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Retraction

Retracted: An Investigation in Analyzing the Food Quality Well-Being for Lung Cancer Using Blockchain through CNN

Journal of Food Quality

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

(1) Discrepancies in scope
(2) Discrepancies in the description of the research reported
(3) Discrepancies between the availability of data and the research described
(4) Inappropriate citations
(5) Incoherent, meaningless and/or irrelevant content included in the article
(6) Manipulated or compromised peer review

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

In addition, our investigation has also shown that one or more of the following human-subject reporting requirements has not been met in this article: ethical approval by an Institutional Review Board (IRB) committee or equivalent, patient/participant consent to participate, and/or agreement to publish patient/participant details (where relevant).

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] M. A. Aboamer, M. Y. Sikkandar, S. Gupta et al., "An Investigation in Analyzing the Food Quality Well-Being for Lung Cancer Using Blockchain through CNN," *Journal of Food Quality*, vol. 2022, Article ID 5845870, 11 pages, 2022.

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Research Article

An Investigation in Analyzing the Food Quality Well-Being for Lung Cancer Using Blockchain through CNN

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Deep learning (DL) is a new approach that provides exceptional speed in healthcare activities with greater accuracy. In this regard, "convolutional neural network" or CNN and blockchain are two important parts that together fasten the disease detection procedures securely. CNN can detect and predict diseases like lung cancer and help determine food quality, and blockchain is responsible for data. This research is going to analyze the extension of blockchain with the help of CNN for lung cancer prediction and making food safer. CNN algorithm has been trained with a huge number of images by altering the filters, features, epoch values, padding value, kernel size, and resolution. Subsequently, the CNN accuracy has been measured to understand how these factors affect the accuracy. A linear regression analysis has been carried out in IBM SPSS where the independent variables selected are image dataset augmentation, epochs, features, pixel size (90×90 to 512×512), kernel size (0–7), filters (10–40), and padding. The dependent variable is the *accuracy of CNN*. Findings suggested that a larger number of epochs improve the CNN accuracy; however, when more than 12 epochs are considered, the accuracy may decrease. A greater pixel/resolution also improves the accuracy of cancer and food image detection. When images are provided with excellent features and filters, the CNN accuracy improves. The main objective of this research is to comprehend how the independent variables affect the accuracy (dependent), but the reading may not be fully exact, and thus, the researcher has conceded out a minor task, which delivered evidence supportive of the analysis and against the analysis. As a result, it can be determined that image augmentation and a large number of images develop the CNN accuracy in lung cancer prediction and food safety determination when features and filters are applied correctly. A total of 10–12 epochs are desirable for CNN to receive 99% accuracy with 1 padding.

1. Introduction

The modern-day healthcare industry across the globe has witnessed the beneficial utilization of machine learning, artificial intelligence, and blockchain materials for detecting critical diseases. Previously, detecting proper reasons and symptoms of critical diseases and predicting fruitful treatment procedures were not easy for healthcare practitioners. Along with this, the rate of human errors remained a constant challenge while offering patient care facilities. Today, the problems can be effectively resolved with the implementation of blockchain materials in the healthcare sector. Researchers have identified various effective contributions of blockchain materials through the CNN method that can be highly used in detecting serious diseases, such as lung cancer. Convolutional neural networks collect the datasets of the patients suffering from fatal diseases and from various food products in order to cater the samples using the AI techniques incorporated with the blockchains that can manipulate the data to discover the serious ailments like lung cancer and food quality. Scientists and researchers from the UK, Canada, and Australia have concluded that after conducting relevant surveys. The survey result reflects that around 87% of medical practitioners strongly support the use of blockchain materials in numerous aspects of patient care [1].

Lung cancer is a slowly growing and serious issue for patients worldwide, especially for those who are active and chain smokers. Various healthcare sectors around the globe now come to a realization that smoking should be banned and limited in specific areas in order to mitigate the growing challenges regarding lung cancer. Researchers have identified that small cells related to lung cancer slowly grow within the host's body but spread faster than any other respiratory disease. Around 70% of people in this fast-growing world are becoming the prey of lung cancers that need to be properly diagnosed in order to avoid an excessive death rate across the globe [2]. From various healthcare surveys and medical reports, researchers are of the opinion that around 55–61% of people are facing death threats due to lung cancers day by day. Lung cancer can be determined as the second most common type of cancer around the world [3]. However, 63% of physicians have stated that they have to deal with around 600,000 new cases of lung cancer per year [4]. In order to mitigate the high growth of lung cancer in developed countries, physicians tend to focus on applying blockchain materials through the CNN method for offering a better patient care service. Today, lung cancer has been regarded as one of the serious death causes of cancer worldwide. Scientists have determined that in order to deal with around 1.9 million new lung cancer cases globally, it is important to undertake the help of blockchain materials for applying the CNN method [5]. It has been recorded that around 13% of all critical lung cancer cases can be detected and diagnosed by using this blockchain technical approach [6]. Lung cancer is a worldwide burning issue that is increasing rapidly. For that reason, physicians felt the need for implementing the IoT facilities for early-stage disease detection of lung cancer. In the recent years, industries have been pushing toward machine orientation to make the processes simpler and more efficient by increasing quality in reduced time. Food quality and safety are one of the many steps in food processing that is majorly labor intensive. Artificial intelligence (AI) and deep learning for determining food classification, quality, and nutrition have shown their implications in the literature. Their application would increase food industry automation, increase food safety, and generate higher income through tourism [7, 8]. Thus, researchers in this research study are going to investigate the key role played by blockchain materials in detecting lung cancer and monitoring food quality easier than before by applying the CNN method.

1.1. Organization. This study has been arranged in a way that section 1 has discussed the Introduction. Section 2 is about Literature Survey followed by section 3 that explains the Research Methodology. Section 4 elucidates Analysis and Interpretation followed by section 5 that explains Discussions and Findings, and the section 6 is about Conclusions.

