Retraction

Retraction: The Face Mask Detection Technology for Image Analysis in the Covid-19 Surveillance System (J. Phys.: Conf. Ser. 1916 012084)

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This article (and all articles in the proceedings volume relating to the same conference) has been retracted by IOP Publishing following an extensive investigation in line with the COPE guidelines. This investigation has uncovered evidence of systematic manipulation of the publication process and considerable citation manipulation.

IOP Publishing respectfully requests that readers consider all work within this volume potentially unreliable, as the volume has not been through a credible peer review process.

IOP Publishing regrets that our usual quality checks did not identify these issues before publication, and have since put additional measures in place to try to prevent these issues from reoccurring. IOP Publishing wishes to credit anonymous whistleblowers and the Problematic Paper Screener [1] for bringing some of the above issues to our attention, prompting us to investigate further.

[1] Cabanac G, Labbé C and Magazinov A 2021 arXiv:2107.06751v1

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The Face Mask Detection Technology for Image Analysis in the Covid-19 Surveillance System

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Abstract. Face mask recognition has been growing rapidly after corona insistent last years for its multiple uses in the areas of Law Enforcement Security purposes and other commercial uses. Face appears spreading others to corona a novel approach to perform face new line detection and face mask recognition is proposed. The proposed system to classify face mask detection using COVID-19 precaution both in images and videos using convolution neural network. Extensive experimentation on the datasets and the performance evaluation of the proposed methods are exhibited. Further, we made a successful attempt to preserve inter and intra class variations of face mask detection using symbolic approach. We studied the different classifiers like Support Vector Machine and a Symbolic Classifier. The project is developed as a prototype to monitor temperature measurement and to detect mask for the people. The first method is performed using temperature sensor used to detect the present temperature of the body and automatically spray the sanitizer. In the second method, the work is designed to provide a safety system for the people in order to avoid COVID-19. We proposed continuous monitoring of the people conditions and store the people’s data in the server using the Deep learning concept. In order to investigate the performance the proposed methods an extensive experimentation is conducted on 50 various Image dataset. We conducted experimentation under varying of training and testing percentage for 10 random trails. From the results we could observe that, the results obtained for symbolic approach is better than the conventional approach.

Keywords: MATLAB, LABoratory software tool, convolutional neural network, face mask detection, COVID-19 precaution.

1. Introduction

The input face mask identification system is an video obtained and the final result an identification or detection of the mask of detected video database. From these issues, mitosis detection is significant feature in detecting the level of face progression. The process of identifying the variations in faces and train count is very tough for pathologists because of two reasons, (1) the size and shape of the mitotic nuclei are same as like non-mitotic nuclei, and (2) pathologist would develop a huge amount of histopathological images. Automated mitotic cell detection and segmentation methods are proposed for multispectral histopathological images in [1]. In this paper, there are three different components which are segmentation and classification, mitotic cell detection and discriminative image generation [2].
To avoid various diseases using face mask and cells must be destroyed or removed by using possible therapeutics viz., surgery, radio-therapy, chemo therapy, etc. to avoid the spread of the affected cells. It is roughly calculated that 40,000 deaths occur annually. To reduce the death rate, early diagnosis methods play a vital role. For this purpose, X-ray, MRI, CT scan, Ultra-sound, etc. are used. The major disadvantages in these techniques lie in the fact that only when women experience a lump they can be used Figure 1.

Medical Diagnostic Decision Support (MDDS) system serves as the diagnostic procedure and helps the physicians to correctly identify the type of breast mass. The major problem in these systems is the superfluity of features which may be extraneous and unrelated. This increases the cost for data confinement and entanglement in computation [3]. To overcome these problems, feature selection technique is used to select the informative features for classification process. Feature selection promotes: Simplification in data visualization and understanding, reducing the storage requirements and decreases the training time. To improve the efficacy prediction and to identify the abnormal lesions in breast, Genetic Algorithm is used to solve optimization problem flawlessly. ease of implementation, data understanding and reduction in computation complexity [4].

