Multi-instance Contingent Fusion for the Verification of Infant Fingerprints

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Tiwalade Olubukola Odu, Tokunbo Ogunfunmi, Moses Olatayo Olaniyan & Isaac Adekunle Samuel

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Abstract

There is a need to recognize newborns (1–28 days old) and infants (29 days–12 months old) automatically, with the ubiquitous 500 ppi fingerprint reader, to combat newborn swapping, aid identification of missing children, vaccination tracking, medical history, etc. This study seeks to show the possibility of future identification of babies with fingerprints acquired with a 500 ppi fingerprint reader, through multi-instance (left thumb and right index fingers) fusion. The fingerprints were acquired from babies who were 1 day–10 months old at enrolment (Session 1). The sum score fusion algorithm was employed. This method produced verification accuracies of 73.8, 69.05, and 57.14% for time lapses of 1, 3, and 6 months, respectively, between enrolment and query fingerprints, for babies that were 0–3 months at the time of enrolment. To the best of our knowledge, this study is the first attempt to verify infant fingerprints with multi-instance contingent fusion. The incorporation of soft biometrics is recommended for future studies.

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Author information

Authors and Affiliations

Covenant University, Ota, Ogun State, Nigeria

Tiwalade Olubukola Odu & Isaac Adekunle Samuel

Santa Clara University, Santa Clara, CA, USA

Tokunbo Ogunfunmi

Federal University Oye-Ekiti, Ikole-Ekiti, Ekiti State, Nigeria

Moses Olatayo Olaniyan

Corresponding author

Correspondence to Tiwalade Olubukola Odu .

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