2. Literature Review

Recently, medical science has experienced a huge demand for applying blockchain materials in various sectors of healthcare in order to ease disease detection and cure highly growing issues nowadays. Researchers have analyzed over 1 million cases of lung cancers each year that are highly increasing the death growth rate across the globe due to lung cancers. The findings from those medical records and cases at once show that around 3–5% death rate is increasing per year due to the attack of lung cancer [9]. In order to comprehend the significance of using blockchain materials, researchers tend to focus on relevant decisions and opinions of global physicians for suitable detection of lung cancer in patients at the initial stage. However, early detection of the symptoms due to lung cancer is crucial in order to avoid the high mortality rate to some extent. Doctors and healthcare practitioners strongly support the utilization of the internet of things in order to diagnose lung cancer at an early stage. Researchers have come to a point that the global healthcare sectors must arrange proper training facilities regarding IoT and blockchain device implementation Figure 1.

However, the symptoms of lung cancer avoid appearing until the complete spreading of the disease, which increases the causes of death among patients. For that reason, physicians undertake effective decisions to detect lung cancer and predict its symptoms at the early stage by using the blockchain CNN method in Figures 1 and 2. Physicians have strongly supported the use of convolution neural networks as an effective algorithm of deep learning for taking important medical input images [11]. However, with the assistance of blockchain materials, physicians can assign various learnable biases and weights related to various aspects of lung cancer in those medical images. Thus, by differentiating among each image, doctors can easily undertake and predict related essential treatment procedures while curing lung cancer globally. On the contrary, the artificial CNN applications can be also used widely in detecting diseases, predicting computer visions, and relevant clinical image recognition [12]. Proper and accurate image recognition without any clinical errors can be highly effective for global physicians while detecting harmful factors related to lung cancer in patients.

Apart from various beneficial impacts on lung cancer detection, the facilities of blockchain materials also can be highly used in numerous aspects of healthcare. Among various growing medical cases, detection of lung cancer and predicting proper treatment procedures have enhanced the overall efficiency of the healthcare industry by 57.19% toward sustainable future growth [13]. It has been observed that blockchain materials can use all the powerful networks available in different healthcare sectors for exchanging and preserving previous records and the history of patients' big data. Researchers have focused much on the growing applications of blockchain materials in healthcare so that

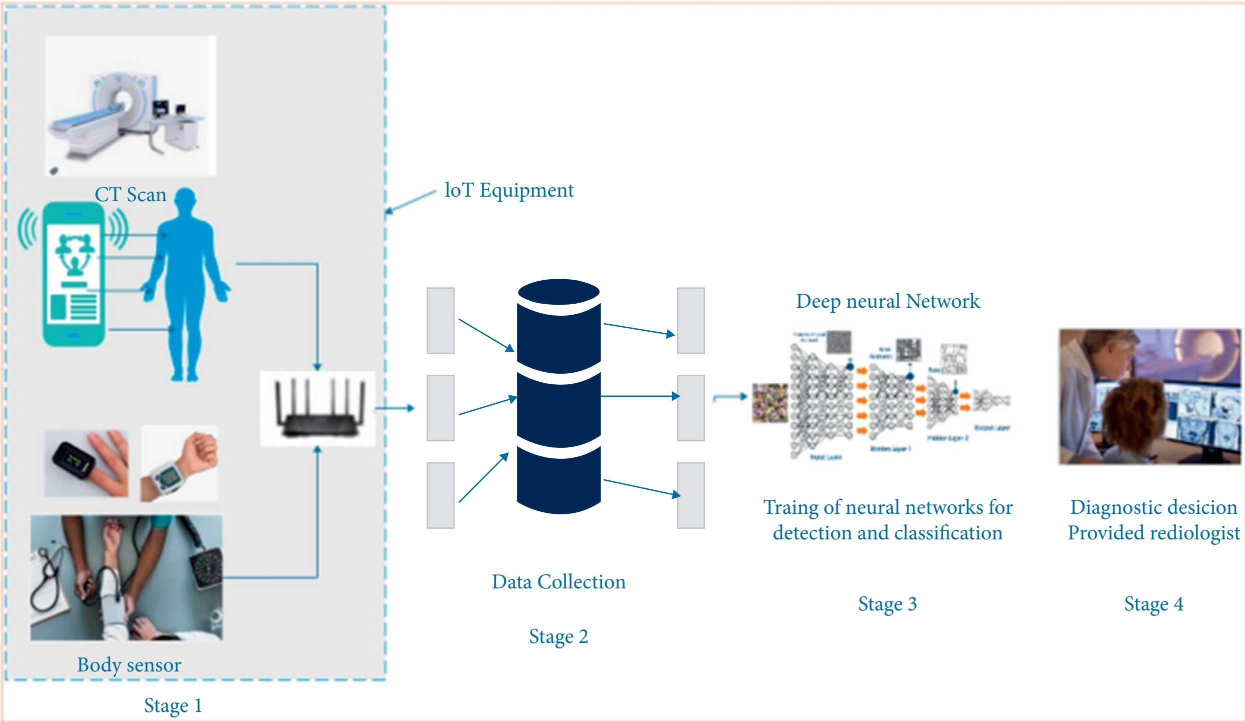

Figure 1: Detection of lung cancer by blockchain facilities [10].