The organization of the paper is described as follows: Section 2 analyse various merits and demerits of literature and considered its future suggestions for advancement of such methodologies. The proposed concepts and its problems are coined out under section 3. Some result and discussion for proposed system analysed in all the methodologies are verified with the python tool and tabulated under chapter 4 Finally, the segmentation and its outcome are summarized in section 5.

2. Literature Survey
The followed part, we briefly present the existing related works on classification and tracking of face mask.

There are several approaches are used for facial masks detection. For instance, [5] used electromagnetic and radiometry techniques for facial masks detection. [6] employed deep neural networks (ANN) using machine learning techniques in Facial Masks detection. Also comparison was made between ELM ANN and BP ANN based on performance measurements. [7] Neural Networks are used to exacted information from ultrasound to classify the abnormal lesions.

A island based model for classification of face mask and distinguishing between various classes of face feature detection using artificial neural network. That artificial neural network to detect the abnormality masks lesions based on edge characteristics, shape and darkness of a lesion. Ultrasound imaging system in order to reduce the dependency of the operator. Linear Discriminant Analysis to classify the informal face mask feature detection using texture and morph metric parameters.
[8] presented a paper on face detection segmentation by using genetic algorithm and ANFIS classifier for locating face feature detection and made comparative analysis between various classifiers. [9] presented a face feature detection method based on Ultrasound RF Time series and SVM Classifier. The characteristics curve of 0.86 using support vector machine (SVM) and 0.81 using RF classification algorithm on 22 subjects was determined.

3. System Design
A feasible approach has been proposed that consists of first detecting the face mask region and check persons wear mask or not wear mask and after checking human body temperature using Pc and get interrupt to Arduino controller then adding to hand sanitizer. RFID is used for calculating the attendance. Then mask pc using CNN algorithm [10]. Temperature sensing (i) temperature normal – green led will glow (ii) temperature abnormal-red led and buzzer. The Figure 2 is clearly shows that, intensity variations across the mitotic and nonmitotic nuclei. Typically, the mitotic nuclei yield darker pigments compared to nonmitotic nuclei.

![Figure 2](image)

**Figure 2.** block diagram for proposed face mask detection for COVID-19 precaution

The Bounding box (a patch of 120x120) is used to extract the mitotic nuclei. The quality of image acquisition affects the segmentation accuracy, pre-processing of histopathological images, earlier to segmentation, becomes predictable. Based on an Expectation-Maximization algorithm (EM) nuclei from these patches are further segmented [11]. EM algorithm determines the probabilities of each pixel ‘p’ representing one of the C classes, in a given image patch. In this proposed system, the no: of classes is considered to be 3, \( \omega_c = \{ \text{nuclei, stroma, and background} \} \). In this algorithm, two steps are used, (1) expectation and (2) maximization step. In step (2) algorithm, the prior Gaussian mixture parameters are measured, \( \eta = \mu \Sigma \).

\[
P(\omega_c | f(p)) = \frac{Pc N(f(p)|\mu_c, \Sigma c)}{\sum_{i=1}^{C} Pi N(f(p)|\mu_i, \Sigma i)}
\]

3.I. CNN MODEL ARCHITECTURE
Histopathological images are categorized by three methods. The first method is nuclei segmentation that signifies cellular changes, the second method deals about texture properties, and the third method
based on the dissimilarities of colour densities. A shape feature is one of the important features that define the behaviour of mitosis. The morphological variations are extracted by set of features and cellular structure of each blob i.e., Area, perimeter, solidity, and circularity. Finally, the best shape features are extracted, which is describes the mitosis behaviour. Texture features are extracted using of detected nuclei. The text features are divided into three types like co-occurrence matrix, run-length matrix, and local phase quantization. Gray-Level-co-occurrence matrices (GLCM) are commonly used method to extract texture features.

Figure 3. proposed CNN face mask detection for COVID-19 precaution
From Figure 3 shows the proposed CNN face mask detection for COVID-19 precaution and the various layers of Neuro-Fuzzy system are listed below and shown in Figure 4. In this proposed system, the accuracy of mitosis detections is validated by three different classifiers i.e., Support vector machine Neural network Decision tree and Proposed Method CNN. Among all these classifiers, SVM classifier is predicting an optimal hyperplane, which is linearly, separates all the features vectors, by projecting on higher dimensional space. K-NN classifier that calculate the outcome of the unknown sample, by calculating the distance between the unknown point and its nearest neighbour point. Compared with conventional classification methods, proposed CNN is used to minimize the empirical training error, minimize generalization error by finding the largest margin between the separating hyper planes. Finally proposed CNN classifier provides better results compared with other two methods.

