

Face Recognition Using Body-Worn Camera: Dataset and Baseline Algorithms

Authors : Ali Almadan, Anoop Krishnan, Ajita Rattani

Abstract : Facial recognition is a widely adopted technology in surveillance, border control, healthcare, banking services, and lately, in mobile user authentication with Apple introducing "Face ID" moniker with iPhone X. A lot of research has been conducted in the area of face recognition on datasets captured by surveillance cameras, DSLR, and mobile devices. Recently, face recognition technology has also been deployed on body-worn cameras to keep officers safe, enabling situational awareness and providing evidence for trial. However, limited academic research has been conducted on this topic so far, without the availability of any publicly available datasets with a sufficient sample size. This paper aims to advance research in the area of face recognition using body-worn cameras. To this aim, the contribution of this work is two-fold: (1) collection of a dataset consisting of a total of 136,939 facial images of 102 subjects captured using body-worn cameras in in-door and daylight conditions and (2) evaluation of various deep-learning architectures for face identification on the collected dataset. Experimental results suggest a maximum True Positive Rate (TPR) of 99.86% at False Positive Rate (FPR) of 0.000 obtained by SphereFace based deep learning architecture in daylight condition. The collected dataset and the baseline algorithms will promote further research and development. A downloadable link of the dataset and the algorithms is available by contacting the authors.

Keywords : face recognition, body-worn cameras, deep learning, person identification

Conference Title : ICIAP 2020 : International Conference on Image Analysis and Processing

Conference Location : Rome, Italy

Conference Dates : December 10-11, 2020