MediTrust: An AI-Based Medical Fund Verification System For Fraud Detection And Donor Trust Enhancement

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Abstract- *This document presents a demonstration paper for submissions to the SET International Journal of Broadcast Engineering (SET IJBE). It provides authors with a practi- cal example of an AI-based medical fund verification system, including the integration of deep learning models, document processing techniques, and fraud detection mechanisms. The paper illustrates the structure of a complete manuscript, covering title, author information, abstract, keywords, sections, figures, tables, equations, lists, references, and acknowledgments. The proposed system, MediTrust, utilizes CRAFT for text region detection, Donut for document understanding and structured data extraction, and Fuzzy Matching algorithms for validating ex- tracted information against a trusted hospital database. The sam- ple content demonstrates how automated verification improves transparency, reduces manual effort, and detects fraudulent medical fund requests efficiently. This abstract is limited to fewer than 150 words, in accordance with the journal guidelines, and is intended to guide authors in preparing compliant, consistent, and publication-ready submissions. It may also serve as a reference when adapting the template to real-world AI-based research contributions.*

Keywords: Medical crowdfunding, fraud detection, docu- ment verification, deep learning, CRAFT, Donut model, fuzzy matching, healthcare analytics, AI-based systems, document un- derstanding.

I. INTRODUCTION

MEDICAL crowdfunding has emerged as an important solution for individuals seeking financial assistance for healthcare treatments, surgeries, and emergencies. Online platforms enable patients to raise funds quickly by sharing medical information and receiving contributions from donors. However, the rapid growth of such platforms has also led to an increase in fraudulent fund requests, where manipulated medical documents and false claims are used to deceive donors and misuse funds.

Traditional verification methods rely heavily on manual inspection or rule-based validation, which are time-consuming, error-prone, and ineffective against sophisticated fraud tech- niques. These limitations reduce donor confidence and delay financial support for genuine patients. Therefore, there is a critical need for an automated, accurate, and scalable system capable of verifying medical documents and detecting fraud-

This paper proposes an AI-based medical fund verifica- tion system, MediTrust, designed to address these challenges. The system integrates advanced deep learning and document analysis techniques to automate verification. It employs the CRAFT algorithm for text region detection, enabling accurate extraction of text from complex medical documents. The Donut (Document Understanding Transformer) model is used to convert document images into structured data, capturing key information such as patient details, hospital information, and treatment costs.

To ensure authenticity, a Fuzzy Matching algorithm is applied to compare extracted data with a verified hospital database, identifying discrepancies and potential fraud. Based on similarity scores, the system classifies fund requests as genuine, suspicious, or fraudulent.

The proposed approach improves verification accuracy, re- duces manual effort, enhances transparency, and strengthens donor trust in medical crowdfunding platforms. This work demonstrates the effectiveness of combining deep learning and intelligent matching techniques for secure and scalable fraud detection in healthcare fundraising systems.

II. MANUSCRIPT ELEMENTS

This section presents the core components of the Med- iTrust system, including architecture, evaluation metrics, and processing workflow for detecting fraudulent medical fund requests.

A. Figures

Fig. 1 illustrates the MediTrust framework, including pre- processing, text detection, extraction, and verification stages. The system processes uploaded documents through AI-based modules to identify fraud.

B. Tables

Table I compares verification methods in terms of accuracy and efficiency.

C. Equations

The verification score is computed as:

$S_h + S_p + S_a$

ulent activities in real time.

Score = (1)

3

Appendix A Example of an Appendix

This appendix provides supplementary information related to the MediTrust system, including details of the verification process and similarity score computation used for fraud de- tection.

As part of the verification process, the similarity score between extracted document data and hospital records is calculated as

$$Score = \frac{Sh + Sp + Sa}{3} \quad (2)$$

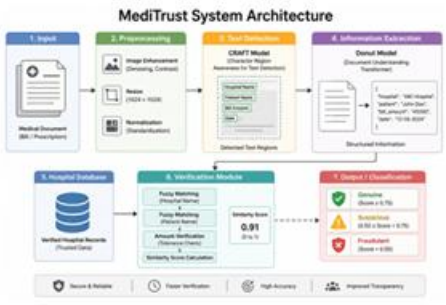

Fig. 1. MediTrust system architecture.

TABLE I
Verification Performance Comparison

Method	Accuracy (%)	Time
Manual	65	High
OCR	72	Medium
Proposed	91	Low

Method Accuracy (%) Time Manual 65 High OCR 72 Medium

Proposed 91 Low

where S_h, S_p, and S_a represent similarity measures for hospital name, patient name, and billing amount.

Appendices should be included only when they provide useful technical details. If not required, this section may be omitted.

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where S_h

Lists

, S_p, and S_a
denote similarity scores.

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References

The system workflow includes:

- document preprocessing;
- CRAFT-based text detection;
- Donut-based extraction;
- fuzzy matching verification;
- request classification.

Relevant works in AI, OCR, and fraud detection support the proposed system.

III. CONCLUSION

This paper presented MediTrust, an AI-based medical fund verification system designed to detect fraudulent medical fund requests and improve transparency in crowdfunding platforms. The proposed system integrates CRAFT for text region detec- tion, the Donut model for structured information extraction, and fuzzy matching techniques for data verification against a trusted hospital database. By automating the verification process, the system reduces manual effort, improves accuracy, and enables faster decision-making. The results demonstrate that the proposed approach effectively identifies discrepancies in medical documents and enhances donor confidence. Overall, MediTrust provides a scalable and reliable solution for secure medical fundraising, addressing the limitations of traditional verification methods and supporting fair and efficient fund distribution.

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