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Automation of Employee Onboarding Process

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ABSTRACT: The employee happiness of a startup or business has a significant impact on turnover. A method of acclimating the person to the workplace is onboarding. The purpose of this research is to identify the crucial steps in the onboarding procedure and automate them in order to boost worker satisfaction and lessen the HR department's workload. We have offered an answer to a couple of problems the onboarding team was having. Some of the processes that we have automated include a quick way to review the employee paperwork and run a background check, setting up employee accounts and giving them their login information on day one of employment, keeping track of their training progress, and desktop distribution. According to a survey, 54% of workers say that their workstation was delayed, and 46% of employees agree that they do not have access to company channels. Employees receive a better onboarding experience because of the solutions offered in this paper.

KEYWORDS: Onboarding, Employee, Organization, Automation, Macros, IT Process Automation (ITPA), Robotic Process Automation (RPA), OCR, Human Resource (HR)

I. INTRODUCTION

Companies hire new staff to accomplish both their short- and long-term objectives. Before starting at a new company, new hires must go through an onboarding process. Onboarding plays a significant part in ensuring that this new employee becomes an asset to the company. Making new hires productive members of the company requires extra effort on the part of the HR department.

In order to welcome new hires, validate their documentation, and assist them in acclimating to the organization and its culture, onboarding is conducted. Sending offer letters, document verification, induction, account creation, desk setup, and training are some of the several processes in the onboarding process. The offer letter includes details on the employment agreement, what is expected of the employee, and the employee's responsibilities. The employee is given a list of documents that he must submit along with some signed paperwork provided by the company, including a confidentiality agreement, compliance form, and some of the company's policies, after returning with a signed offer letter. Most of the typical onboarding process involves human data extraction and document verification, which takes time. Obtaining documentation, making workstation requests, allocating IDs, and completing the mission and policies are all prerequisites. Automation allows for more reliable, high-quality onboarding, which prevents data loss, saves time and money, and improves security. Automation aids in more reliable, high-quality onboarding to prevent data loss, save money, speed up the process, and increase security. It promotes a stress-free environment for the new employees and gives new hires more time to concentrate on their new jobs. A variety of processes have been automated, beginning with the offer letter, which confirms the employee's acceptance into the organization. The employee must e-sign the letter after receiving it in order to accept it. For new hires, we create an account in the business portal and send them the login information. The employee will upload the necessary documents as soon as they log into the portal. We have identified the documents and extracted the data in the form of key-value pairs that will be saved in our database using the Google vision API, which employs the tesseract algorithm for OCR. The documents will then be checked to see if they belong to the employee and are authentic using the data that has been stored.

II. LITERATURE REVIEW

Three categories of process automation exist:

Macros: Macros are the most important classical automation technology. In business applications, databases, and other computer systems, macros are a series of operations that enable the automation of some difficult activities, repeated chores, or routine processes.

For instance, macros function similarly to a keyboard shortcut: they combine a series of actions or processes so that they can be carried out again as soon as the appropriate order is given. IT Process Automation: ITPA is a common name for IT Process Automation. By eliminating manual labor from typical IT operations like patching or updating systems, running backups, setting up new servers or network devices, or configuring security policies, this strategy increased efficiency. Robotic Process Automation (RPA) is a rapidly developing technology that enables robots to do all administrative and back-office functions entirely, up until the point at which they become routine or repetitive. The connection and flexibility with processes are substantially better than with the earlier generations. It functions as a "virtual worker". Robotic process automation (RPA) promises to lower costs, dependability, and efficiency in processes with a high volume of transactions and that are simple to decompose into rules.

RPA is a technology that gives robots the ability to perform human tasks digitally in order to complete commercial operations. Robots can take over standard and repetitive activities such as processing a transaction, manipulating data, triggering responses, and communicating with other digital systems. These robots work in a similar way as professionals do. The best part of this is, RPA software or robots never ever sleeps and commits zero mistakes. J. G. Enrique et al. Presents the review on leading RPA tools across the globe. They detected 48 functionalities which were based on the following 6 phases of the RPA lifecycle: Analysis, Design, Construction, Deployment, Control and Monitoring, and Evaluation and Performance. They performed testing of 14 leading tools and got the conclusion that the average support of these tools is above 80 %. The UiPath Studio, Blue Prism, and other Automation platforms are the three main platforms for developing RPA process. The most popular platform is Blue Prism (34%) followed closely by other automation platforms (28%) and UiPath (26%) before all other platforms (12%).

