ABBYY®

PRODUCT INFORMATION

ABBYY® Mobile OCR Engine 3.0

Compact Code OCR for Mobile Devices

What is the ABBYY Mobile OCR Engine SDK?

The ABBYY Mobile OCR Engine 3.0 Software Development Kit (SDK) is a specialised toolkit for empowering mobile and other "compact" applications with text recognition and conversion capabilities. ABBYY's specially developed "compact code OCR" is optimised to deliver a highly accurate conversion of image files into text using a small amount of memory and system resources. Platform independence ensures support for such operating systems as iPhone, Android, Linux, Symbian, Windows and Windows Mobile.

Your Mobile Application with the Power of OCR

ABBYY OCR technology transforms images into manageable text which can be saved, stored, edited or sent via web, web services, email or SMS. Applications based on the Mobile OCR Engine 3.0 will transform notes, business cards, newspaper clippings, menus and other texts captured via a mobile imaging device into data which can easily be embedded into other applications. Examples of applications which can be enhanced with ABBYY Mobile OCR Engine include:

Camera Smartphone/PDA Applications:

Take full advantage of cameras on mobile devices. Photo menus, signs and posters, business cards, and other documents can be converted into text for easier input into a variety of applications such as:

- *Phone and address books*
- *Calendars*
- *Task lists*
- *All-in-one personal information managers (PIMs)*
- *Business card readers*
- *Mobile dictionariesAutomated Network Installation*

Portable Scanning Applications

- *Business card, ID card and other small card scanning*
- *Text readers combined with pen-based or handheld scanners*
- *Text-to-audio programs which scan and read text aloud*

Capture Front-ends Linked to Backend Systems and Web Applications

Exisiting applications can be improved or extended using OCR for easy capture of input of data to a networked backend system or Web applicaition. For example:

- *Mobile capture for CRM — take a picture of a business card for input into a CRM system or sales lead database*
- *Mobile capture for Workflow — take a picture of a document for fast input into a workflow application*
- *Client/server text conversion and processing — collecting pieces of texts and other data via mobile phone camera and sending to a Web or other server for processing. Mobile OCR can be used for pre-recognition and to check image quality, before sending to a server for processing.*

"Instant OCR" PC Utilities

- *Image processing from a Web site*
- *Input for desktop search*
- *"Pop-up" applications such as dictionaries*
- *and training utilities*
- *Anti-spam utilities (converting and reading images in Spam mail)*

Benefits of the ABBYY OCR Engine SDK

- Easy integration of high performance text recognition capabilities
- Business card recognition
- Platform independence — supporting such systems as Windows Mobile, Symbian, Linux, Android and iPhone.
- Optimised memory management and efficient loading for high performance
- Multilingual support
- Sample application and test shell
- Sophisticated OCR functionality:
  - Extremely accurate text conversion
  - Multi-column document analysis

Functionality Overview

Development for Mobile Platforms

Desktop and server OCR have been established for some time. With ABBYY Mobile OCR Engine, text recognition on mobile terminals, the corresponding applications and devices are now also available to developers. The SDK has been designed especially for the mobile platform and enables the development for a large spectrum of applications

Small Footprint

ABBYY Mobile OCR Engine 3.0 is a special compact code version of ABBYY recognition technology specifically optimised to run with low memory resources. Depending on the set of functions, it may require from 1,5 to 5 MB of RAM and from 1,5 to 30 MB of ROM.

Improved Memory Management

RAM operations in ABBYY Mobile OCR Engine 3.0 have been optimised. It is possible to allocate additional RAM without stopping the application. So there is no need to allocate large amounts of RAM in advance.

Platform-Independent

The Mobile OCR Engine 3.0 is platform independent and can be easily integrated into any operating system including

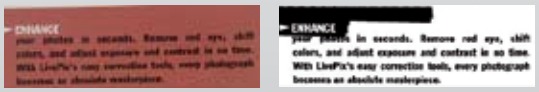
- *Android™*
- *iPhone™*
- *Linux, ucLinux™*
- *Symbian OS*
- *Windows*
- *Windows Mobile Edition / Windows CE*

and some proprietary operating systems for the GMS and CDMA phone platforms. ABBYY also offers special services for porting the software to other platforms.

Overview Processing Steps

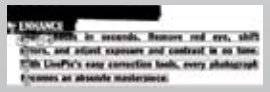
Step 1: Image Import and Processing

The image has to be loaded from memory and to be prepared for OCR. Image binarisation, separates text from the background, producing a black-and-white image that is much smaller in size than the colour original. Additional skew correction can be applied.



Step 2: Document Analysis

Document Analysis is a set of algorithms that analyses the image which detects letters, joins the letters into words, then into lines of text, and finally, into paragraphs. Additionally the reading area is cleaned and noise removed.



Step 3: Optical Character Recognition (OCR)

Then the detected blocks on the image are recognised using the special language and pattern definitions. If dictionaries are available then the texts are also compared to improve the overall recognition quality.

Step 4: Business Card Processing (optional)

The recognition results are analyses and the relevant contact information from business cards is extracted.

Step 5: Result Processing

The recognition results can be processed and exported. Developer of the application has full control over the OCR results.

