

X9E13bOcr: Your MICR recognition tool

X9E13bOcr

- 100% Java
- Completely developed by X9Ware
- Small footprint
- High performance
- Windows or Linux

API

- Easy to use
- Input TIFF images
- Output MICR line strings with confidence levels

MICR recognition

- Skew detection
- Noise removal
- Pixel smoothing
- Character isolation
- E13B recognition
- Rationalization
- 99% accuracy

Throughput

- Multi-threaded
- 15 items per second on a single thread
- 50+ items per second when fully threaded

Testing Tools

- Detailed logging
- X9Assist test aid

Licensing

- Perpetual license
- 20% annual maintenance
- No item charges

Do you have more complex needs? Please consider our SDK which will perform any x9 related task.

X9E13bOcr is a MICR line SDK that performs character recognition that is targeted to the E13B character set. This solution is 100% Java and completely developed by X9Ware. There is no usage of third party recognition products, and no JNI interfaces to external technologies. It is all-Java and will run in any JVM environment that is Java 9 or higher (Oracle JVM or OpenJDK). Our development goal was achieved, which provides an E13B recognition engine with a small footprint that yields the highest performance possible. This was achieved through a unique and proprietary approach that isolates each MICR line character. This includes the ability to accommodate vertical shift (even after skew detection and rotation), and support for varying E13B character sizes, even when they exceed the MICR standard. Our capture is very forgiving in terms of alignment and character size.

X9E13bOcr is extremely easy to implement from your application environment. Recognition can be run against a single item, but our recommendation is to use the built-in list processing capabilities that will run multiple items concurrently from background threads (which is a standard feature). Input to the recognizer is the front-side TIFF image. Output is the resulting MICR line as individual characters along with their confidence levels, the MICR line as formulated string, and the individual MICR line fields.

X9E13bOcr includes testing tools for both development and production support. The library includes detailed logging that can be activated in the test environment. X9Assist includes the ability to analyze individual images with this detailed logging. These results can be provided to X9Ware as feedback for possible enhancements to the recognizer.

X9E13bOcr has exceptional performance. We have seen 15 items per second on a single thread and 50+ items per second when fully threaded. All of this is accomplished from a native Java application.

X9E13bOcr has a licensing model that is accommodating and non-restrictive. There is no item level pricing, no dongles, and no pricing based on server counts or cores. We provide a perpetual license with annual maintenance, allowing you to use the product within your environment as needed.

Skew Detection and removal targeted at MICR line area itself, so it is not impacted by embedded graphics and handwriting.

Noise Removal is applied at the pixel level, where neighboring pixels are analyzed to automatically remove noise. This process is only run against the MICR band itself (not the entire image) for improved performance.

Pixel Smoothing is similarly applied at the pixel level based on neighboring pixels, which allows missing pixels from the capture process to be filled, which improves recognition results.

Character Isolation is a complex process that consists of edge analysis against the isolated characters within the MICR line itself. These algorithms include automated scaling, cut, and trim operations which formulate the character data as it is processed within the recognizer.

E13B Recognition is performed through pixel level matching operations of captured characters against the actual E13B character set. Confidence levels are assigned based on matching results.

Data Rationalization is applied as the recognition process evolves as well as on

The logo for X9Ware LLC, featuring the text "X9Ware" in a large, bold, sans-serif font, with "LLC" in a smaller, all-caps font to the right.

completion, to ensure that the context of the resulting characters and symbols are logically reasonable based on where they appear within the data itself.

Recognition Accuracy is ultimately 99% or higher, subject to the quality of the images that were originally captured and presented to the recognizer. Accuracy is improved through the use of primary and secondary matching techniques, where an independent secondary match is utilized when confidence is below certain thresholds.

Finalized Data is returned to the application program at the item level, and in the same order as originally presented despite the multi-threading that is being applied through background tasks. The returned data consists of the fully formed MICR line which is provided as a string which includes all digits, symbols, and blanks as they were returned by the recognizer. Unrecognized characters which were determined to be significant are returned as asterisks. Embedded blanks are considered to be significant and are maintained. Methods are provided to parse the resulting MICR string into separate fields including AuxOnUs, EPC, Routing, OnUs, and Amount. Access is also provided to the application as to the individual characters that have been identified, their position within the MICR band, and confidence levels that were determined by the recognizer.

Please visit our website at x9ware.com, or send inquiries to sales@x9ware.com. We have the x9 and ach experience to meet your specific business needs.