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EON OF IMPLEMENTING A MULTIFACETED CLOUD BASED OCR IN APPLE'S COMPASSIONATE APP STORE MILIEU

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Abstract - Cloud Architectures discourse key hitches surrounding large-scale data dispensation. In customary data processing it is grim to get as many machines as an application needs. Second, it is difficult to get the machines when one needs them. Third, it is difficult to dispense and harmonize a large-scale job on different machines, run processes on them, and provision another machine to recover if one machine fails. Fourth, it is difficult to auto scale up and down based on dynamic workloads. Fifth, it is difficult to get rid of all those machines when the job is done. Cloud Architectures solve such difficulties. Optical character recognition of cursive scripts present a number of thought-provoking nags in both segmentation and recognition processes and this entices many researches in the arena of contraption learning. This paper presents the best approach based on a mishmash of OCR and Cloud Computing to handle with the Apple's prerequisite, to make it available in the app store to design a splendid OCR for outdoor portable documents. The enactment results on a comprehensive database show a high notch of accuracy which meets the requirements of viable use.

I. INTRODUCTION

There are many advances in the computer field, where the two main include Cloud computing and the OCR which can now be performed to be implemented in a better environment. With IT technology development, the platform for people to use software has been changed from single PC platform to multi-platforms such as PC +Web-based+ Cloud Computing + Mobile devices. After 30 years development, OCR software started to adapt to new application requirements. WebOCR also known as OnlineOCR or Web-based OCR service has been a new trend to meet larger volume and larger group of users after 30 years development of the desktop OCR. Internet and broadband technologies have made WebOCR & OnlineOCR practically available to both individual users and enterprise customers. Since 2000, some major OCR vendors began offering WebOCR & Online software, a number of new entrants companies to seize the opportunity to develop innovative Web-based OCR service, some of which are free of charge services.

The term "cloud" is used as a metaphor for the Internet, based on the cloud drawing used in the past to represent the telephone network, and later to depict the Internet in computer network diagrams as an abstraction of the underlying infrastructure it represents.

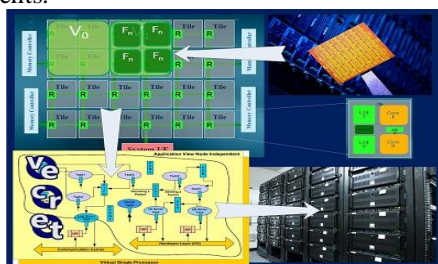


Fig. 1 : OCR Cloud concept

The ubiquitous availability of high capacity networks, low cost computers and storage devices as well as the widespread adoption of virtualization, service-oriented architecture, autonomic, and utility computing have led to a tremendous growth in cloud computing. Details are abstracted from end-users, who no longer have need for expertise in, or control over, the technology infrastructure "in the cloud" that supports them.

Almost all the modern-day characteristics of cloud computing, the comparison to the electricity industry and the use of public, private, government, and community forms, were thoroughly explored in Douglas Parkhill's 1966 book, The Challenge of the Computer Utility. Other scholars have shown that cloud computing's roots go all the way back to the 1950s when scientist Herb Grosch postulated that the entire world would operate on dumb terminals powered by about 15 large data centers.

II. OCR

Optical character recognition (OCR) is the process of converting an image of text, such as a scanned paper document or electronic fax file, into computer-editable text. The text in an image is not editable: the letters/characters are made of tiny dots (pixels) that together form a picture of text.

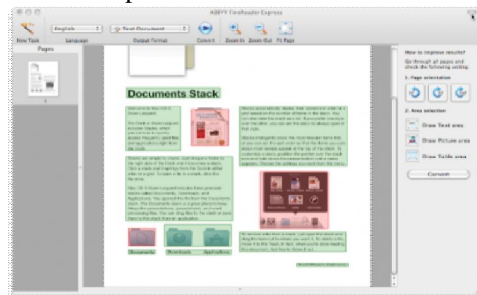


Fig. 2 : Abby fine reader for MAC

During OCR, the software analyzes an image and converts the pictures of the characters to editable text based on the patterns of the pixels in the image. After OCR, you can export the converted text and use it with a variety of word-processing, page layout and spreadsheet applications. OCR also enables screen readers and refreshable Braille displays to read the text contained in images.

In addition to device methods of handling the OCR, there are more concepts added to make it highly portable which is the goal of this paper.

