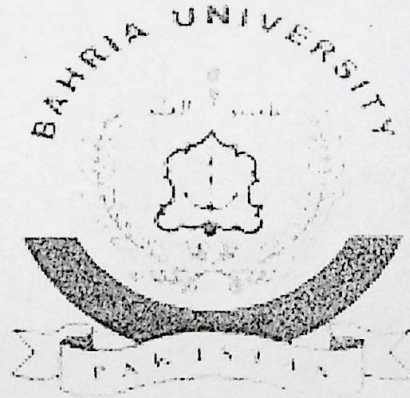


Islamabad Police, Islamabad
Fingerprints Verification
System



Advisor:
Ejaz Hussain
MCS THESIS BY
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MCS2000-02

Bahria Institute of Management
&
Computer Sciences
May 2003

Islamabad Police, Islamabad

Fingerprints Verification System

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

**In the Name of Allah, the Most Gracious,
the Most Merciful**

*Research in the
Science of Biometrics*

Islamabad Police, Islamabad

Fingerprints Verification System



*Research in the
Science of Biometrics*

Computer Science College

Islamabad Police, Islamabad
Fingerprints Verification System



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Certificate

We accept the work contained in this report as a confirming to the required standard for the partial fulfillment of the degree of MCS

Head of Department (CS)

Project Supervisor

Internal Examiner

External Examiner

My Parents

*Whose Love,
Valuable Advise,
Guidance
and
Moral Support
helped me
a lot
in
Achieving
this
Objective*

*Research & Development
Of
Fingerprints Verification System*

*A Thesis presented to the
Bahria Institute Of Management
&*

Computer Science Islamabad

*In partial fulfillment of
the requirements for the*

Masters Degree

in

Computer Science

By

Shazia Liaquat Satti

MCS2000-02

May 2003.

*Dr.M.A.Khan
(Internal Supervisor)*

*Dr.M.Yousuf
(External Supervisor)*

Project Brief

Project Title: *Fingerprints Verification System*

Objective: *Development of an application for pattern recognition from a fingerprint.*

Undertaken by: *Shazia Liaquat Satti*

Supervisor: *Ejaz Hussain*

Co-Supervisor: *Dr.M.A.Khan*

Date Started: *January 2003*

Date Completed: *May 2003*

Development Tool: *J-builder 6.0 (JDK2.0)*

System Environment: *Microsoft Windows 98,2000,XP, NT*

Hardware platform: *PentiumIII, 933Mhz, 128M6 RAM*

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The whole praise to Almighty Allah, Creator of this universe who made us the super creature, blessed us with knowledge and able us to accomplish this work.

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*Shazia Satti
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Abstract

Biometrics Recognition System, the oldest form of authentication includes, Facial Recognition, Voiceprint Recognition, Fingerprint Recognition, Retinal Patterns Recognition, DNA Recognition and Handwritten signatures.

Fingerprints are important because of their Uniqueness, Stableness and Classablility.

The science of fingerprints identification is based on the fact that the ridge formation with all the detail features, such as the ridge characteristics are present at the time of birth and remain the same throughout the life. Furthermore the ridge characteristics on every finger of every person are differently arranged so that no two fingers are ever alike. Because of these differences in every fingerprint it is always possible to establish a person's identity by a comparison of the ridge characteristics.

Fingerprints examine to be identical with any stored image by implementing pattern-matching algorithm. The proposed system reports whether the two fingerprints are identical or not.

Extract feature points (ridge-ending, bifurcation)

