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Development of Secured Risk Assessment of Digital Invoice System using Block Chain Technology

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Abstract – E - Invoicing methods are exceedingly accessed in todays scenario, where bills/invoices are sent and received electronically through single cloud platform. Blockchain technology being one of the most secured technology to store any kind of data securely on internet, it has been extended to Electronic or Digital Invoices system also. Blockchain has been recognized with such potential for validating online transactions, payments made by customers to businesses and also Invoices issued. We have observed opaqueness in traditional ways of Invoicing system or would be paper based with no audit trail available. Also keeping the exiting tax problems for electronic invoices, we do observe few risks like overstatements, false declarations or also false invoices, etc. In this proposed paper, a method is being implied keeping all the above situations in mind. The method is utilized to check the authenticity of digital invoices using Graphic Digital Image Processing technique. An automatic Artificial Intelligence technology is implied using Pixel Filtering algorithm which is safe and efficient. It can also be helpful to avoid calculation efforts and also suitable for large-scale digital invoices tracing and reimbursement for records**.**

Keywords: blockchain technology, digital invoices, graphic image processing, artificial intelligence, OCR

I.INTRODUCTION

Payment ways are existed or continued for long time which were meant to be non-transparent. We have observed opaqueness in traditional ways of Invoicing system or would be paper based with no audit trail available. The payments observed to be held up by borrowers or not maintained filing by thrashing information behind bureaucracy. Nowadays, technologies like TallySticks or even Networks are being implemented with changes which helps upcoming companies applied block chain for businesses invoicing system and culture. Electronic Invoicing are majorly used in today's scenario where invoices are sent and received electronically through a single cloud-based platform. Blockchain technology being one of the most secured technology to store any kind of data securely on internet, it has been extended to Electronic or Digital Invoices system also. Blockchain has been recognized with such potential for validating online transactions, payments made by customers to businesses and also Invoices issued. Various debates have been seen that blockchain is a method where the information can be accessed and also can be accessing at every point, where people can see through exact amount which has been taken also with future investments and credits. But the fact is uptake is considered to be slow. Therefore, considering many businesses resistance, they have been adopting e-invoice and payment gateway technologies. Adopting and shifting to blockchain will require sometime to handle invoicing system digitally. The progress can be observed of this brand-new technology, years coming will be adopted to blockchain environment specially invoicing methods. Current scenario of Internet era, relying on own products, new technologies, new models and services is a breakthrough for expansion of market and also getting adopted to big data technology for production process is highly recommended. A rapid growth on Internet and block chain for digital technology has given a boost in economy. Also keeping the exiting tax problems for electronic invoices, we do observe few risks like overstatements, false declarations or also false invoices, etc. In this proposed paper, a method is being implied keeping all the above situations in mind. The method is utilized to check the authenticity of digital invoices using Graphic Digital Image Processing technique. An automatic Artificial Intelligence technology is implied using Pixel Filtering algorithm which is safe and efficient. It can also be helpful to avoid calculation efforts and also suitable for large-scale digital invoices tracing and reimbursement for records.

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Upcoming technology like Blockchain has three main abstractions that cannot be ignored: Blocks, Nodes and Miners
Blocks: Any chain if considered will have multiple blocks and where those individual blocks will consist of three elements. First element is nonce which is randomly generated when block created and generates a block header hash. When a block is created for chain, the nonce generates cryptographic hash. The data is considered to be signed and tied to nonce.
Miners: This is a process to create new blocks for the chain which is called as mining.
Nodes: These nodes help in the decentralization of the chain i.e., securing the data. It is called as a distributed ledger, they are connected through nodes.

II.SYSTEM MODEL

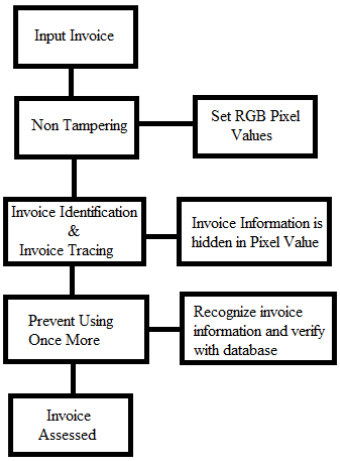

Fig 1. Proposed Block Diagram

The proposed method consists three major risks solving methods:
1. Digital Invoice Tampering

The digital invoice will be considered in the png/jpeg format, the invoice information set will be crossed verified. For non-tampering of invoice, the pixels of the invoice is extracted, this is implemented where the encoded data is taken out or extracted from LSB bit of RGB Pixels of e-invoice. Using this the system will verify if the invoice has been tampered or not.

