DETECTION OF FINGERPRINT IMAGES ROTATED DISTORTION USING PHASE-ONLY CORRELATION

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ABSTRACT

Fingerprint images distortion are classified into five categories: oily, dry, dirty, in part, and rotation. Detection of the fingerprint image distortion is generally difficult to detect when rotated. This study describes the detection of distorted fingerprint image rotated using Phase-Only Correlation (POC) and aims to detect the rotational angle of the rotated fingerprint image. This research was conducted with a template fingerprint image and fingerprint image input in their respective two-dimensional Fourier transformation to obtain the value of complex numbers, a set of rotated input fingerprint image and then raised one by one input fingerprint image and fingerprint image in the template cross-spectrum, in the inverse and normalized to minimize real value, after normalizing the cross spectrum back to get the value of phase-only correlation (POC). The highest POC value in the fingerprint image identical to showing the highest level of phase correlation image of the fingerprint. In this study, rotated fingerprint image can be measured at an angle of rotation of \(-7.5^\circ \leq \theta \leq 9^\circ\) and POC values in the rotated fingerprint image identical to the lowest is 0.4% while the value of POC in the fingerprint image is different from most high 0.35%. This study uses POC can compare identical fingerprint image and fingerprint image rotated differently, to increase the score of POC can be used in band-limited POC.

Keywords: phase-only correlation, image detection, fingerprint image, rotation image.