

SURVEY PAPER ON AUTOMATION FOR DIGITALIZATION OF INVOICES

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ABSTRACT

This project's foundation is the frequent problem that occurs in the industry i.e. the lack of digitalized invoices and the immense effort that goes into manually doing that. This project helps industry personals to quickly extract the important information from the invoice by scanning it and putting it through an optical character recognition software.

Keywords: OCR- Optimal Character Recognition, Neural Network, ERP (Enterprise Resource Planning), Invoice Digitalization.

I. INTRODUCTION

This Project Topic is Automation for digitalization of invoices. Invoice digitalization using OCR (Optical Character Recognition) technology offers numerous advantages that can significantly improve efficiency, accuracy, and cost-effectiveness in financial and administrative processes.

OCR technology automates the extraction of text and numerical data from paper or electronic invoices. Human data entry is susceptible to errors, such as typing mistakes and misinterpretation. OCR technology digitizes invoices and stores them in electronic formats, facilitating easy retrieval and document management.

Digitalized invoices provide valuable data for analysis and reporting. OCR technology is scalable and adaptable and it can be integrated with existing ERP (Enterprise Resource Planning) systems and other software solutions. It reduces paper usage through digitalization aligns with sustainability goals.

II. ADVANTAGES OF PROJECT

Optical Character Recognition (OCR) systems offer several advantages to small-scale industries that can significantly improve their efficiency and productivity. One key benefit is the ability to streamline data entry and document management processes. Small businesses often deal with a considerable amount of paperwork, such as invoices, receipts, and contracts. OCR technology allows them to digitize and convert this physical documentation into machine-readable text, reducing manual data entry errors and saving time.

Furthermore, OCR systems enhance searchability and accessibility of documents. Small-scale industries can easily retrieve specific information from their digitized documents by conducting keyword searches, thereby accelerating decision-making processes and ensuring that critical data is readily available. Additionally, OCR facilitates document storage and retrieval in a more organized and space-efficient manner, reducing the need for physical storage space.

OCR also promotes cost savings for small businesses. It minimizes the expenses associated with paper document storage, printing, and manual data entry, which can be substantial over time. Moreover, by automating data extraction and entry, OCR reduces the risk of human error, which can lead to costly mistakes.

In summary, OCR systems empower small-scale industries to improve their data management, reduce operational costs, and enhance overall efficiency. By digitizing and automating document-related tasks, businesses can allocate their resources more effectively, make quicker decisions, and remain competitive in their respective markets.

III. ABBREVIATIONS AND ACRONYMS

Definitions : -

OCR: - Optical Character Recognition

IoT: - Internet of Things

NLP: - natural language processing

ERP: - Enterprise Resource Planning

IV. COMPARISION OF DIFFERENT OCR SOFTWARES

OCR Software	Multi Language recognition	Multiple files conversion/bundle d	Multiple pages conversion
Tesseract	No	No	No
ABBYY Flexi capture	No	No	No
Google Cloud Vision OCR	Yes	No	No
Nanonets	Yes	Yes	Yes
Amazon Textract	yes	Yes	yess

V. BENEFITS AND REASONS TO USE

Invoice digitalization using OCR (Optical Character Recognition) technology offers numerous advantages that can significantly improve efficiency, accuracy, and cost-effectiveness in financial and administrative processes. Here is a rationale outlining the key benefits:

A. Efficiency Enhancement:

OCR technology automates the extraction of text and numerical data from paper or electronic invoices. This eliminates the need for manual data entry, which is time-consuming and error-prone. Automated data extraction accelerates the invoice processing cycle, leading to faster approval and payment times.

B. Accuracy Improvement:

Human data entry is susceptible to errors, such as typos and misinterpretation. OCR technology, on the other hand, has a high degree of accuracy in recognizing characters and numbers. Enhanced accuracy reduces the risk of errors in financial transactions and helps maintain compliance with regulatory requirements.

C. Cost Reduction:

Manual invoice processing involves significant labour costs, including data entry, verification, and reconciliation. OCR technology reduces these labour costs by automating data extraction and processing. Additionally, fewer errors mean fewer costly discrepancies to resolve, leading to further cost savings.

D. Time Savings:

Automating the invoice processing workflow with OCR technology results in faster turnaround times. Invoices can be processed and approved more quickly, improving cash flow management. Time-sensitive discounts and penalties can be better managed, maximizing cost savings for the organization.

E. Improved Document Management:

OCR technology digitizes invoices and stores them in electronic formats, facilitating easy retrieval and document management. Electronic storage reduces physical storage costs and the risk of document loss or damage.

F. Enhanced Data Insights:

Digitalized invoices provide valuable data for analysis and reporting. Organizations can gain insights into spending patterns, vendor performance, and other financial metrics. These insights enable informed decision-making and strategic planning.

G. Scalability and Adaptability:

OCR technology is scalable and adaptable to the needs of businesses of all sizes and industries. It can be integrated with existing ERP (Enterprise Resource Planning) systems and other software solutions. This scalability ensures that organizations can grow without the burden of manual invoice processing.