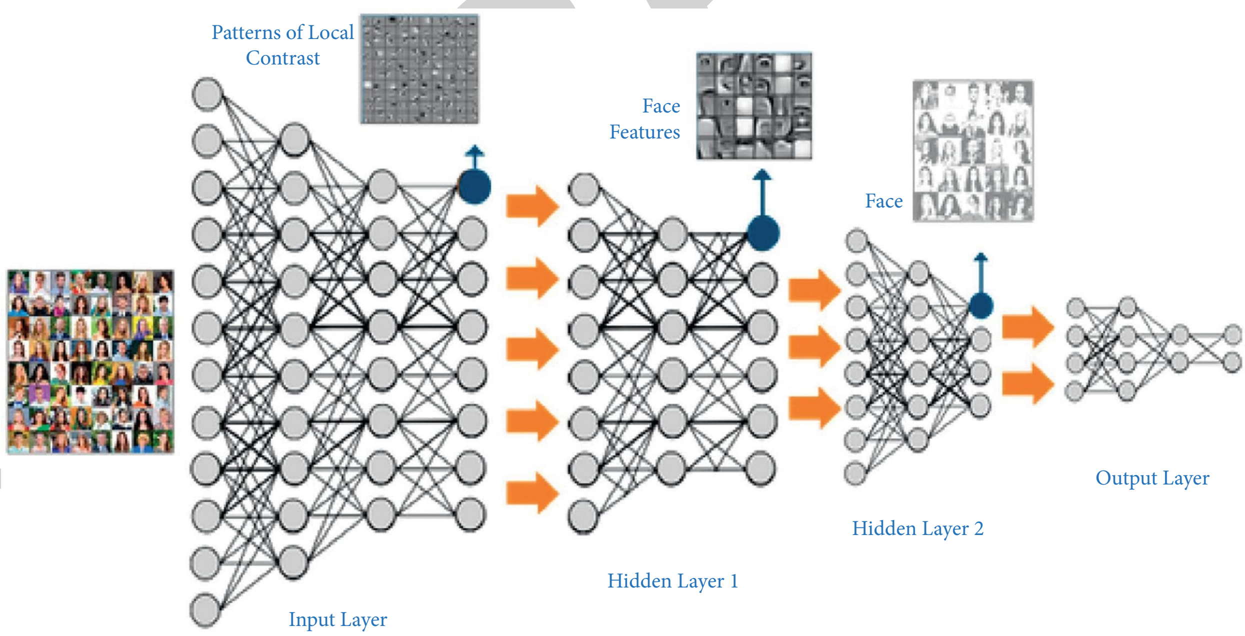

Figure 2: Lung cancer prediction by CNN methods [12].

critical errors and fatal diseases can be identified accurately across the clinical field. On the other hand, blockchain facilities play a major part in dealing with clinical deception in trials for providing better patient care outcomes.

Researchers while conducting the investigation related to the use of blockchain in lung cancer detection have identified a vast range of utilization in relevant healthcare practices. The CNN method is associated with lung cancer detection while the technology of the ledger operates all the patients' medical history securely across healthcare-based neural networks. After detecting symptoms and reasons for lung cancer in a patient's body, physicians undertake various predictive measures for better treatment procedures as shown in Figure 3. As a result, they used to apply numerous benefits of blockchain materials for managing the proper supply of relevant medicines for lung cancer. However, the practices

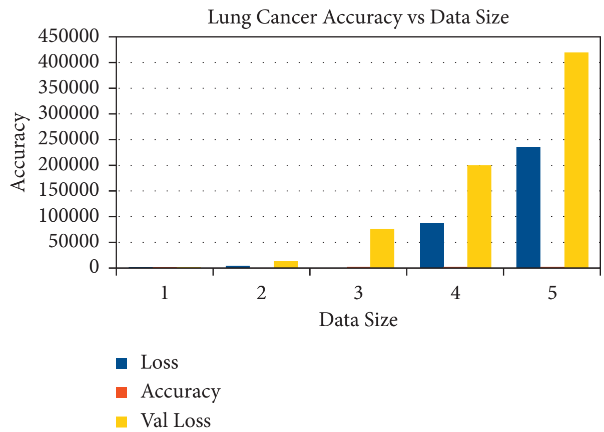

Figure 3: Graph showing lung cancer accuracy prediction by using blockchain materials [14].

and applications of the blockchain CNN method can at once aid healthcare researchers to unlock various codes related to genetics in the sustainable future. While identifying critical diseases, blockchain also processes overall infrastructure and network securities. Besides predicting disease symptoms, the CNN method also can identify patients' verification and participants' authentication regarding studying previous cases related to lung cancer [14]. Moreover, suitable access to electronic health information and treatment procedures after detecting lung cancer can also be conducted with the help of blockchain materials worldwide.

With the growing concerns about mitigating lung cancers around the globe, physicians have focused their medical attention to look out for the key signs of the disease in a patient. After using blockchain CNN methods, physicians and scientists can properly classify lung cancer CT images as shown in Figures 2 and 3. Subsequently, blockchain materials help doctors to organize all the knobs of the affected lung to assess all the levels of life risk and threats. Ilinca thinks, by evaluating numerous parameters of CNN, that the accuracy of time and intricacy of precision can be highly determined for sensitive lung tumor cells detection [15]. Blockchain has found its utility in top global businesses around the world, widely known to disrupt the world market. Its application in the food sector has proven advantageous in the following areas [16, 17]:

(i) Food tampering, fraud, and misrepresentation
(ii) Assisting with large-scale withdrawals of tainted goods
(iii) Detecting food waste in supply chain operations
(iv) Reducing the likelihood of food spoilage
(v) Allowing businesses to verify sustainably grown or valid goods source
(vi) Enhancing food tracing, communication, and collaboration
(vii) Optimizing the process
(viii) Simplifying food marketing operations

The CNN is one such deep learning technology, which has also been applied to several business sectors, including the food sector, mainly to identify different food types and determine their quality by processing multiple food images across any platform [18]. Combining CNN with blockchain would only end up increasing the overall efficiency of this entire process. A blockchain methodical array conducted through convolution neural networks reflects high usefulness for detecting and diagnosing lung cancer via taking various breath samples of patients. The sensors presented in the CNN array can conduct effective discrimination toward the organic compounds that are volatile and can be traced in the breath samples of patients [19]. The overall composition of the blockchain pattern can be efficiently determined after using CNN method while evaluating real-time symptoms of exhaled breath for detecting any growth of cancer cells Figure 4. Nowadays, machine learning with blockchain CNN technology can easily detect and diagnose lung cancer symptoms by classifying and recognizing clinical images through computed tomography Figure 1. Lung cancer detection and treatment have become a trendy topic in healthcare. Physicians have witnessed various procedures of automated detection of lung cancer that at once offer numerous advantages in medical fields.

