

CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

A fingerprint is the representation of the epidermis of a finger. It consists of a pattern of interleaved ridges and valleys. The recovery of fingerprints from a crime scene is an important method of forensic science. Fingerprints are easily deposited on suitable surfaces such as glass or metal or polished stone by the natural secretions of sweat from the eccrine glands that are present in epidermal ridges. Fingertip ridges evolved over the years to allow humans to grasp and grip objects. Like everything in the human body, fingerprint ridges form through a combination of genetic and environmental factors. This is the reason why even the fingerprint of identical twins is different. A fingerprint is a unique pattern of ridges and valleys on the surface of a finger of an individual. A ridge is defined as a single curved segment, and a valley is the region between two adjacent ridges.

A fingerprint is an impression of the friction ridges left behind on the surface of an object when they are touched or handled. Each person has his own fingerprints with the permanent uniqueness. So fingerprints have been used for identification and forensic investigation for a long time. The ridges are the dark area of the fingerprint and the valleys are the white area that exists between the ridges. Ridges remain the same all lifelong. Injuries such as superficial burns, abrasions, or cuts do not affect the underlying ridge structure and the original pattern is duplicated in any new skin that grows[1]. Ridges and valleys run in parallel that can arise in the ridges and some examples are given in the figure 1.1. these points are also known as the minutiae of the fingerprint.

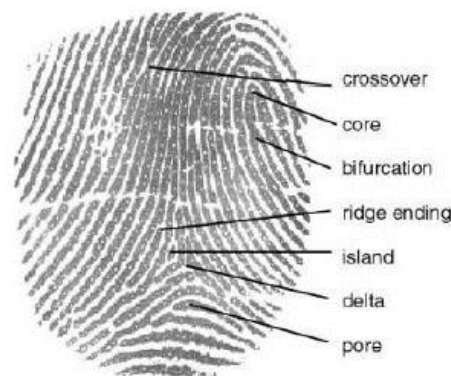


Fig 1.1 Fingerprint image