



LAMSTAR: For IoT-based face recognition system to manage the safety factor in smart cities

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Abstract

Digital transformation played a vital role in smart cities because of its ability to process the different data to providing sustainability, connectivity, and mobility to data effectively. According to the diver operational productivity, preserving public safety government law enforcement integrated that face recognition is more important in smart cities. Traditional face recognition system fails to predict the exact facial features that leads to reduce the facial recognition accuracy. The false facial point detection process maximizes the computation complexity. Therefore, in this work, effective and artificial intelligence internet of things-based facial expression detection system is implemented to predict and match the face from the database. Initially, the facial images are captured from the internet of things sensor device, which is processed by applying the Perona-Malik diffusion algorithm. Then, face location is cropped from the image, geometric face shape model is created for predicting the exact face from the template face image. From the face shape, different facial features are extracted from various region using Fisher linear discriminant analysis. The derived features are trained with the help of convolution network and the face recognition process is done by using the adaboost large memory storage and retrieval neural network. The network successfully recognizes the face from the template, which is used to eliminate the safety related risk in smart cities.

1 | INTRODUCTION

Smart city¹ is one of familiar sector that uses the various technologies, efforts, which uses different camera, sensor devices, internet of things (IoT) and intelligent techniques. These techniques are helps to develop the effective and safer smart cities in efficient way. The smart city includes several factors² such as information analysis, energy management, traffic analyzes, and waste management process, which collects the data from human and device. Among the several smart city initiatives, face recognition is one of the main factors that integrated with the city initiatives to eliminate the threaten activities.³ In addition to this, the face recognition process helps to maintain the city safety, maximize the investigation process and enhance the smart city initiatives. This face identification process creates the top layer in security examination process in smart cities in terms of matching the template face into the captured criminals face. This matching process predict the terrorists, suspects and other individual threats, after that matching alert is created to stopping crimes in beginning stage. Moreover, the face recognition process⁴ helps to identify the missing children in city, because, around every year, 800 000 children missing in traffic and other location. Therefore, the IoT-based face identification process matching the missing children face in database with identified face to predict the missing child successfully. Along with this, the face identification process helps to product the public events, expedite investigation, and control access process