Both the researchers and medical professionals are showing genuine interest in adapting beneficial approaches for lung cancer detection and prediction by using blockchain CNN facilities. On the other hand, the particular CNN model can enable automatic identification of lung cancer easier than in past years, which was a highly challenging practice for doctors. Researchers in the research paper effectively collected and analyzed relevant medical data and details related to lung cancer by automated blockchain facilities. Besides, the classification of related clinical images has also become easier in the recent period through computed tomography analysis Figure 4. Nevertheless, there may be few backlogs in AI while dealing with the healthcare like it requires human scrutiny, may oversee societal variables, and may lead to job loss. As per Le and Hsu, the application of the model with a 98.04% sensitivity level can be highly effective in reducing human errors by 99.56% [20]. Moreover, with an accuracy rate of 97.23%, researchers can effectively investigate the use of blockchain facilities in lung cancer prediction for a sustainable healthcare service in the future.

3. Research Methodology

Physicians and scientists were investigating over the past few years to detect the proper use of blockchain materials and IoT in lung cancer detection in order to apply proper treatments, along with their implementation in the food sector. Researchers have focused on performing a regression analysis in this research study for evaluating the contributions of blockchain CNN methods. In this study, researchers have evaluated the extension of blockchain with the aid of CNN for lung cancer extrapolation and making food safer. CNN algorithm has been skilled with a massive number of images by alterable the filters, features, epoch values, padding value, kernel size, and resolution. Subsequently, the

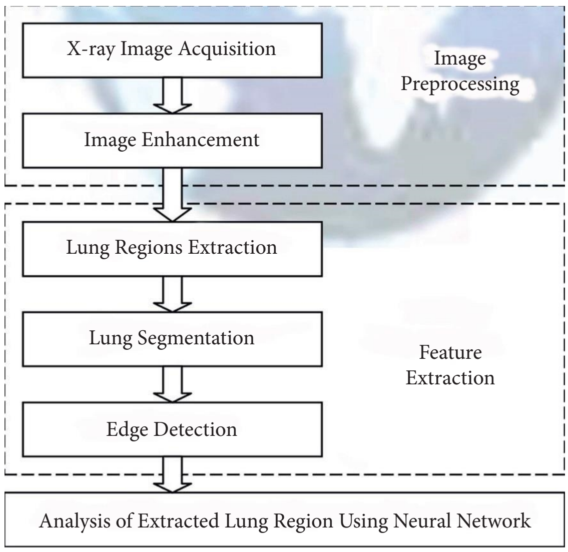

Figure 4: Framework for lung cancer detection by applying the blockchain CNN method [19].

CNN correctness has been measured to comprehend how these factors disturb the accuracy. A linear regression examination has been carried out in IBM SPSS where the independent variables selected are image dataset amplifications. While applying a model of regression analysis, researchers have concentrated more on evaluating numerous linear regression practices for taking suitable decisions in the sustainable future. On the other hand, various pieces of medical evidence also have been gathered for recognizing CT scan images related to lung cancer and noncancer cases [21]. For exploring the accuracy rate in the CNN outcomes, researchers tend to minutely analyze all the factors for regulating the performance of regression analysis toward easy detection in predicting of lung cancer diseases and analyzing food quality. Besides conducting a linear regression analysis, researchers also tend to focus on evaluating all the outcomes of the calculations of descriptive statistics with both the minimum and maximum values. The entire regression analysis has been outlined with a 95% level of confidence in the software IBM SPSS. Researchers also have undertaken various effective decisions while collecting almost 1,00000–2,00000 medical images from healthcare sectors and food images from social media and restaurants in order to understand the use of blockchain in lung cancer detection and food quality. On the other hand, the CNN accuracy level has also been tested by the researchers against various augmentations of the clinical image dataset. Apart from this, numerous lung cancer-related features and epochs also have been tested and evaluated with the help of the regression analysis model. Changes and modifications in the size of images' pixels (90×90 to 512×512), and the kernel size (0–7), have been considered positively for conducting the overall research method. Researchers have focused much on analyzing both the findings of primary and secondary research filters (10–40) and padding. Therefore, to check the validity of the collected primary results, they have also conducted secondary research in order to measure the CNN accuracy as a dependent variable and the rest as independent variables.

This research has effectively evaluated the significance of two important variables related to the CNN method toward focusing more on particular characteristics related to the early detection of lung cancer. CNN can automatically recognize and organize features using artificial neural networks with the aid of a trained dataset catered from several samples of patients with critical issues with almost no intrusion of human efforts. It is also important to examine various patient-related data including the value of heart rate, CT scan images, X-ray, and blood pressure data collected through ML algorithms of IoT [22]. The p value significance has been successfully evaluated, where the below p value indicates 0.05 ($p < 0.05$). However, the value reflects statistical importance related to the particular topic. The entire analysis also aids researchers in comprehending the importance of the value of Pearson's correlation, which is almost close to +/−1. The negative value reflects the accurate relationship in the research study that has been traced to be negatively correlated with the variables. Moreover, researchers also explored the storing and sharing of various medical nodes by using blockchain facilities. The flowchart for the research followed is shown in Figure 5.

4. Analysis and Interpretation

The regression analysis has been carried out with a 95% confidence level in IBM SPSS. The accuracy of CNN has been tested against image dataset augmentation, epochs, features, pixel size (90×90 to 512×512), kernel size (0–7), filters (10–40), and padding. Therefore, the CNN accuracy is a dependent variable and the rest are independent variables. Below Table 1 shows the value of the descriptive statistics.