Functionality Overview

High Accuracy OCR

Based on award-winning technology, ABBYY Mobile OCR Engine 3.0 combines the best possible accuracy with powerful and efficient OCR processing. The software development kit delivers instant OCR results and provides multilingual capabilities to develop solutions for the international market.

Based on Proven Technology

Developers, service providers and hardware manufacturers can have confidence in the functionality provided through the Mobile OCR Engine 3.0 because it is based on second generation, proven technology in use by products already released to the market. ABBYY first premiered the small code-sized version of its toolkit in 1999 when the technology was integrated into the C-Pen, a small handheld pen scanner. OCR implementation in the C-Pen required less than 2 MB of disk space and was combined with the ABBYY Lingvo Russian-English dictionary.

Multilingual OCR

The SDK allows developing international solutions since it supports 58 languages with Latin, Cyrillic and Greek characters. It offers dictionary support for 20 languages. Mobile OCR Engine 3.0 supports 3 types of dictionaries:

- *Standard dictionary (OCR),*
- *Keywords dictionary for Business Card Reading*
- *User dictionary for own custom defined languages*

The standard and custom dictionaries can be used to avoid errors in words caused by uncertain recognised characters.

New Document Analysis

ABBYY Mobile OCR Engine 3.0 includes a new Document Analysis (DA) module. It analyses documents in their entirety and produces a set of blocks, each having its own internal structure. The new analysis detects noise more reliably and makes OCR faster and more accurate as a result.

Paragraph Assembly

ABBYY Mobile OCR Engine 3.0 automatically detects text columns. The Document Analysis detects the borders of the text blocks and reads each block separately. Thus recognition is performed left to right and top to bottom only within the boundaries of a separate block.

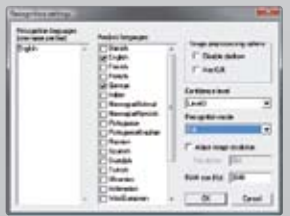
Business Card OCR

ABBYY Mobile OCR Engine 3.0 offers intelligent text parsing capabilities specially designed to accurately identify and extract key fields of contact information from business card images. It will recognise key phone and address book fields such as name, phone/fax number, e-mail address, company name, job title, address and Web address. Using this option, developers can create applications which will allow users to take a digital camera picture of a business card and convert the picture into text which can then be stored directly into the address book on the phone.

Test Shell for Windows

ABBYY Mobile OCR Engine 3.0 includes a precompiled test shell for Windows. This application allows an easy evaluation of the feature set. There is direct access to the following calls:

- Pre-process image
- Find all lines
- Recognise active blocks
- Recognise all blocks
- Find and recognise all lines
- Recognize business cards
- Generate word suggestion



Integration and Availability

Specifications

Development Environment

ABBYY Mobile OCR Engine can be used under any development environment for C/C++, C# and .NET, including Microsoft Visual Studio 2005.

Supported Operating Systems

The Mobile OCR Engine is crossplatform technology and supports the following operating systems:

- Android™
- iPhone
- Linux, ucLinux™
- Symbian
- Windows
- Windows Mobile
- propriety OSs for GSM and CDMA phone platforms

ABBYY offers professional services to port the software to other platforms and to customise the software for special tasks.

Memory

ABBYY Mobile OCR Engine is a compact code OCR solution and requires minimal resources:

- ROM: 2.5 – 3MB for program installation plus 0.5 – 1 MB per recognition language.
- RAM: 2.5 – 3 MB for program storage plus 0.5 – 1 MB for each recognition language used; 1.5 – 5 MB for program operation; 1 – 3 MB for storing the input picture/image file.
- Exact memory requirements vary depending on the operating system and specific recognition tasks (e.g. multilingual recognition requires more memory).

Recognition Languages

Full text recognition:

20 Main Languages, with dictionary support:, Czech, Danish, Dutch (Belgian), English, Estonian, Finnish, French, German (new and old spelling), Greek, Italian, Norwegian (Bokmal and Nynorsk), Polish, Portuguese (Portugal and Brazil), Russian, Spanish, Swedish, Turkish, Ukrainian.

38 Additional Languages with Latin, Cyrillic or Greek characters: Afrikaans, Albanian, Basque, Breton, Bulgarian, Beylorussian, Catalan, Chechen, Crimean Tatar, Croatian, Fijian, Hawaiian, Hungarian, Icelandic, Indonesian, Irish, Kabardian, Latin, Latvian, Lithuanian, Macedonian, Malay (Malasian), Maori, Moldavian, Mongol, Ossetian , Provencal, Rhaeto-Romanic, Romanian, Samoan, Serbian, Slovak, Slovenian, Swahili, Tagalog, Tatar, Welsh, Yiddish.

Business card processing:

16 Languages: Danish, Dutch, English, Finnish, French, German, Indonesian, Italian, Norwegian, Portuguese, Portuguese (Brazilian), Russian, Spanish, Swedish, Turkish and Ukrainian

Licensing Policy and Trial

Pricing and licensing of ABBYY Mobile OCR Engine 3.0 varies based on the hardware and software requirements and scope of a given project. ABBYY's Technical Service teams offer special assistance for operating platform porting, testing for certain hardware and customisation. A special limited testing application showcasing the functionality of the SDK is available upon signing of a special licence agreement. Interested parties should contact their local ABBYY sales representative for further details.

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