

Fingerprint Matching Based on Convolutional Neural Networks

1st Given Name Surname
dept. name of organization (of Aff.)
name of organization (of Aff.)
City, Country
email address

2nd Given Name Surname
dept. name of organization (of Aff.)
name of organization (of Aff.)
City, Country
email address

Abstract—Fingerprint has been widely used in biometric authentication systems due to its uniqueness and consistency. Despite tremendous progress made in automatic fingerprint identification systems (AFIS), highly efficient and accurate fingerprint matching remains a critical challenge. In this paper, we propose a novel fingerprint matching method based on Convolutional Neural Networks (ConvNets). The fingerprint matching problem is formulated as a classification system, in which an elaborately designed ConvNets is learned to classify each fingerprint pair as a match or not. A key contribution of this work is to directly learn relational features, which indicate identity similarities, from raw pixels of fingerprint pairs. In order to achieve robustness and characterize the similarities comprehensively, incomplete and partial fingerprint pairs were taken into account to extract complementary features. Experimental results on FVC2002 database demonstrate the high performance of the proposed method in terms of both false acceptance rate (FAR) and false rejection rate (FRR). Thanks to the robustness of feature extraction, the proposed method is applicable of incomplete and partial fingerprint matching.

Index Terms—fingerprint matching, convolutional neural networks

I. INTRODUCTION

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II. RELATED WORKS

here is the only related work [1]

REFERENCES

- [1] Y. Zhu, X. Yin, and J. Hu, “Robust fingerprint matching based on convolutional neural networks,” in *Mobile Networks and Management*, J. Hu, I. Khalil, Z. Tari, and S. Wen, Eds. Cham: Springer International Publishing, 2018, pp. 56–65.