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Matrix Code Decoder and Encoder for Mobile Content Distribution

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ABSTRACT

This thesis is about how printed barcode system can be utilized as a robust mobile content distribution system.

Color Quick Response Code or CQR Code for short, is a Matrix code that has been extended into a 3D barcode system. Matrix code itself is a 2-dimensional barcode that appears to be a 2D image that consists of (usually) black and white dots that can be printed or displayed on a screen. These 2D barcodes can be used for many purposes, such as: encoding simple text, mobile content distribution, tracking motor parts, and so on.

CQR Code is an extended version of the popular QR Code. 3D barcodes contains data not only in its x and y axis, but also in depth. By stacking QR Codes we can create a new barcode system that can store more data than other existing barcode systems. Through this barcode system we can embed data that normally we could not in existing barcode system.

The system utilizes mobile phone cameras and JavaME, and even internet connection to retrieve external files or data.

This thesis contains procedures to encode a CQR Code and also to read it using a mobile phone barcode reader application. Several testing have been done to test several aspects of the system such as: functionality, compatibility and barcode reader accuracy.

From the tests that had been conducted, CQR Code currently is capable of storing data up to 9KB with 3 layers and 8 colors. CQR Code can be read with 40% - 100% chance of success using a multi-format mobile phone barcode reader that the author developed using an existing open-source mobile barcode reader. The author has also implemented a simple color correction algorithm into the barcode reader to ensure its accuracy.

In conclusion, CQR Code has a lot of potential for future developments for it to be a simple, sophisticated, and easy to use barcode system that can store relatively large amounts of data.

Keywords: *mobile content distribution, 3D barcode, mobile barcode reader, printable data storage*

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TABLE OF CONTENTS

ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS.....	iv
LIST OF PICTURES	viii
LIST OF TABLES.....	ix
CHAPTER 1 INTRODUCTION	1
1.1. Background	1
1.2. Scope.....	2
1.2.1. Constraints	2
1.2.2. Assumptions.....	3
1.3. Aim and Benefits	3
1.4. Hypothesis.....	3
1.5. Structure.....	4
CHAPTER 2 THEORETICAL FOUNDATION.....	6
2.1. Theoretical Foundation	6
2.1.1. Introduction to Barcodes	6
2.1.2. Introduction to QR Codes	7
2.1.3. Structure of QR Codes	9
2.1.4. QR Code Versions	10
2.1.5. QR Code Error-Correction.....	10
2.1.6. Reed-Solomon Error Correction	11
2.1.7. Encoding a QR Code.....	16
2.1.8. Characters that can be encoded	17
2.1.9. Character Count Indicator	19
2.1.10. Encoding Source Data into Binary Representation.....	20
2.1.11. Terminator.....	21
2.1.12. Code Words	22
2.1.13. Calculating Error Correcting Code Words.....	22
2.1.14. Data Allocation	28
2.1.15. Masking Pattern	31
2.1.16. Format Information.....	34

2.1.17.	Final Product.....	36
2.1.18.	Introduction to 3D Barcodes	37
2.1.19.	Java Platform Micro Edition (Java ME)	37
2.1.20.	Connected Limited Device Configuration (CLDC).....	38
2.1.21.	MIDlets	39
2.1.22.	Zebra Crossing (Zxing).....	39
2.1.23.	Color Correction	39
2.1.24.	Generations of Media.....	40
2.2.	Theoretical Framework.....	41
2.2.1.	Software Development Methodology	41
CHAPTER 3 PROBLEM ANALYSIS.....		42
3.1.	Current Mobile Trends.....	42
3.1.1.	2D Barcode Trends	45
3.1.2.	Example use of QR Code for Mobile Content Distribution.....	46
3.2.	Paper Memory Code System (PM Code).....	47
3.3.	Proposed Solution: Colored QR Code (CQR Code) Codec.....	50
CHAPTER 4 SOLUTION DESIGN.....		53
4.1.	CQR Code Design (3D Barcode) Overview	53
4.1.1.	Encoding CQR Code.....	54
4.1.1.	Encoding : Pseudo code	57
4.1.2.	Decoding CQR Code	58
4.1.3.	Decoding : Pseudo code.....	58
4.2.	Barcode Reader - General Steps (J2ME variant)	59
4.3.	Barcode Reader - General Steps (JavaSE variant).....	60
4.4.	Development Tools	60
4.5.	Implementation Tools	61
4.6.	Data Design.....	61
4.6.1.	Data Object	61
4.6.2.	Data Flow.....	61
4.7.	Data Flow Diagrams	61
4.7.2.	Data Flow Diagram Data Dictionary	64
4.8.	Barcode Contents	65
4.8.1.	URL.....	66
4.8.2.	E-mail address.....	67