III. IMPLEMENTATION

Our system consists of operations including automatic account setup, document verification utilising OCR, and sending of offer letters. When HR adds employee information to the portal, the onboarding process gets started. The employee receives the offer letter through email, and after accepting it, an account is created for the portal and credentials are mailed to the employee. After logging into the site, an employee can upload files that are stored in S3 and have data retrieved using Google Vision API.

The government database is used to verify the extracted data. Professional Accounts, such as Microsoft 365, can be created by HR following the successful completion of the verification process.

The following sections provide a detailed explanation of these modules.

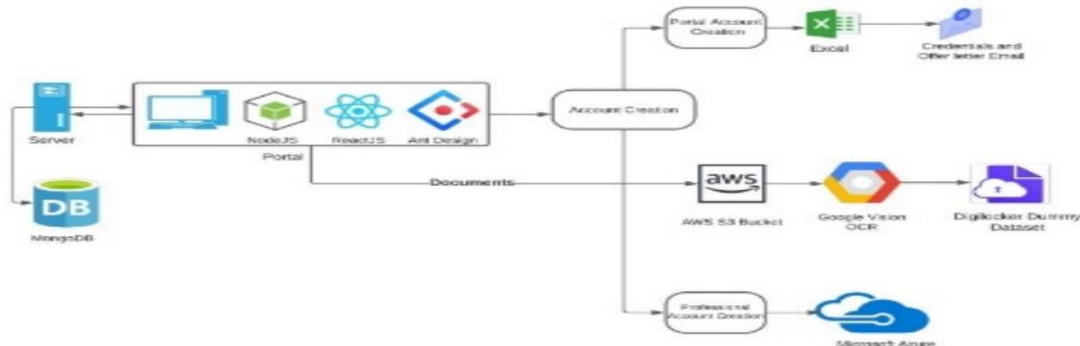


Fig. 1. System Architecture

A. Creation of a portal account and the offer letter

HR can upload an excel file with the necessary columns or manually enter new hires' personal information. For the account creation procedure, information such as the employee's name, email address, joining date, role, and salary is necessary. If any information is missing or is in an improper format, the row is either stored in the employee table or the pending employee table.

Utilising the "SendGrid" service, the offer letter is sent to the new employee through email. The employee must sign the offer letter on the link provided in the email in order to accept it. Then, credentials are mailed to the employee and an account is created in the backend. If an employee does not sign an offer letter in 5 days the status is updated as an offer



rejected in the database.

Dear infinity,

We are excited to offer you a full-time position as a Frontend developer at our Company. We look forward to work with you. As per our discussion we'd like to offer you an annual starting salary of \$60,000 paid out on your account. If you decide to accept this role, your anticipated start date will be 20/4/2022

As an employee of Company ABC, you will also have access to our comprehensive benefits program, which includes unlimited vacation days, health insurance, RRSPs and tuition reimbursement. To accept this offer, please add your signature [here](#) by 1650421911, and I will get you started with the rest of the onboarding process.

We are excited about the possibility of you joining Company ABC! If you have any questions, please contact me directly via phone or email.

Sincerely,
Hiring Manager,

Activate Windows

Fig. 2. Offer letter sent to candidate

The status is changed to "Offer Shared" once HR has entered all the necessary information for the employee and added them to the employee table. The employee must sign the offer letter by adding their name, and only if their name matches, may they do so. Following the candidate's signature on the offer letter, the status is changed to "Offer Accepted" and a portal account is created for them. They receive a mail message with the login information for it. The candidate can then log in with these credentials and complete additional tasks.

Name	Email	Role	Status
Kilyt	co@cc.com	front end	Offer Send
Cody	m@f.com	front end	Offer Send
Tobika	tobikal893@jo6s.com	front end	Offer Send
Govind	gorivi5725@f1xm.com	front end	Offer Send
Shweta	shweta.kate18@pccoepune.org	SE	Offer Accepted
Fake1	fake1@gmail.com	SE	Account Created
Fake2	fake2@gmail.com	SE	Offer Rejected
infinity	infinityseekers101@gmail.com	Frontend developer	Account Created

Fig. 3. HR list: offer letter status

B. OCR and Document Storage

MNCs hire hundreds of workers each year in a variety of fields. The security and privacy of these documents are of great concern. AWS offers us large amounts of Cloud storage space and ensures security. Storage for objects with industry-leading availability, scalability, and performance is AWS S3. We are utilizing AWS S3's free trial version for development. AWS gives you a secret key to access the bucket. For every document that is kept in the MongoDB Employee table, a location URL is generated. Using the AWS secret key and the location URL, documents are retrieved from the storage bucket.