Table 1 shows the minimum value of image data augmentation taken for the experiment, which is 10,000, or the lowest image set contains 10,000 CT, X-ray scan images of lungs, and food images. A maximum of 2,00,000 CT, X-ray, and food images have been taken in the CNN dataset with the help of blockchain. When the entire testing and training were over, 99.9% maximum accuracy was observed, and a minimum of 53.4% accuracy has been obtained. From this Table 1, it cannot be concluded which factor is responsible for improving the accuracy of CNN. A maximum of 13 and a minimum of 1 epoch have been considered. A maximum of 1080×1080 and a minimum of 90×90 resolution images have been provided. Among them, mostly 512×512 resolution images have been used. A total of 9 kernels have been considered with 10–40 filters and 0–1 padding.

Table 2 shows the coefficient values, which also define how the different parameters impact the accuracy of CNN. In this scenario, blockchain has been used for storing and collecting data, and then, data were directly transferred to CNN with blockchain encryption. The t value here shows how different the parameters impact the accuracy of CNN. "Significance value" shows whether the variables are statistically significant to each other or not. The image data augmentation is not statistically significant with CNN accuracy ($p > 0.5$). The t value, here, is positive (0.641), which

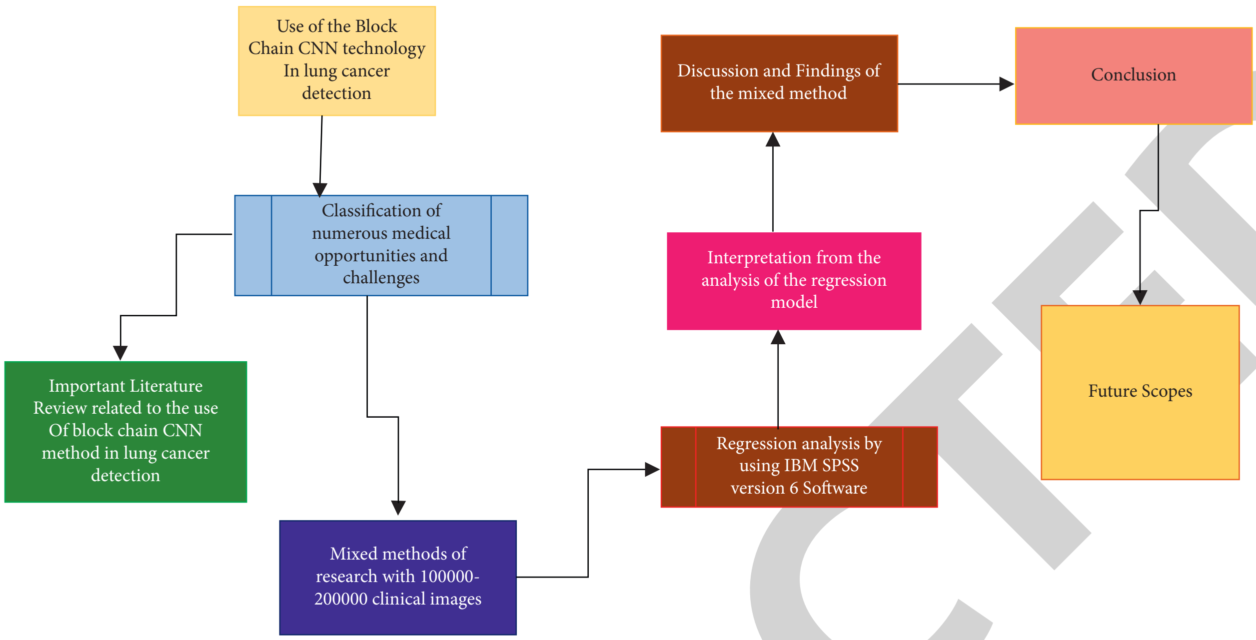

Figure 5: Research flowchart.

Table 1: Descriptive statistics' output showing minimum, maximum, mean, and other values.

		Statistics							
		Image data augmentation	Epochs	Features	Pixel (x)	Kernel size	Filters	Padding	Accuracy of CNN
N	Valid	20	20	20	20	20	20	20	20
	Missing	0	0	0	0	0	0	0	0
Mean		105000.00	7.95	26.65	471.70	4.15	29.55	0.55	82.795
Std. deviation		59160.798	3.517	9.533	312.884	2.412	8.101	0.510	17.3127
Variance		3500000000.000	12.366	90.871	97896.537	5.818	65.629	0.261	299.731
Minimum		10000	1	10	90	1	10	0	53.4
Maximum		200000	13	50	1080	9	40	1	99.9

Table 2: Coefficient values.

Coefficients					
Model		*t*	Sig.	95.0% confidence interval for B	
				Lower bound	Upper bound
1	(Constant)	8.609	0.000	40.685	68.258
	Image data augmentation	0.641	0.534	0.000	0.000
	Epochs	6.705	0.000	3.492	6.855
	Features	0.618	0.548	−0.275	0.492
	Pixel (x)	−1.242	0.238	−0.026	0.007
	Kernel size	1.570	0.142	−0.732	4.511
	Filters	−1.788	0.099	−1.604	0.158
	Padding	−0.235	0.818	−5.908	4.756

Dependent variable: Accuracy of CNN.

suggests that when image augmentation increases, the accuracy of CNN increases. As previously stated, a total of 2,00,000 images have been taken for training; thus, when more images were provided, accuracy improved. However, the accuracy is not strongly dependent on the image augmentation and number of images ($p > 0.5$). The accuracy is strongly dependent on the number of epochs. A higher t value (6.705) and $p < 0.001$ suggest that increasing epochs significantly increases the accuracy of CNN. The number of features is not statistically significant with the accuracy ($p > 0.5$); however, increasing features can increase the accuracy to some extent ($t = 0.618$). The pixels of the images are showing a negative correlation (−1.242), which suggests that when pixel size decreases, the accuracy increases. The relation is not statistically significant although ($p > 0.2$). As previously mentioned, mostly, 512×512 images have been used; therefore, the interpretation and analysis are not accurate.