4.8.3.	Telephone numbers	68
4.8.4.	Contact information	68
4.8.5.	SMS.....	70
4.8.6.	MMS	71
4.8.7.	Geographic information	71
4.9.	System Flowchart.....	72
4.9.1.	System Flow Chart Data Dictionary	74
4.10.	Use Case.....	74
4.11.	Architecture Diagram.....	75
4.12.	Class Diagram.....	76
4.12.1.	Class Diagram Overview	76
4.12.2.	SnapshotThread Class	77
4.12.3.	ZXingMIDlet Class.....	77
4.12.4.	LCDUIImageMonochromeBitmapSource Class	78
4.12.5.	CQRCodeReader Class	81
4.13.	GUI Design	82
4.13.1.	Main Display.....	82
4.13.2.	Error Display.....	83
4.13.3.	Successful Read	83
CHAPTER 5 TESTING AND IMPLEMENTATION		85
5.1.	Operational Procedures	85
5.1.1.	CQRcode Creation	85
5.1.2.	Software Installation	85
5.2.	Test Plan.....	86
5.3.	Accuracy Testing	86
5.3.1.	Environment Condition.....	86
5.3.2.	System Specification.....	87
5.3.3.	Unit Testing	88
5.3.4.	Results.....	90
5.4.	Functionality Testing	92
5.4.1.	1D Barcode Test.....	93
5.4.2.	2D Barcode Test (text-only)	95
5.4.1.	2D Barcode Test (telephone number)	96
5.4.1.	3D Barcode Test (text-only)	97

5.4.1. 3D Barcode Test (web URL)	98
5.5. Compatibility Test.....	99
5.5.1. Test Specifications	99
5.5.2. Compatibility Result	100
5.5.3. Results.....	101
CHAPTER 6 EVALUATION	102
6.1. General Discussion	103
6.1.1. Have you ever heard of 2D barcodes before this test?.....	103
6.1.2. Have you ever heard of 3D barcodes before this test?.....	103
6.1.3. Do you find 2D/3D barcodes helpful in obtaining mobile contents?.....	103
6.1.4. Which method do you prefer for obtaining mobile contents?.....	104
6.2. CQR Code Discussion	104
CHAPTER 7 CONCLUSION AND RECOMMENDATIONS	107
7.1. Conclusion	107
7.2. Future Recommendations	108
REFERENCES	110
APPENDIX A QR CODE VERSIONS DATA CAPACITY.....	115
Version 1 – 10	115
Version 11 – 20.....	116
Version 21 – 30.....	118
Version 31 – 40.....	120
APPENDIX B QR CODE ERROR CORRECTING CODE WORDS.....	123
APPENDIX C CONVERSION TABLE OF EXPONENT α TO INTEGER.....	125
APPENDIX D GLOSSARY.....	137

LIST OF PICTURES

Picture 1 - QR Code (left) compared to 1D Barcode (right).....	8
Picture 2 – Structure of a QR Code.....	9
Picture 3 – QR Code result of “ABCDE123”, not yet masked.....	30
Picture 4 - Masking Patterns.....	33
Picture 5 – QR Code format information allocation.....	36
Picture 6 – Final Product, “ABCDE123”.....	36
Picture 7 – J2ME Architecture.....	37
Picture 8 – RAD Methodology Diagram.....	1
Picture 9 - QR-Code embedded in a scarf pattern (fashion meets technology).....	46
Picture 10 – PM Code with 8 colors.....	48
Picture 11 – QR Code Stacking in PM Code.....	49
Picture 12 – IP based PM Code with 256 Colors.....	50
Picture 13 – Color QR Code (3D barcode) concept.....	51
Picture 14 – Color QR Code (3D barcode) concept.....	57
Picture 15 – Context Flow Diagram.....	62
Picture 16 – Level 0 DFD.....	62
Picture 17 – Image Processing DFD Level 1.....	62
Picture 18 – Barcode Detection DFD Level 1.....	63
Picture 19 – Barcode Decoding DFD Level 1.....	63
Picture 20 – Result Processing DFD Level 1.....	64
Picture 21 – Flowchart Diagram of Barcode Reader part 1/2.....	72
Picture 22 – Flowchart Diagram of Barcode Reader part 2/2.....	73
Picture 23 – Architecture Diagram.....	1
Picture 24 – Class Diagram Overview.....	76
Picture 25 – Success ratio to the amount of lights for CQR Code.....	90
Picture 26 – Success ratio to the amount of lights for QR Code.....	91

LIST OF TABLES

Table 1 – Data Type Encoding	17
Table 2 – Data type and its binary representation.....	18
Table 3 – Data types and their length	19
Table 4 – Alphanumeric Characters and their value.....	21
Table 5 – Alphanumeric Encoding Example	21
Table 6 – Rule of Error Correction Code Words	24
Table 7 – Error Correction Code Words and their $g(x)$ function.....	25
Table 8 - calculation of error correct codewords for sample	27
Table 9 – allocation example, first direction is up.....	30
Table 10 – allocation example, first direction is up.....	30
Table 11 – Masking Pattern Indicator and its conditions.....	31
Table 12 – Selecting Masking Patterns.....	32
Table 13 – Error Correcting Indicator.....	34
Table 14 - what's the most frequent activity you do with your phone?	43
Table 15 – Comparison of 2D Barcodes Data taken from <i>www.qrcode.com</i>	45
Table 16 – SWOT analysis of CQR Code	52
Table 17 – DFD Dictionary	65
Table 18 – Flowchart Data Dictionary.....	74