

MySQL DATABASE FOR STORAGE OF FINGERPRINT DATA

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ABSTRACT

This project presents the MySQL database for storage of fingerprint data and to study the fingerprint image enhancement technique using Matlab. The application of the database is for future process, fingerprint matching. There are three main components to complete this project. The first one is Matlab R2009a software, used for fingerprint image enhancement and minutia extraction. The second one is MySQL, a relational database management system (RDBMS) that runs as a server providing multi-user access to a number of databases. The third component is XAMPP Control Panel V2.5 software for free and open source cross-platform web server package, consisting mainly of the Apache HTTP Server, MySQL database, and interpreters for scripts written in the PHP and Perl programming languages.

In this dissertation, I firstly provide discussion on the methodology and implementation of techniques for fingerprint image enhancement and minutia extraction. This target can be mainly decomposed into image preprocessing, feature extraction and feature match. Experiments using a mixture of both synthetic test images and real fingerprint images are then conducted to evaluate the performance of the implemented techniques. In combination with these techniques, preliminary results on the statistics of fingerprint images are then presented and discussed. Then, I get the fingerprint data and store to the MySQL database.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

What is the fingerprint? A human fingerprint is an impression pattern left on any hard smooth surface by the ridged dermis (skin) (called friction ridges) of the fingertip. Fingerprints are the oldest and most widely used form of biometric identification [1]. Despite the widespread use of fingerprints, there is little statistical theory on the uniqueness of fingerprint minutia. A critical step in studying the statistics of fingerprint minutia is to reliably extract minutia from the fingerprint images [2]. However, fingerprint images are rarely of perfect quality. They may be degraded and corrupted due to variations in skin and impression conditions. Thus, image enhancement techniques are employed prior to minutia extraction to obtain a more reliable estimation of minutia locations.

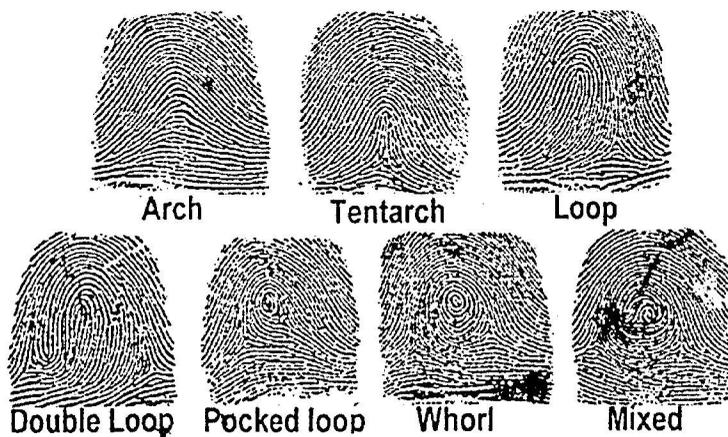


Figure 1.0: Patterns of fingerprint

A fingerprint is composed of many ridges and furrows. These ridges and furrows present good similarities in each small local window, like parallelism and average width [3].