International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Intelligent Document Processing: A Game Changer in the Human Services Sector

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Abstract
Intelligent document processing helps scan, extract, and transform structured and unstructured data into meaningful information. Social services receive the information in the form of Applications, change of circumstances, supporting documents like income, residency proof, etc. This information must be processed efficiently and effectively within the set timeline. IDP can help process these documents smartly using emerging technologies. This paper covers what IDP is and how it can help human services to streamline the processes.

Keywords: Intelligent document processing (IDP), Optical Character Recognition (OCR), Natural Language Processing (NLP), Machine Learning (ML)

1. Introduction

Intelligent Document Processing (IDP) scans, extracts, and categorizes data. It can process structured and unstructured data, such as a report, form, or driver's license. The growing need to process large volumes of structured and unstructured data makes IDP more popular.

IDP uses technologies like optical character recognition (OCR), Natural Language Processing (NLP), Machine Learning (ML), and Robotic process automation (RPA)

Human services can leverage IDP to process incoming documents such as new applications, recertifications, and supporting documents like proofs to fast-track the processing timeline. IDP automates the manual data entry process, saving caseworkers time and allowing them to focus on more critical tasks.

2. How IDP Works

Intelligent document processing (IDP) helps transform structured, semi-structured, and unstructured data into actionable information. There are six steps in the INDP workflow, and these are:

1. Document Ingestion
2. Preprocessing
3. Classification
4. Data Extraction
5. Validation and Verification
6. Integration and Workflow Automation

Document ingestion involves gathering and converting documents from various sources into machine-readable formats. In preprocessing, data is cleaned and converted from text images to actual text via OCR technology. Documents are then classified into predefined categories, such as application forms and

supporting documents/proofs. Data is then extracted from these documents using various AI/Machine learning models. Data is then validated using multiple internal and external sources. A human is also consulted to address any exceptions/outliners if required. Once data is validated, it is then integrated with downstream systems using RPA technology.

As identified above, IDP uses the following components:

1. Optical character recognition (OCR),
2. Natural Language Processing (NLP),
3. Machine Learning (ML),
4. Robotic process automation (RPA)

A. Optical Character Recognition

OCR is a technology for converting handwritten and typed images into text. It is commonly used to extract text from images and scanned documents.

OCR uses image analysis, pre-processing, text recognition, and post-processing functions to produce machine-readable documents from scanned documents and images.

B. Natural Language processing

Natural Language Processing (NLP) is AI technology that interprets and understands human language. It can work through the grammar. Errors, slang and it can interpret the tone of voice/text, etc.

NLP in IDP can help extract more useful information from unstructured data. It helps identify relevant data and understand the context and relationship between the data.

NLP uses various technologies like Computational linguistics, pre-trained language models, deep learning, etc.

C. Machine Learning

Machine learning helps in improving the accuracy of document processing over time. Machin learning can use supervised and unsupervised learning techniques to help process the document with minimum human intervention and enhanced accuracy.

D. Robotic Process automation

Robotic process automation helps build processes that automate human action. It is mainly used in routine and repeatable tasks like entering data from paper documents into the system of record, creating tasks from call center inquiries, etc.

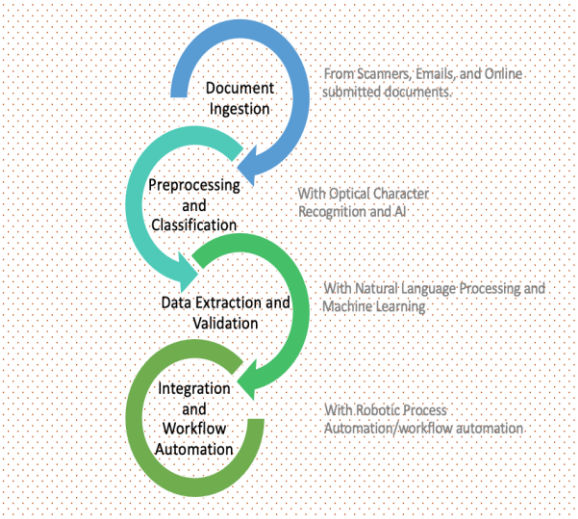

Fig 1: IDP workflow steps and Technologies

3. Application of IDP In Human Services

Intelligent document processing can automate the manual data entry work so that caseworkers can focus on more complex tasks.