OCR: - In order to extract information from scanned documents and photos, a text recognition technology called optical character recognition is used. On the internet, there are a few OCR services offered by AWS, Microsoft, Google, etc.

Google Vision API is what we are using. An algorithm for detecting vision called Vision API has functions including OCR, Landmark detection, and image labelling. Based on the free and open-source Tesseract engine, Google Vision API. It has made some changes to the Tesseract algorithm, making it a trustworthy tool. The OCR API from Vision is incredibly simple to use and offers sufficient speed and accuracy for our application. The useful information is extracted from the scanned papers using regular expressions. Employee data from the government database is now available to be used after this stage.

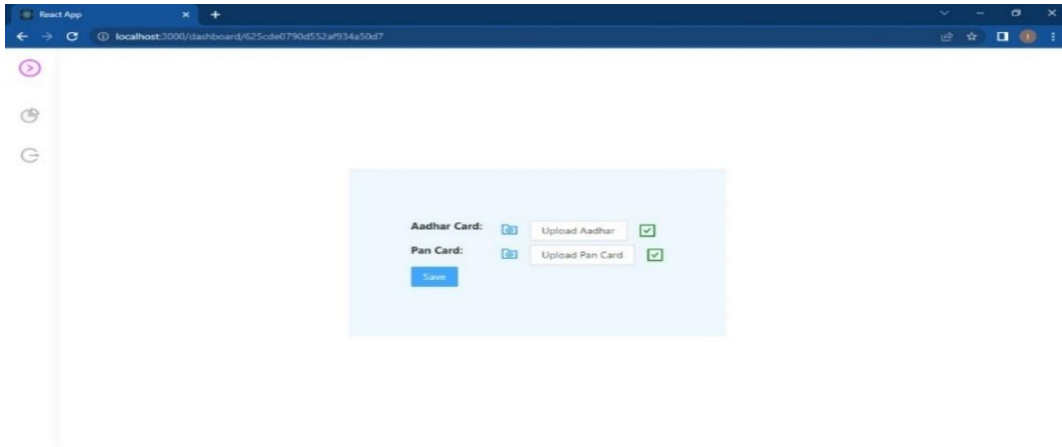


Fig. 4. Candidate need to upload document

C. Background Verification

Many businesses go through the process of background verification to examine the information that candidates offer when applying for a position. Government agencies use the Digi vault platform to share data with certain businesses in order to validate these documents. A registered corporation or organization is required in order to access the data through Digi Locker. We cannot access certain government databases since we are not a registered organization. Therefore, we created a dataset with over 1000 documents. In order to retrieve the data from a fake government database, we also developed a REST API. The Node.js-based API is implemented using the Heroku cloud application platform. Two APIs are available here, one for PAN verification and the other for Aadhar verification. In response, the API will display the message "Document Found" if the document is present in the fictitious government database or "Document Not Found" if it is not. The server will pass the PAN and Aadhar number as arguments.

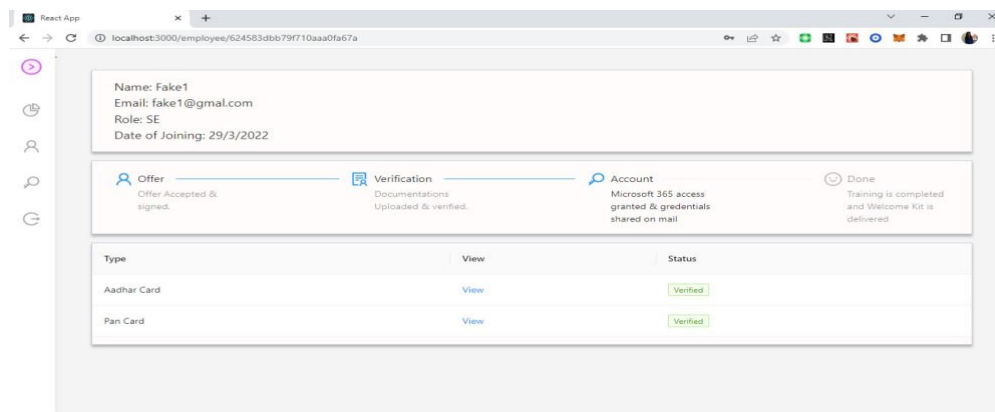


Fig. 5. Document verification status

D. Professional Account Create

From Document, we export data to Excel. Username, first and last names, display names, job titles, departments, office numbers, office phones, mobile phones, fax numbers, backup email addresses, addresses, cities, states, or provinces, ZIP codes, and countries or regions are all included in the excel data. We used Microsoft 365 for all office communications when setting up the account for business-related activity.