Kernel size is positively correlated with the CNN accuracy ($t = 1.570$). The regression here is weakly significant with the accuracy ($p > 0.1$), which suggests that when kernel size increases, the accuracy improves. The number of filters is also slightly significant with the accuracy ($p > 0.9$) and the correlation is antiproportional ($t = -1.788$). It suggests that when the number of filters decreases, the accuracy increases. Lastly, the padding of CNN is not statistically significant with the accuracy ($p > 0.8$). However, the t value suggests when padding is "0," the CNN shows higher accuracy, and when padding is "1," the accuracy decreases ($t = -0.235$).

Table 3 shows the ANOVA output where it can be observed that the entire model is statistically significant ($p < 0.001$) with an F value of greater than 3.9 (34.327).

Table 4 shows the entire model summary with an adjusted R square value. The R square value suggests the accuracy of the model, which is 0.925. Hence, it can be suggested that the model is 92.5% accurate (adjusted) with a 4.75% error. Figure 6 suggests that the model is centered and not skewed in any direction. Figure 7 suggests that the values are not scattered and the model is statistically significant.

Table 5 and Figure 8 show how the number of epochs affects the CNN accuracy (positive correlation till 12 epochs).

5. Discussion and Findings

The blockchain here is extended for developing connections with CNN to provide patient information and food statistics. Initially, CNN was used with AI, but this study is combining CNN with blockchain, which will ultimately allow the CNN to classify the image for lung cancer prediction and determine food quality. Blockchain is only responsible for storing and sharing data between different nodes [23]. Patient medical data such as heart rate value; computer tomography or CT scan data (Figure 9); X-ray scanned images; food images; blood pressure data; oxygen level (using oximeter); and other essential data are collected by using the internet of things or IoT devices. These data are further stored in the blockchain cloud environment and then shared with professionals. Clinicians analyze these data using deep learning algorithms to predict lung cancer. Similarly, analysts do the same to check food status and nutrition level.

The current analysis showed that image augmentation was not statistically significant with the CNN accuracy in lung cancer prediction. The possible reason is when the image dataset and augmentation (Figure 10) were increased, overfitting occurred, which in turn reduced the accuracy [25]. However, the t value suggested that when image augmentation and the number of images increase, the CNN accuracy increases. A similar study has been carried out by Moreno-Barea et al., which also showed that data augmentation increases the accuracy of deep learning architectures when the dataset is small (less than 1000) [26]. Concerning this, Bandara and other researchers stated that

Table 3: ANOVA regression output.

ANOVA						
Model		Sum of squares	Df	Mean square	F	Sig.
	Regression	5424.011	7	774.859	34.327	0.000
1	Residual	270.878	12	22.573		
	Total	5694.889	19			

Dependent variable: accuracy of CNN. Predictors: padding, filters, image data augmentation, features, pixel (x), epochs, and kernel size.

Table 4: Model summary and R values.

Model summary[b]				
Model	R	R square	Adjusted R square	Std. error of the estimate
1	0.976[a]	0.952	0.925	4.7511

a. Predictors: (constant), padding, filters, image data augmentation, features, pixel (x), epochs, kernel size. b. Dependent variable: accuracy of CNN.

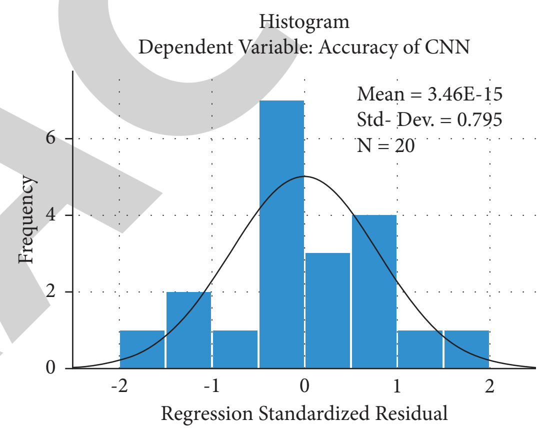

Figure 6: Residual statistics' plot showing a centered bell-shaped curve.

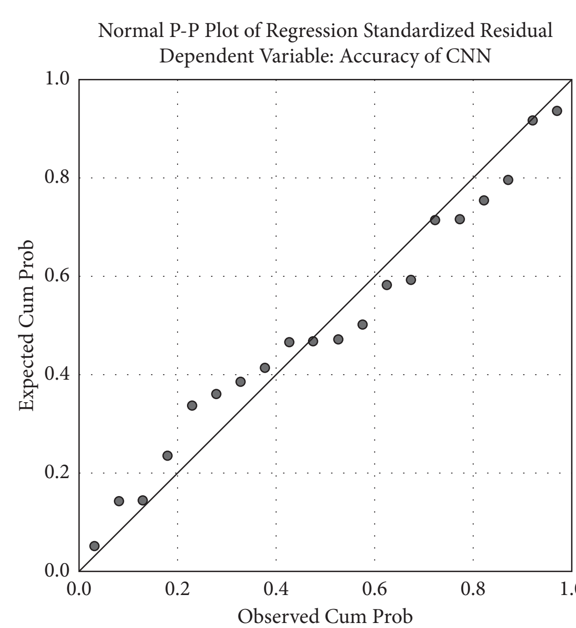

Figure 7: Scattered plot showing the model is statistically significant.

Table 5: Epochs and accuracy of CNN.