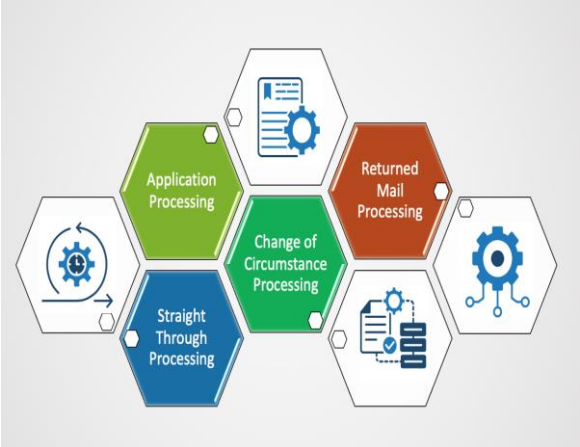

Fig 2: Applications of IDP in Human Services

E. Application processing

Social agencies must process applications within a defined timeline. For instance, a SNAP application should be processed within 30 days of being received. In application processing, there are many steps that the caseworker should consider. Like entering the application data from the form into the system, reviewing if all the required information is submitted, reviewing associated documents like residency proof, income proof, etc., issuing the notice if required information is unavailable, and more.

Sometimes, the number of applications received is so large that not all can be manually entered into the system on the same day. This backlog impacts the timeliness of application processing.

IDP can help extract the application data and map it to the system of record on the same day it is received and scanned. It can also be configured to verify if all required documents are obtained. If not, then RPA can be configured to trigger the Request for information notice within the same day.

F. Change of Circumstance processing

Application and recertification processing are mostly considered higher priority work, and change of circumstance processing takes a back seat. This impacts benefit delivery and leads to procedural errors.

IDP can process these changes within the system by reading the change reported and mapping the information to the system of records. It can be configured to alert the caseworker only in address exception scenarios.

G. Straight through processing

Eligibility can be determined systematically in some scenarios, and applications can be auto-processed.

IDP can help extract and map the information from the application, mid-cert, and recent forms and flag if the form is eligible for straight-through processing. If no exception is encountered, workflow automation can then help straight-through processing. For instance, a mid-cert submitted with no change in information can be auto-processed using IDP.

H. Returned mail processing

The social agency should validate the client's address via real-time interfaces with postal and other address-verifying services. In scenarios where the client has not reported the change of address or if it is reported but is not processed, the IDP can help auto-update the address in the system and issue required notices. It can be configured to loop in caseworker in specific scenarios, e.g., if it is an out-of-state address and impacts

eligibility.

4. Conclusion

In conclusion, Human Services must deal with fluctuating workloads throughout the year and limited human resources. Staff should be focused on processing critical tasks, and any mundane data entry task should be automated. IDP can help agencies by scanning and reading the document intelligently, classifying and extracting the data, and mapping it into downstream systems.

References

The following are the references used for this paper:

1. Key AI Components of Intelligent Document Processing That Makes It Close to Unbeatable (Nov 2023) https://www.allerin.com/blog/key-ai-components-of-intelligent-document-processing-that-makes-it-close-to-unbeatable
2. Intelligent Document Processing Market, By Component (Solutions and Service), By Technology, By Organization Size, By Deployment, By End-Use, and By Region Forecast to 2030 (Dec 2022) https://www.emergenresearch.com/industry-report/intelligent-document-processing-market#:~:text=IDP's%20main%20purpose%20is%20to%20automatically%20extract,a%20high%20demand%20for%20intelligent%20document%20processing.