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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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