is responsible for now is scanning the unsorted stack of papers.

Description of Project Materials

Inside the LoanApplication folder, you'll find the following:
- LoanBot Folder - This directory houses the UiPath project which can be opened and run from the UiPath Studio.
- FormSet Folder - This directory contains the FormSet and FormDefinitions that are used by FormAssist to process the loan application forms. The Templates subdirectory contains the blank versions of the loan applications and the FilledImages subdirectory contains the filled out versions of the loan applications that can be processed by the automated workflow.
- Incoming Folder - The UiPath project is currently set to monitor this folder for new files to

process. After you've started the UiPath bot and it is running, you can copy files from the FormSet\FilledImages folder over to the Incoming folder for processing.

- Approved & Denied Folders - Files put into the Incoming folder will get processed and sorted into one of these folders via the automated workflow, depending on if they were approved or denied by their respective RiskE program.
- RiskE program executables (3) - These are GUI programs that ask the user to enter information into the fields and click submit to get either an approved or denied status for the applicant.

And that's all there is to it! Once you have FormSuite and the UiPath installed on your computer, you can customize and tweak the project however you like. The FormAssist source code is also included with FormSuite so you can customize that as well.

Happy automating!