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A SURVEY ON VIDEO FACE RECOGNITION USING DEEP LEARNING

(Tinjauan Berkenaan Pengecaman Wajah Video Menggunakan Pembelajaran Mendalam)

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ABSTRACT

The research on facial recognition consists of Still-Image Face Recognition (SIFR) and Video Face Recognition (VFR), is a common subject being debated among researchers since it does not require any touch like other biometric identification, such as fingerprints and palm prints. Various methods have been proposed and developed to solve the problems of face recognition. Convolutional Neural Network (CNN) is one of the deep learning techniques that is suggested for both SIFR and VFR. However, several issues related to VFR have still not been solved. Hence, the objective of this paper is to review VFR using deep learning that specifically focuses on several steps of VFR. The VFR steps consists of six main stages; input video of the face, face anti-spoofing module, face and landmark detection, preprocessing, facial feature extraction and face output that include identification or verification result. A summary of implementation of deep learning within VFR steps is discussed. Finally, some directions for future research are also discussed.

Keywords: convolutional neural network; deep learning; video face recognition

ABSTRAK

Penyelidikan mengenai pengecaman wajah terdiri daripada Pengecaman Wajah Imej Pegun (PWIP) dan Pengecaman Wajah Video (PWV), adalah subjek yang biasa diperdebatkan di kalangan penyelidik kerana tidak memerlukan sentuhan seperti pengenalan biometrik lain, seperti cap jari dan cetakan tapak tangan. Pelbagai kaedah telah dicadangkan dan dibangunkan untuk menyelesaikan masalah pengecaman wajah. Rangkaian Saraf Konvolusional (RSK) adalah salah satu teknik pembelajaran mendalam yang disarankan untuk PWIP dan PWV. Walau bagaimanapun, beberapa masalah yang berkaitan dengan PWV masih belum dapat diselesaikan. Oleh itu, objektif makalah ini adalah untuk mengkaji PWV menggunakan pembelajaran mendalam yang secara khusus menumpukan kepada beberapa langkah PWV. Langkah-langkah PWV terdiri daripada enam peringkat utama; memasukkan video wajah, modul anti-penipuan wajah, pengesanan muka dan mercu tanda, prapemprosesan, pengekstrakan ciri wajah dan output wajah yang merangkumi hasil pengenalan atau pengesahan. Ringkasan pelaksanaan pembelajaran mendalam dalam langkah-langkah PWV telah dibincangkan. Akhir sekali, beberapa hala tuju untuk penyelidikan masa depan juga dibincangkan.

Kata kunci: rangkaian neural konvolusional; pembelajaran mendalam; pengecaman wajah video

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