Included in Microsoft 365 Apps for Business are:
• Constantly updated desktop and mobile apps for Word, Excel, PowerPoint, Outlook, and OneNote (plus Access and Publisher for PC only).
• PowerPoint, Excel, and Word online versions.
• 1 TB of OneDrive cloud storage for file sharing and storing.
Five phones, five tablets, and five computers can all run Office apps with a single license.
Making use of Microsoft Dashboard:
1) To add a worker, navigate to Users Active Users Add a User.
2) Adding numerous employees: To add many users, a CSV file with user data in the format required by Microsoft is required. A new CSV file with all the login information for the new user is available for download when this CSV has been posted.
Add numerous users by going to Users > Active Users. Upload a CSV file or enter a file path Choose a license for the product for users Obtain fresh user credentials.
Microsoft Graph API usage - A single endpoint access to data on many Microsoft Cloud Services is provided via Graph API. The Microsoft Basic 365 license and Microsoft 365 are both being used. All of the features for adding team members and creating team goals may be accomplished using the Microsoft Graph API.

If the employee is validated, the pseudocode is:

Using the Graph API, create a Microsoft 365 account.

Add the account with the new employee's information.

Make a formal business email.

Give a Microsoft Basic 365 license to someone.

Send the employee these credentials via postal mail.

Access to all Microsoft Products used by the business is available to the employee. Using conventional techniques, HR must set up accounts for each individual employee, which can take anywhere between one and two minutes per person.

With the help of the Microsoft Graph API, which we have integrated, it will take about 1-2 minutes for 100 employees.

Dear infinity,

You have been granted access to our Microsoft Directory. The credentials for the same are shared in this email, you can login the site here by using the following credentials:

Account Mail: infinity@EmployeeOnboarding778.onmicrosoft.com

Password: xWvwJj6NMw+bWH-d

If you have any questions, please contact me directly via phone or email.

Sincerely,

Hiring Manager,

Fig. 6. Mail sent to candidate containing microsoft 365 credentials

E. Training

If a new employee is arriving as a fresher or is joining for a new role that they are unfamiliar with, they may occasionally need training. In this situation, employees are trained with the aid of outside training providers or there is a list of courses that employees must finish if they want to be assigned a project. Employee may be dropped from training if they fail to satisfactorily finish it.

When adding a new employee to our site, HR must indicate whether the new hire needs training. In our database, the field training Required is recorded as true if training is necessary; otherwise, it is listed as false. Using information from our database, we determine whether the status is "Documents Verified" and whether training is necessary. If both conditions are met, the list is then shown to the training department. We have a unique position that may be created when making a new account just for the training department.

The trainer can obtain information about the employee who needs training from the list that is displayed. If a candidate does not perform well throughout training, the trainer may change the status of the training or even reject them. If training was successfully finished, we update the key is trained as true and the status in the database would be changed to rejected and the account created for them would be terminated.