2. Identification and Tracing

When the e-invoice is raised and the particular invoice is given as input for identification and tracing, few details of the customer will be set such as Invoice Number, Buyer Name, using ORC method which will be set as watermarked. This information will be hidden in pixel values format. Once the invoice is selected to verify, details mentioned above will verified.

3. Invoice Duplication

This section concentrates on preventing the usage of invoice again. The technique developed in proposed project will recognize information on invoice and under goes verification every time the invoice is generated or taken as input. This verification at every stage will help the user/businesses from raising the invoice again with details.

III.OPTICAL CHARACTER RECOGNITION MODEL

OCR technology is a technique used for recognition of different kinds of characters being handwritten or printed and converts into a digital data format which will be machine-readable.

Steps involved in OCR:

1. Extract Characters – Select image and Extract characters with OpenCV contours method.
2. Build a Network – Build a network with each character label information and save the parameters.
3. Extract Characters – Select the image and extract characters with OpenCV contours.
4. Consolidated Predictions – Using PIL Library in image processing for consolidation and predictions.

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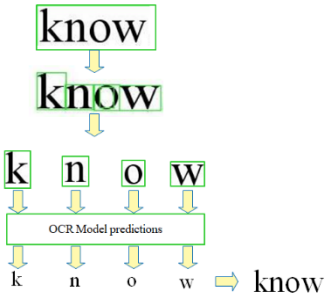

Figure 2: OCR Flow

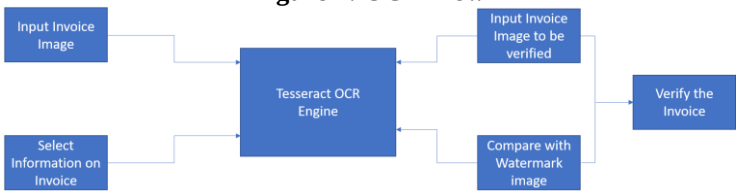

Figure 3: OCR using Tesseract

IV PREVIOUS WORK

Early versions needed to be trained with images of each character and worked on one font at a time. Advanced systems capable of producing a high degree of recognition accuracy for most fonts are now common, and with support for a variety of digital image file format inputs. Some systems are capable of reproducing formatted output that closely approximates the original page including images, columns, and other non-textual components.

V PROPOSED METHODOLOGY

Step 1: Input is Invoice Image
Step 2: Read Image
Step 3: Based on OCR algorithm following information are detected - Name, serial number, invoice amount, invoice given by company
Step 4: Information gathered are hidden using watermark process
Step 5: After Adding, Images are stored in database
Step 6: During invoicing or taxing process: Detect Name, Serial Number, Invoice Amount and Invoice generated by sender digitally.
Step 7: Hidden Information is drawn out which is done in Step 4
Step 8: Compare each data from Step 6 and Step 7
Step 9: If both information (hidden data and OCR detected) is matching, then Invoice is Valid
Step 10: Output – Detect if Valid Invoice or Fake invoice and invoice details in text

VI EXPERIMENTAL RESULTS

The proposed methodology for blockchain, the algorithm used will be under encryption and decryption for input image. Now talking about the algorithm, we used. There are lot of algorithms present which help us in analyzing data. Machine learning and data analytics are boon in this field. The algorithm we opted is Regression Analysis. Regression Analysis is a set of statistical processes for estimating the relationships among variables. It includes many techniques for detection of invoice identification and tracking. Also, we used tesseract, which is a free software machine learning library for the Python programming language.

VII CONCLUSION

This paper, by using artificial intelligence automatic identification technology and image analysis and processing technology, combined with tax application scenario, the existing electronic invoices are fully assess the risks, completely solve the electronic invoice is " one ticket can be used more than once, false reimbursement, and false invoices " tax issues. The implementation and application of this project will provide an advanced solution mechanism for the extensive implementation of Internet block chain digital invoice.

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VIII FUTURE SCOPES

Some of the major advantages of blockchain is that it helps in saving costs of labour, manual errors could be reduced while generating invoices and also can eliminate the extra credit charges when loss of invoices are observed. This basically pin points on having control on hoe information about an individual or companies can be shared and can be accessed only with ones required only. It enables swift migration of businesses onto the blockchain service network, and allows each developer and user to have absolute control over their own data, thus effectively removing barriers between two parties.

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