

**FACE AUTHENTICATION WITH MASK WITH A DEEP
LEARNING APPROACH**

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ABSTRACT

Most of the software systems build with layer of security and user authentication. Face authentication can be considered as one of the widely use biometric based security layer which is widely use in border and access control systems, banking and retail systems, policing and national security systems, social media applications and smart phones and smart technologies.

The proposed face authentication system provides advance face authentication solution which is capable to recognize and authenticate users with wearing a mask or without wearing a mask. The solution will detect the faces and capture a image and identify that whether the capture face is with wearing a mask or not. If the fed facial image is with mask, it localizes the area of eyes and eye brows and calculate the pupillary distance. With considering those features the solution will authenticate the faces.

The proposed system uses YOLOv5 to classify the facial images with wearing mask and without wearing a mask and dlib with OpenCV has used to localize the area of the eyes and eyebrows from the fed image and SSIM has used to find the similarity between the fed image and the registered system users' facial images to recognize the user.

The system has well tested with covering the functional and structural requirements. Test results and evaluated results prove that the accuracy of the system is sufficient for a commercial level system. The critical evaluation process takes place with different evaluation criteria with different evaluation groups. The evaluation carried out is useful to identify the strengths and weaknesses of the project improvement

Keywords: – Face authentication, Computer Vision, Convolutional Neural Network, Face mask detection

Subject Descriptors: –

Computing Methodologies → Artificial Intelligence → Computer vision

Computing Methodologies → Machine Learning → Machine Learning Approaches → Neural Networks