H. Compliance and Audit Trail:

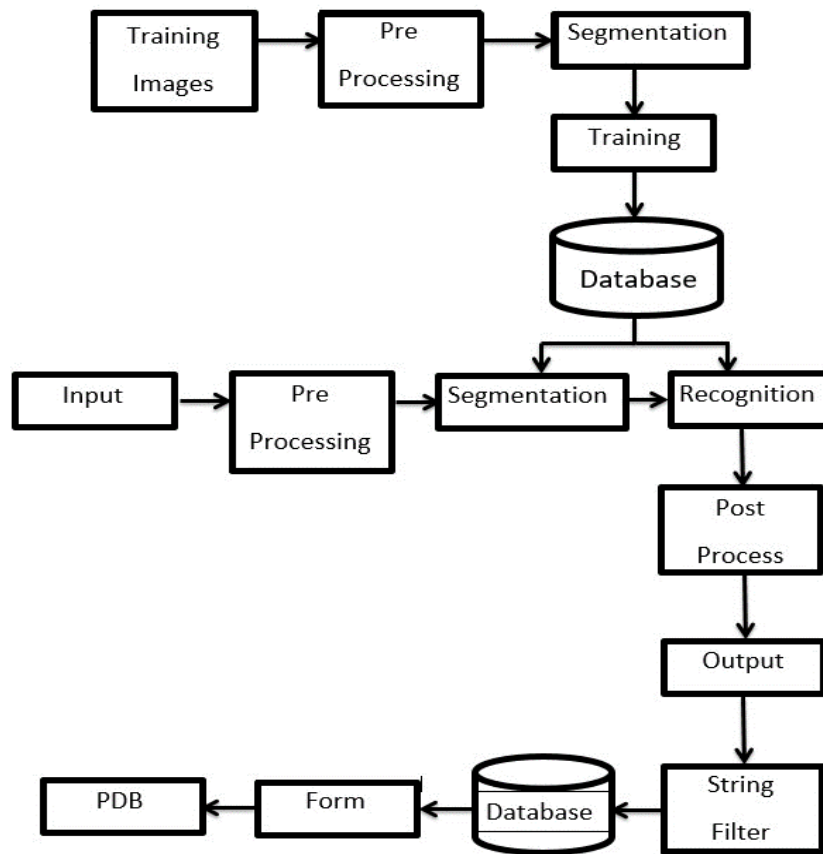
Digitalized invoices with OCR technology often come with built-in audit trails and security features, enhancing compliance with regulatory requirements. These audit trails provide transparency and traceability of invoice processing actions.

I. Environmental Sustainability:

Reducing paper usage through digitalization aligns with sustainability goals and reduces the organization's environmental footprint.

In conclusion, the rationale for implementing invoice digitalization using OCR technology is clear. It offers substantial benefits in terms of efficiency, accuracy, cost reduction, and overall process improvement. This technology empowers organizations to streamline their financial operations, make data-driven decisions, and stay competitive in today's digital business landscape.

VI. DATA FLOW DIAGRAM OF OCR



VII. FUTURE SCOPE

The future scope of Optical Character Recognition (OCR) technology in industrial applications is promising and poised for significant growth. As industries continue to embrace digital transformation and automation, OCR is expected to play a pivotal role in enhancing operational efficiency, data accuracy, and decision-making processes. Firstly, OCR will likely see increased adoption in industries that rely heavily on document processing. Manufacturing companies, for instance, can use OCR to automate the extraction of information from invoices, purchase orders, and shipping documents. This not only accelerates the accounts payable and receivable processes but also reduces the risk of errors associated with manual data entry. Moreover, OCR can be integrated with Enterprise Resource Planning (ERP) systems, providing real-time access to critical data, which is essential for optimizing production schedules and inventory management.

In the realm of quality control, OCR has the potential to revolutionize inspection processes. For instance, in the automotive industry, OCR can be used to read and validate serial numbers, part numbers, and labels on

components, ensuring that the right parts are used during manufacturing and assembly. This enhances product quality, reduces rework, and minimizes the chances of product recalls.

Additionally, OCR's scope extends to sectors like logistics and supply chain management. Industrial warehouses can benefit from OCR's ability to rapidly read barcodes and labels on packages, facilitating accurate inventory tracking and faster order fulfilment. OCR can also enhance the traceability of goods through the supply chain, contributing to improved transparency and accountability.

As artificial intelligence and machine learning technologies advance, OCR systems are becoming smarter and more adaptable. Future OCR solutions are likely to incorporate natural language processing (NLP) capabilities, enabling them to understand and interpret unstructured data, such as handwritten notes or complex documents. This will broaden OCR's applicability to industries that deal with diverse document types.

Moreover, the integration of OCR with Internet of Things (IoT) devices and edge computing is on the horizon. This means that OCR processing can occur closer to the data source, enabling real-time data extraction and decision-making in industrial settings, even in remote or challenging environments.

In conclusion, the future of OCR in industrial use holds great promise. As industries continue to prioritize efficiency, accuracy, and automation, OCR technology will evolve to meet these needs. Its applications are expected to expand across various sectors, driving improvements in data management, quality control, and supply chain operations, ultimately contributing to increased competitiveness and success for industrial enterprises.

VIII. CONCLUSION

Automation for digitalization of invoices is a process that involves capturing, extracting, validating, and integrating invoice data into various systems and applications. This process can be performed by using different methods and technologies, such as scanners, cameras, software, or cloud services. The main goal of this process is to reduce manual errors, such as typos, duplicates, or misclassifications that can lead to delays, penalties, or disputes. It also aims to increase efficiency, by speeding up the invoice processing and payment cycles, and reducing the workload and costs of human operators. Moreover, it can improve compliance, by ensuring that the invoice data conforms to the legal and regulatory requirements of different countries and regions. Finally, it can enhance customer satisfaction, by providing faster and more accurate services, and enabling better communication and collaboration between the parties involved in the invoice transactions.

We hope that this survey paper can provide a comprehensive overview of the current research landscape and inspire new ideas and innovations for automating invoice digitalization. We believe that automation for digitalization of invoices is a promising and important field that can bring significant benefits to businesses and society.

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