Score on the number of matching feature points

Matching Difficulties

A "simple-minded" solution usually does not work

Rotation

Displacement

Missing Areas

◆ *Image Defects*

◆ *Scalability*

Metrics

◆ *False Reject Rate*

False Acceptance Rate
Special Features of Fingerprints

◆ *Focal points*

- *Core*
- *Delta*

◆ *Minutiae Attributes*

- *Ridge ending*
- *Bifurcation*

TABLE OF CONTENTS

Chapter 1:	Introduction	1
	1.1 Overview of the Project	1
	1.2 Goal of the System	2
	1.3 Tools and Technologies	2
	1.3.1 Database	2
	1.3.2 Design Tools, IDE and Application Environment	2
	1.4 Glossary of Terms	3
	1.5 History of fingerprints	4
Chapter 2:	Overview of the Science of Fingerprints	4
	2.1 What is Fingerprints	7
	2.2 Rules of the Science of Fingerprints	8
	2.3 Types of fingerprints	10
	2.4 How does a Finger Leave a Mark on an Object	11
	2.5 Transmitting Prints to an Object	11
	2.6 Making Marks Visible	12
	2.6.1 The Cyanoacrylate Fuming Method	18
	2.6.2 Development of a Black Powder Method to Process Adhesive Tapes Abstract	18
	2.7 Saving the Marks	20
	2.8 Typica	21
	2.9 Identification	23
	3 Why are Fingerprints Important	24
	4 How Do We Search With a Mark	25
	5 How Can Fingerprints Made Visible	26
	6 The Way Fingerprints makes figures	26
	7 The Structure of Fingerprints	27
	8 The Future of Fingerprints	28
Chapter 3:	Requirement Analysis	28
	3.1 System Function	29
	3.2 Use Cases	29
	3.2.1 Navigation and Selection	30
	3.2.2 Pre-Processing of Image	31
	3.2.3 Low Pass Filtration	32
	3.2.4 High Pass Filtration	33
	3.2.5 FFT Applied on Frequency Domain	33
	3.2.6 Useful Points are Extracted and Marked in the Processed Image	34
	3.2.7 Points are Stored in Database	35
	3.3 Ranking of Use Cases	36
	3.4 Use Case Diagram	36
Chapter 4:	Design Specification	37
	4.1 Class diagram	37
	4.2 Sequence Diagram	38
	4.3 Collaboration Diagram	40
Chapter 5:	Introduction of Image Processing	41
	5.1 Digital Image Definitions	42
	5.1.1 Common Values	43
	5.1.2 Characteristics of Image Operations	44
	5.1.2.1 Types of operations	44
	5.1.2.2 Types of neighborhoods	45

	5.2 Tools	47
	5.2.1 Convolution	47
	5.2.2 Properties of Convolution	48
	5.2.3 Fourier Transforms	48
	5.2.4 Statistics	50
	5.2.4.1 Probability distribution function of the brightnesses	50
	5.2.4.2 probability density function of the brightnesses	51
	5.2.4.3 Average	54
	5.2.4.4 Standard deviation	55
	5.2.4.5 Coefficient-of-variation	55
	5.2.4.6 Percentiles	56
	Mode	56
	SignaltoNoise ratio	56
	5.2.5 Contour Representations	58
	5.2.5.1 Chain code	58
	5.2.5.2 Chain code properties	59
	5.2.5.3 Crack code	60
	5.2.5.4 Run codes	61
Chapter 6:	Implementation	62
	6.1 Design Pattern for Building Fingerprints Verification System	63
	6.1.1 Model	64
	6.1.2 View	64
	6.1.3 Controller	64
	6.2 Problem Domain	65
	6.3 Suggested Solution	65
	6.4 Overview of Java APIs	66
	6.4.1 AWT	66
	6.4.2 Swing	67
	6.4.2.1 Z-order	68
	6.4.2.2 Platform independence	70
	6.4.2.3 Swing package overview	70
Chapter 7:	Testing	74
	7.1 Testing Strategies	74
	7.1.1 Specification Testing	75
	7.1.2 Black Box Testing	75
	7.1.3 White Box Testing	76
	7.1.4 Performance Testing	76
	7.1.5 Regression Testing	76
	7.1.6 Acceptance Testing	77
	7.1.7 Assertion Testing	77
	7.1.8 Unit Testing	77
	7.1.9 System Testing	77
	7.2 System Evaluation	78
Chapter 8:	User Manual	79
	8.1 Start Application	80
	8.2 Main Page	81
	8.3 Select File	82
	8.4 Load Image/Refresh	83
	8.5 Edit Menue	84
	8.6 Search Menue	85
	8.7 View Menue	86
	8.8 Image Menue	87
	8.9 Image Filter Option	88

9.0 <i>Image Effects Option</i>	89
9.1 <i>Image Rotation Option</i>	90
9.2 <i>Image Zoom Options</i>	91
9.3 <i>Help Menue</i>	92
9.4 <i>Low Pass Image</i>	93
9.5 <i>High Pass Image I</i>	94
9.6 <i>High Pass Image II</i>	95
9.7 <i>Feature Extraction I</i>	96
9.8 <i>Feature Extraction II</i>	97
9.9 <i>Proposed Solution</i>	98

Chapter 1

Introduction