

Research on 2D barcode technology for data entry in forms and its applications

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Abstract: This thesis investigates the development and application of two-dimensional (2D) barcode technology for automated data entry into digital forms. While 2D barcodes are widely used for product identification and logistics, their potential for streamlining manual form-filling processes remains underexplored. This research proposes a system that encodes structured form data into a 2D barcode, enabling rapid and accurate data import via a standard camera-equipped device. The study details the design of a data encoding schema compatible with common form fields and the implementation of a decoding algorithm that parses and populates the corresponding digital interface. Experimental results demonstrate that the proposed method significantly reduces data entry time and eliminates transcription errors compared to manual input. Furthermore, the system's performance is evaluated across various barcode densities and lighting conditions. The findings confirm the feasibility of this approach for applications in administrative workflows, healthcare registration, and survey collection, offering a practical solution for enhancing data capture efficiency and reliability in form-based environments.

Keywords: QR code, data entry, form, application