Geethanjali
College of Engineering and Technology
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Problem Statements requiring 'Robotic Process Automation' for the 36 Hour Hackathon that Geethanjali College of Engineering is planning to conduct on 23-24ᵗʰ Dec 2019.

Some of the problem statements proposed by local Micro Small Medium Enterprises, several departments of Geethanjali College of Engineering for the 36 Hr Hackathon are categorized into Hardware and sortware…

Category: Hardware

1. **Auto change-Over from grid power to power from Generator during power failure**
   Disciplines: Electrical Engineering
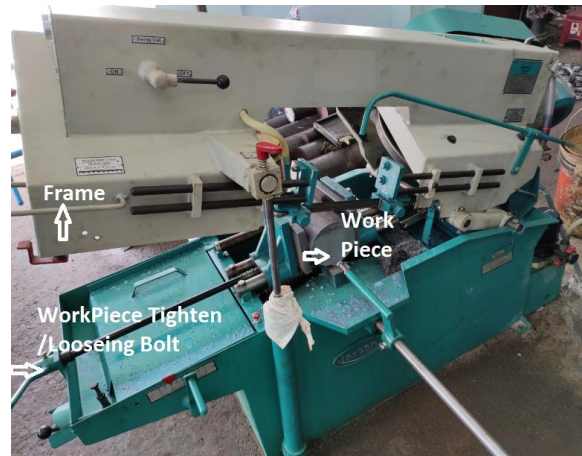   Problem Location: Geethanjali College of Engineering.

Currently, there is a down time of around 10 mins, when an operator manually switches from grid power (during power failure) to source the power from diesel generator. Operator has to disconnect the line from Solar panels, as the power from diesel generators is expected to interfere with the solar panels. Diesel generator is then started and is connected to load.

This process can be automated using Programmable Logic Controllers and eliminate human intervention. During important meetings, diesel generators are being run continuously to avoid the inconvenience during down time of the electrical power. A 'quick changeover' by process automation can save even the diesel costs during such important meetings.

2. **Work piece adjuster for bandsaw metal cutting machine:**
   Disciplines: Electrical and Mechanical Engineering
   Problem Location: Vijetha Engineering Industries IDA Kushaiguda

After cutting the work piece, bandsaw cutting machine stops. The frame has to be lifted up by 30^0 and workpiece bolt has to be loosened just enough so that the work piece can be pulled outside for starting the next cut.

This process is manually being done currently. Machine is remaining idle, If the operator is not attending the machine after the work piece is cut, To decrease the idle-time and reduce human intervention and increase productivity a robot is visualized to automate the process of going to the next cut.

3. **Scrap removal from scrap bin of a machine**
   Disciplines: Electrical and Mechanical Engineering
   Problem Location: Vijetha Engineering Industries IDA Kushaiguda

After the work piece is machined, metal scrap, usually of low carbon steels or Aluminium alloys are collected in the 'scrap bin'. Operator then manually removes the scrap from the scrap bin. As the scrap chips have sharp edges, chances of the operator's hands getting bruises are high. Hence a robot to empty the scrap bin is visualized, reducing the possibilities of injuries to the operator and improving the consistency.

4. **Scrap removal on the floor**

Disciplines: Electrical and Mechanical Engineering
Problem Location: Vijetha Engineering Industries IDA Kushaiguda

Metal scrap and non metal scrap on the shop floor is to be regularly cleaned. Metal scrap is currently cleaned by using a magnet shown above by operator. Metal/Non metal scrap chips generally have sharp edges and may injure operators or anyone who steps over it. A robot to regularly clean the shop floor is visualized. It may or may not have a battery.

Category: Software

1. Smart supply chain management

In supply Chain management the inventory tracking and replenishment management can be made faster by using IOT and RPA.

Using some sensors we can track the stock variations which enable the collection of relevant data on the firm's warehouse stock customer's orders and Software robots enable the automation of replenishment orders and free up the time spent by the operator in data collection, analysis and decision-making.

2. Predictive maintenance in industry

With predictive maintenance, firms can better keep their production lines in optimal operational condition and improve the business continuity - or at least limit the disruption time - of their service(s), thus optimizing production's performance and overall service quality.

IoT sensors enable the collection of relevant data on products, the operator and the production chain in general, Software robots enable the automated machine adjustment tasks or real-time reporting push.

3. Employees payroll automation

Employee attendance tracking is particularly useful for payroll. This ensures nonexempt employees are never over- or underpaid because exact hours are available. Employers can accurately calculate overtime pay, and if necessary, dock pay appropriately.

Keeping accurate records of hours employees work also shows the work levels for different departments. Some might work harder than others and have consistent overtime. Tracking frequency and patterns can improve the decision making process of redistributing workloads.

Through this system we can track the employee working hours by keeping some IOT device and we can automate the payrolls by RPA.

4. Web Site Scraping

RPA software is the perfect choice to put them into implementation for these specific use cases as the data that needs to be collected or scraped off the websites are already known for example, stock trading websites, futures trading websites, commodities trading websites, news and media sites. These websites can comfortably be scraped for the specific information of interest, summarize them and later can be presented to the required stakeholders for a call on what to do next with this information.

Advantages of web scarping with RPA:

1. Lesser errors and cost
2. Customized scraping
3. Faster setup
4. Gathers social media data
5. Automates batch download tasks
6. No need to maintain a team for scraping
7. Easy and faster setup

5. Incoming Customer E-mail Query Processing

If you are a support Organization that needs to answer to those thousands of emails that get bombarded at your inboxes for responses, you could definitely get away from that situation and have RPA look after them for you. Common issues or emails can be segregated to groups and responses to such emails can be given by the RPA solution whereas the critical ones which are not ascertained into a group can be handled by the respective personnel.

Advantages of automating email query campaigns:

1. Increases scale and scope of email campaigns
2. Boosts ROI on staff costs
3. Empowers your team to get better results
4. Increases average order value
5. Improves customer lifetime value
6. Gives space for strategic thinking

6. Students Fee Automation

In this automation process automated emails regarding the fee structure of the student is send information automatically to the student mail id when Ever there is any modifications such as addition of any fee to the student account , the due dates and the notification regarding the fee payments is send automatically to the respective students mail id. By this automation process the work load of the accounts section is reduced by which they can concentrate of other process in accounts department.

7. Credit Card Application

Banks can appoint RPA software robots to take up the complete responsibility of the initiating a credit card application, to gather all the required documents from the individuals, make the necessary credit checks, background checks on itself, decision making whether or not an individual is eligible for a credit card based on the details that are provided in the step earlier, issue a new card if they are eligible and on successful delivery of the card the case can be closed. The whole process is so systematic that this can be easily handed to the RPA software robots comfortably.

Advantages of Automating Credit Card Applications:

1. Improves employee productivity
2. Anywhere anytime access to online documents.
3. Availability of efficient methods to crosscheck operational metrics for process excellence.
4. Reduce turnaround time
5. High customer satisfaction

8. Shipping Notifications

E-Commerce websites and Logistics companies can reap loads of benefits from the RPA software robots as these kinds of activities can be fully automated without the intervention of any human being at all. Since these details can be fetched from the provider database and the shipments can be tracked for delivery over GPS, this can comfortably be automated.

Advantages of Automating Shipping Notifications:

1. Reduce Labor cost
2. Allows streamlining of multiple tasks into one process.
3. Increased accuracy

Avoids dimensional weight surcharges