4 Results And Discussion
The examination of proposed system is tested with MATLAB simulation environment and compared some other existing methodologies. Face mask recognition is an important strategy in the field of image analysis, computer vision, authentication and verification. Proposed system training set of both masked and non-masked images are initially trained and further system will be processed to segmentation, feature extraction and classification stage. In this proposed system, the accuracy of mask detections is validated by three different classifiers i.e., Support vector machine neural network Decision tree and Proposed Method CNN. Among all these classifiers, CNN classifier is predicting an optimal hyperplane, which is linearly, separates all the features vectors, by projecting on higher dimensional space [12].

Decision tree classifier that calculate the outcome of the unknown sample, by calculating the distance between the unknown point and its nearest neighbour point. Compared with conventional classification methods, CNN is used to minimize the empirical training error, minimize generalization error by finding the largest margin between the separating hyper planes. Finally CNN classifier provides better results compared with other two methods.
Figure 5. proposed system training and testing image dataset

Training phase image contains 50 numbers images are used to predicted the real time dataset Figure 5 shows the various test and train images that are used to analysis mask wear or not. Figure 6 shows the proposed system for mask detection.

Figure 6. proposed system face mask detection

Table 1. Performance analysis

| Approach                  | Accuracy (%) | Running Time(s) |
|---------------------------|--------------|-----------------|
| Proposed Method CNN       | 91.11        | 7.24            |
| Support vector machine    | 89.4         | 18.3            |
| Neural network            | 86.02        | 26.14           |
| Decision tree             | 83.35        | 33.10           |

The performance analysis of CNN face mask system is compared with the existent methods. Such methods used for analysis are one-class SVM method, neural network, decision tree and distance based approach method. The parameters used for performance analysis are classification accuracy and running time. Accuracy is measured where is perfectly identified count of true positive records and is the absolute count of positive records for infected person category. The performance analysis in Table 1 exhibits the enhanced accuracy and reduced running time of CNN method over other existent methods. The pictorial representation of performance analysis is shown in Figure 7. Depending on domain applications, there are various face mask...
classification techniques. Quantification and performance of analysis can be done statistically with a strong fundamental background. Before finding its application to data mining algorithms on the basis of statistics can be modified and scaled.

Figure 7. Proposed CNN face mask System Accuracy and running time analyses

Pictorial representation of overall face mask data classification accuracy of proposed CNN Clustering method is 1.92% better result for existing support vector machine only achieve 89.4%, other methods are 86 % of neural network and 83.3 % of decision tree method. The running time parameter of CNN 11.1 seconds other existsnts SVM method achieved 18.3 sec, neural network 26.14 seconds and decision tree method 33.10 seconds achieved their corresponding efficiency. Hierarchical Clustering method 4 times better running time result for SVM method. Proposed CNN features subset approach attained Bes accuracy result for shortest time period. Also, this work outperforms the conventional methods by releasing the bottleneck created to classification algorithm without any deficiency in classification performance

5 Conclusion
The proposed system to classify face mask detection using COVID-19 precaution both in images and videos using convolution neural network. Extensive experimentation on the datasets and the performance evaluation of the proposed methods are exhibited. Further, we made a successful attempt to preserve inter and intra class variations of face mask detection using symbolic approach. We studied the different classifiers like Support Vector Machine and Symbolic Classifier. The project is developed as a prototype to monitor temperature measurement and to detect mask for the people. The work is designed to provide a safety system for the people in order to avoid COVID-19. We proposed continuous monitoring of the people conditions and store the people’s data in the server using the Deep learning concept. In order to investigate the performance, the proposed method an extensive experimentation is conducted on 50 various Image datasets. We conducted experimentation under varying number of training and testing percentage for 10 random trails. From the results we could observe that, the results obtained for symbolic approach is better than the conventional approach.

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