Epochs	1	2	3	4	5	6	7	8	9	10	11	12	13	11
Accuracy of CNN	55.2	53.4	55	60	67	68	70	85	95	98	98.5	98.2	96.5	99

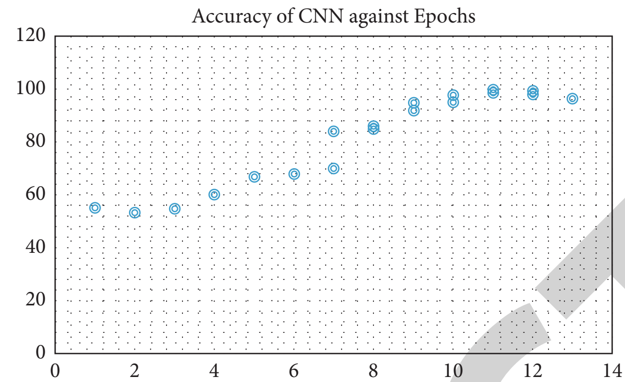

Figure 8: Accuracy of CNN increases with the number of epochs.

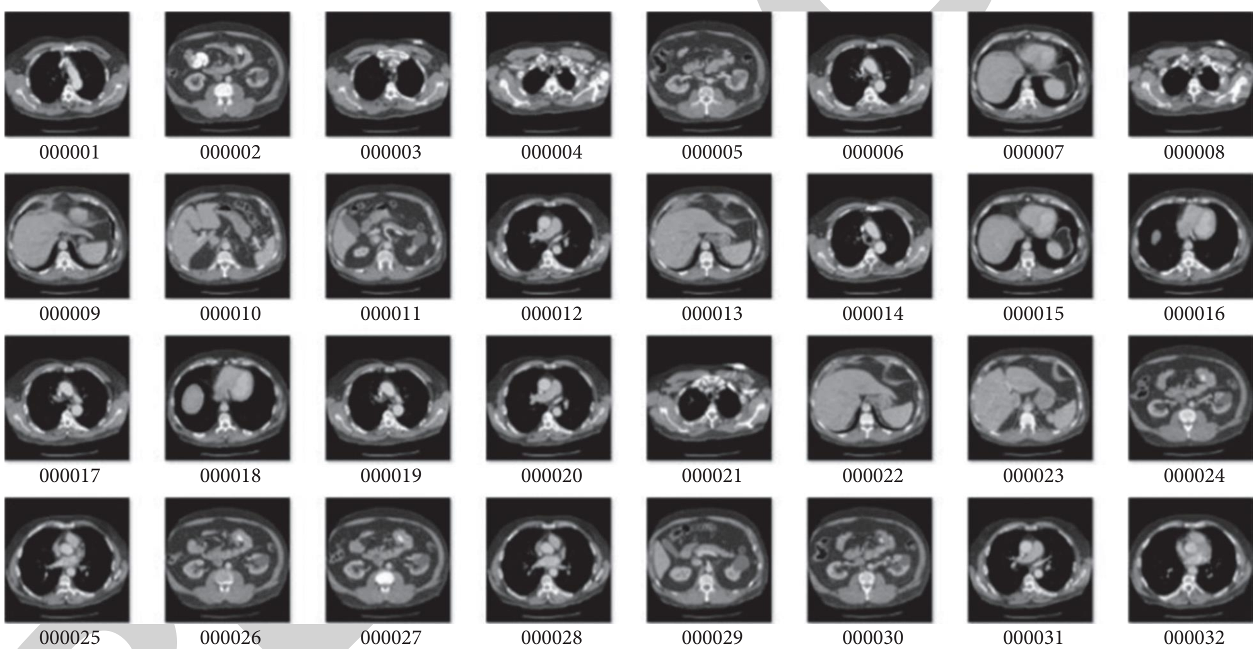

Figure 9: CT scan images for CNN training [24].

data augmentation improves the baseline accuracy of CNN [27]. It has been observed that a large number of epochs increase the accuracy of CNN. A total of 13 epochs have been considered here, and when the epoch number is 10–12, the CNN accuracy was 98–99.9%. A study by Barman et al. showed that when 11–12 epochs are taken, the CNN shows maximum accuracy [28]. When 11–12 epochs are taken the "data passing" is enough; however, when the epochs are increased, the data become "overfitting" for the CNN architecture. In this case, the researchers observed that 10–12 epochs are enough for obtaining 99% accuracy in lung cancer detection. The number of features showed no statistically significant relationship with accuracy; however, the t value was positive. Therefore, the features improved accuracy by providing the CNN with more accurate details of CT and X-ray scanned images. A study by Bochkovskiy et al. showed that a large number of features increase the accuracy of CNN [29]. Therefore, the analysis and output in this currency research are reliable.

The pixel size did not show any statistically significant relationship with the accuracy; however, the t value is negative. This result seems to be "*false negative*"; it suggests that when the resolution of images decreases, the accuracy increases. However, when resolution increases, the CNN receives larger pixels and features (details), which are expected to improve the accuracy. The previous paragraph described that a larger number of features improve CNN accuracy. To support this sentence, evidence from Borji can