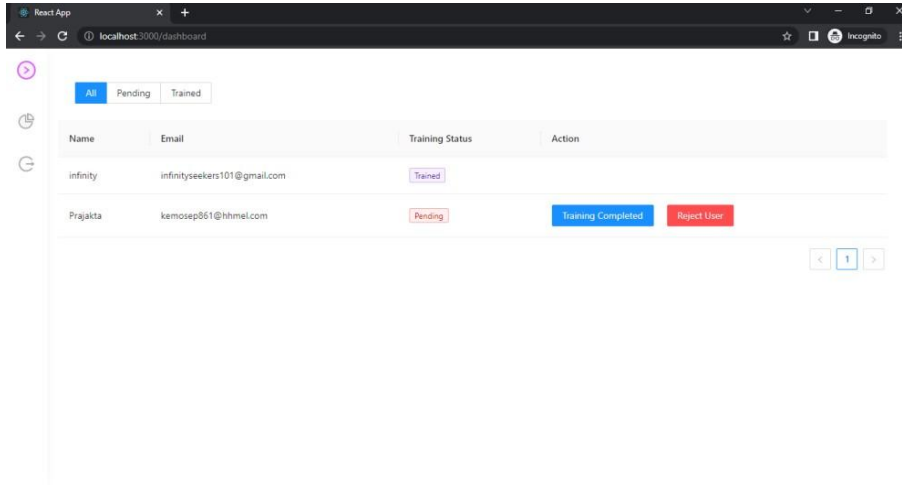


Fig. 7. Training dashboard

F. IT Team

When a new employee starts working for a company, they are given a laptop and a welcome package. The IT team is in charge of allocating hardware and couriering it to candidates. When an employee uploads the necessary documents and those documents pass the document verification procedure, they only then begin the allocation process. When adding a new employee to our site, HR must provide the candidate's address along with other necessary information.

The IT team can assign the laptop after uploading and verifying the employee's documents. The team can use the verify button to provide the employee's current address if they don't already have it or if they need to confirm it. The employee then determines whether the address is accurate or not. If it is inaccurate, the employee can edit it, and the corrected address will be included to the list given to the IT team. Our IT team has a unique job that can be created when making a new account.

Only when the status is "Documents verified" may the IT staff see the candidate's information. By examining the is Allocated term, which is true if the laptop has been dispatched to the new employee or false if it hasn't arrived yet, we can determine whether allocation has been completed or not. When the IT staff is finished, they can click the Allocate button, which will change the is Allocated state to true.

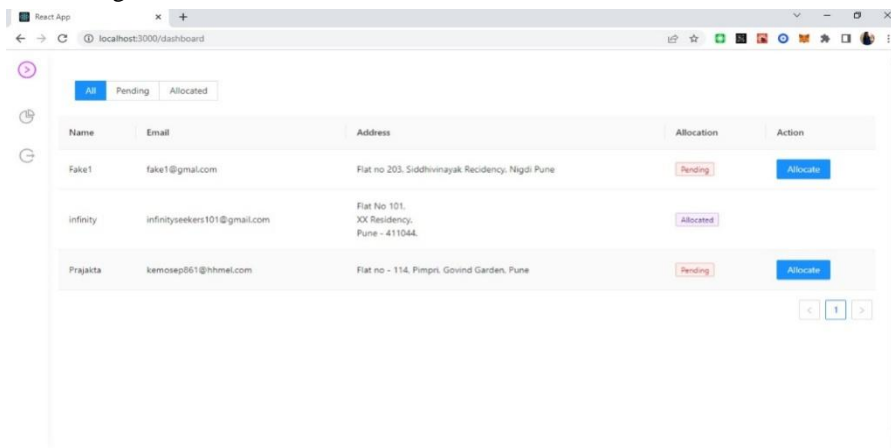


Fig. 8. Desk allocation

IV. FUTURE WORK

A. Verification of additional documents
The documents that must be verified vary depending on the firm, but we may add the verification code and OCR for more documents so that the candidate can choose the appropriate documents from a larger pool of options. On our platform, HR will have a variety of lists of papers from which they may choose the ones that they need from candidates. Candidate candidates will then be able to see the list, upload their documents, and have their uploaded documents verified.

B. Including more integrations in the process for creating accounts.
We have recently implemented a procedure for creating accounts for Microsoft 365, which contains nearly all of the fundamental services needed for Employees to engage with Members. It offers features including PowerPoint, Word, Excel, Outlook, and Teams Chat. Additionally, connectors for additional account creation services like Slack, Jira, and GitLab will be added.

C. Mail formats relevant to the company

We send a variety of emails, such as offer letters, invitations to register for portals, and invitations to register for Microsoft accounts. We only have one format for these emails, but we will also provide you the ability to add company-specific formats. After that, the business could modify the format of emails from the portal interface.

V. CONCLUSION

We attempted to automate a few of HR's tedious procedures in this project. These include of adding new personnel, sending offer letters, and verifying credentials and backgrounds. We have slashed the time it takes to create a new employee account from 2 minutes to 1 second with the aid of cloud storage and API. We were able to cut the background check time for each employee to about 10 seconds thanks to Google's Tesseract. Now there is no longer a requirement for the HR team to spend hours confirming employee submissions or determining whether an employee has finished the required training. With the use of onboarding software like ours, we can standardize the procedure and guarantee that each employee gets an identical onboarding experience.

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