

E1-14: PC based finger print identification system

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The use of finger prints as a means of personal identification is based on the ridge outlines of the skin on the inner side of the fingers and thumbs, which follow patterns of a definite design and persist throughout the whole period of human life and distinctive to differentiate each individual from all others. The identification method of a finger print discussed here was based on the coincidental sequence and true relative positions of the ridge characteristics.

The objective of producing this system was to find an alternative solution to the problem, as the available packages were expensive and inflexible. This system needs only a normal scanner with a high resolution rate, a Personal Computer and software such as Microsoft Windows for capturing the image.

The captured image would be enhanced by histogram equalization technique, edges were extracted by a simple thresholding method and thinned to curves having thickness of a single pixel. The combinations formed by extracted features, their relative positions, directions and ridge counts between any 2 features were tabulated in ascending order of the ridge count. About 95 such combinations were considered for 1 fingerprint impression.

The matching was carried out by comprising at least 21 such combinations (7 features create 21 combinations) of 1 fingerprint against the other. The purpose of recording more combinations than required was to avoid any confusion which may arise when the expected feature cannot be extracted due to any reason.

The results showed that this system can be used to identify clear fingerprints. However, if the fingerprint image contained ink patches or any other disturbance the system may not detect them accurately. In such situations additional searching mechanisms need to be employed.