

A system for processing handwritten bank checks automatically

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Abstract— In the US and many other countries, bank checks are preprinted with the account number and the check number in special ink and format; as such, these two numeric fields can be easily read and processed using automated techniques. However, the amount fields on a filled-in check is usually read by human eyes, and involves significant time and cost, especially when one considers that over 50 billion checks are processed per annum in the US alone. The system described in this paper uses the scanned image of a bank check to read the check. It includes three main modules that allow for fully automated bank check processing.

These three modules are described in the paper; they focus sequentially on: the detection of strings within the image; the segmentation and recognition of string in a feedback loop; and the post-processing issues that help to ensure higher accuracy of recognition. The major benefit of the integrated system is the ability to address the complex problem of reading handwritten bank checks by implementing efficient algorithms for each processing step. All modules have been implemented and subsequently tested for reading the value of the check using different image databases. Due to the particular requirements of this application, the system can be tuned to yield low levels of incorrect readings; this, in turn, leads to higher levels of rejection than the levels encountered in other handwritten recognition applications. A rejected check can be read subsequently by human eyes or other more advanced automated approaches. However, a check read incorrectly is more difficult to deal with, in terms of costs and time involved to rectify the mistake. As such, our architecture can be geared towards producing the most suitable balance between inaccurate readings and rejection level, in accordance with user preferences. The experimental results presented in the paper do not focus on the best possible results for a particular database of checks; instead, they show the benefits attained independently by each of the modules proposed.

Index Terms— Handwritten checks; Reading unconstrained handwritten material; Neural network based reading; Automation of banking systems

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