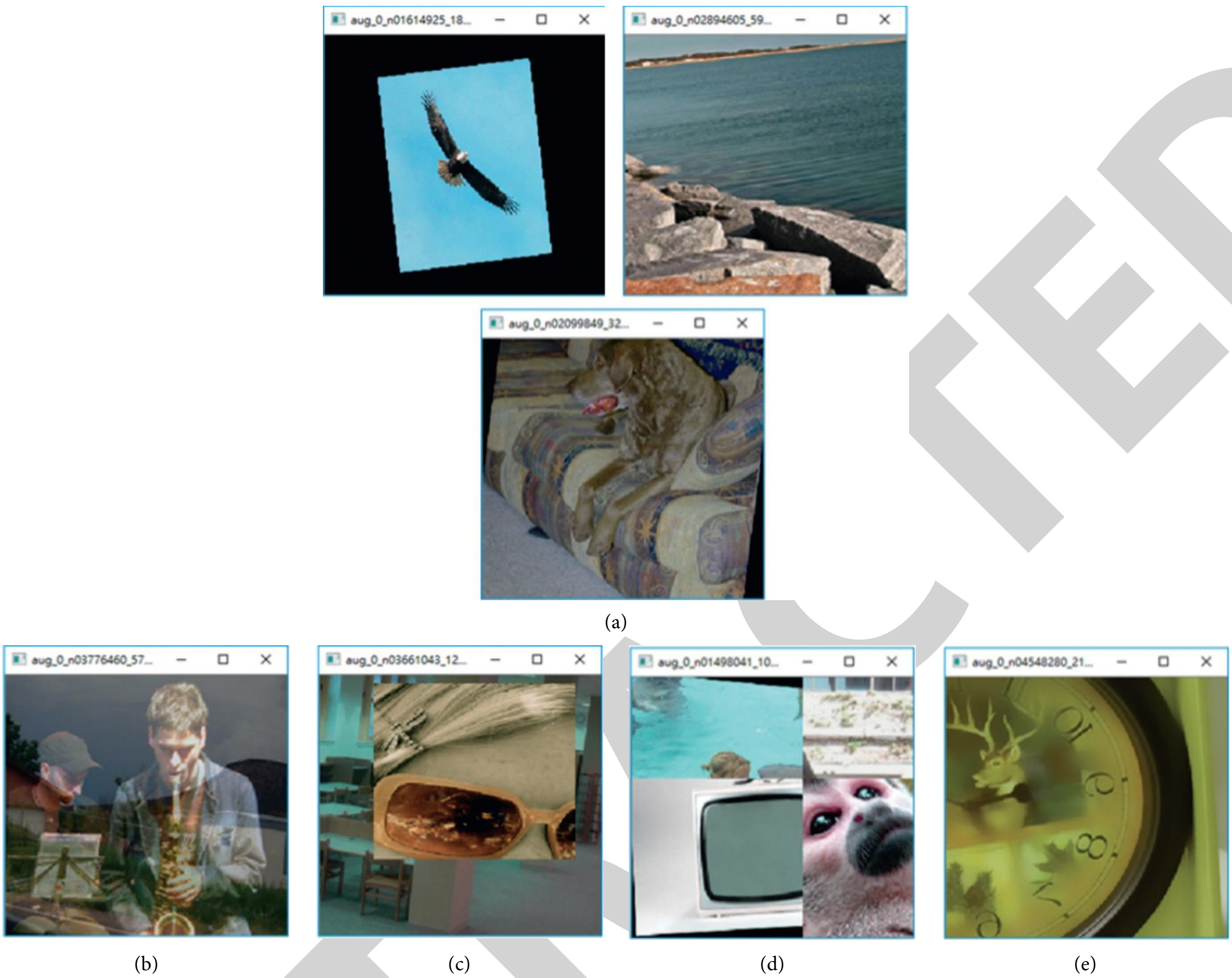

Figure 10: Data augmentation techniques [29].

also be observed here, which states that increasing resolution increases the accuracy. Therefore, the findings from this current research related to resolution are false and larger resolution increases accuracy [30].

The kernel size has shown a positive correlation with lung cancer prediction accuracy. A total of 9 kernels have been used, and increasing kernel size improved the accuracy of CNN. Kong and Jang showed that increasing the kernel increases the accuracy of neural networks [31]. Although strong evidence has not been obtained regarding this, however, this study and other available studies showed kernel size increased the accuracy [32]. In this study, filters are negatively correlated with accuracy, which suggests that when more filters are used, it can cause overfitting. Lastly, 0–1 padding has been used and it showed no significant improvement in the CNN accuracy. However, a study by Wei and Lin et al. showed 1 padding improved accuracy than 0 padding. In this study, authors have predicted heart disease using deep learning that still researchers are examining deep neural networks and CNN [33]. A lot of research has been conducted in this field, and various researchers have proposed several methodologies, which can be taken as a reference to conduct further research by joining the various gaps, which lags behind, and further it can be determined that convolutional neural network or CNN and blockchain are two important parts that together securely fasten the disease detection procedures like lung cancer and help in determining the food superiority with the assistance of blockchain for numerous data. In this research, we have strained to analyze the extension of blockchain with the help of CNN for lung cancer prediction and making food harmless.

6. Conclusions

This study has been carried out with a larger number of the training dataset to understand how the number of epochs, number of images, pixels, features, and padding affect the CNN accuracy in lung cancer prediction and analyze food safety. The study found that when the number of epochs is 10–12, the CNN obtained more than 99% accuracy, and when the epoch number exceeds 12, the accuracy decreased. A large number of image augmentations improve accuracy when filters and features are applied correctly; otherwise, overfitting will decrease the accuracy. The padding did not show any significant improvement in accuracy; however, after receiving evidence from available studies, it has been observed that "1" padding improves accuracy than "0" padding. The entire model is 92.5% accurate with a standard error of 4.75% because some false results have been obtained.

The primary research has been performed for understanding how the independent variables affect the accuracy (dependent). The study may not be fully correct, and thus, the researcher has carried out secondary research, which provided evidence supportive to the analysis and against the analysis. Therefore, it can be concluded that image augmentation and a large number of images improve the CNN accuracy in lung cancer prediction and food safety determination when features and filters are applied correctly. A total of 10–12 epochs are desirable for CNN to receive 99% accuracy with 1 padding.

6.1. Future Scopes. The future scopes of CNN and blockchain include efficient image classification and data encryption, respectively. Blockchain has been shown to improve the value of an organization, and the reports suggest that the blockchain will help a business to grow faster. Studies also show that transactions using blockchain are more secure and safer than banking transactions. Moreover, due to its minimal compliance cost, the blockchain can dominate in the future.

On the other hand, CNN, which is a deep learning algorithm, can automatically classify and identify features without any human intervention. For example, when CT scan images or X-ray images are provided to the CNN, the CNN can automatically detect the new features, whereas other neural networks require human supervision to capture the features. Moreover, CNN is more effective and efficient than other architectures. Thus, CNN along with blockchain technology can provide long-term success to healthcare and other organizations. However, security is a major concern that needs to be improved for encrypted operations.

Data Availability

The data shall be made available on request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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