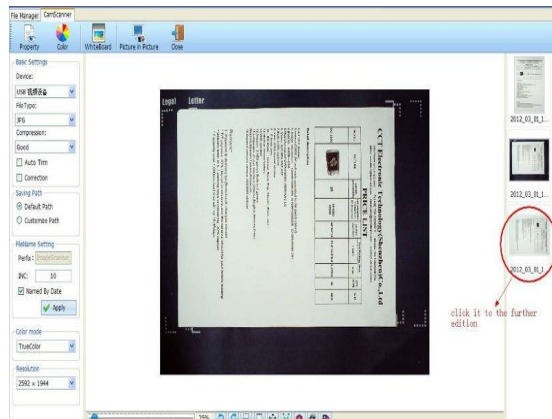


Fig. 3 : OCR portable

The MLP Network implemented for the purpose of this project is composed of 3 layers, one input, one hidden and one output layer. The input layer constitutes of 150 neurons which receive pixels, binary data from a 10x15 symbol pixel matrix. The size of this matrix was decided taking into consideration the average height and width of character image that can be mapped without introducing any significant pixel noise.

The hidden layer constitutes of 250 neurons whose number is decided on the basis of optimal results on a trial and error basis. The output layer is composed of 16 neurons corresponding to the 16-bits of Unicode encoding. To initialize the weights a random function was used to assign an initial random number which lies between two preset integers named \pm weight bias. The weight bias is selected from trial and error observation to correspond to average weights for quick convergence.

Implementation can be easily done using the following algorithm.

1. Start at left top of the picture [.bmp]
2. Scan up to image height on the same x-component
 - a. If black pixel is detected register x as left of the character, and y as top, Increment x, y
 - b. If not continue to the next pixel
3. Scan the image(in the same character space), if $y > \text{top}$, update top

4. If y is equal to height register x as right of character. Increment the number of Characters.
5. Repeat step 1 to 4 till x is equal to image width.
6. Using left, top and right of each character scan character for bottom.

III. iCloud

The cloud computing is the latest trend among the IT sector, as it's the most cost effective solution to adapt to larger number of high end technologies and demands. Cloud Storage is basically storing our data in another place so that it can be accessed through various devices. The NIST categorizes cloud computing into three service models: software as a service (SaaS), infrastructure as a service (IaaS) and platform as a service (PaaS).



Fig. 4 : Using iCloud

A key common word here is "service" among the three models, so one of the key issues to consider when negotiating and managing your contract with a cloud provider that will be required to meet your needs. It is important for the contract to include service-level agreements (SLAs) stating specific parameters and minimum levels for each element of the service provided. The SLAs must be enforceable and state specific remedies that apply when they are not met. Aspects of cloud computing services where SLAs may be pertinent include: service availability, performance and response time, error correction time and latency. Such definitions in standard cloud provider contracts often provide a very narrow way of measuring SLA parameters.

iCloud can automatically download new music purchases to all your devices, Which means you can buy a song from iTunes on your iPad at home, and find it waiting for you on your iPhone during your morning commute, all without having to sync. You can access your purchase history from the iTunes Store on your iPhone, iPad, iPod touch, Mac, PC, or Apple TV. And since you already own the songs, albums, or TV shows in your purchase history, you can tap to download them to any of your devices. iCloud manages your Photo Stream

efficiently so you don't run out of storage space on your iPhone, iPad, or iPod touch.

IV. APP STORE

The Apple App Store is a digital application distribution platform for iOS developed and maintained by Apple Inc. The service allows users to browse and download applications from the iTunes Store that were developed with the iOS SDK or Mac SDK and published through Apple Inc.

Depending on the application, they are available either for free or at a cost. The applications can be downloaded directly to a target device, or downloaded onto a personal computer (PC) or Macintosh via iTunes. 30% of revenue from the store goes to Apple, and 70% go to the producer of the app.



Fig. 5 : Apple App Store deeds

The App Store opened on July 10, 2008 via an update to iTunes. On July 11, the iPhone 3G was launched and came pre-loaded with iOS 2.0.1 with App Store support; new iOS 2.0.1 firmware for iPhone and iPod Touch was also made available via iTunes. As of June 6, 2011, there are at least 425,000 third-party apps officially available on the App Store.

As of January 18, 2011, the App Store had over 9.9 billion downloads, which was announced via the company's "10 Billion App Countdown". At 10:26 AM GMT on Saturday, January 22, 2011, the 10 billionth app was downloaded from Apple App Store.

At early July 2011, 200 million iOS users have downloaded over 15 billion apps from its App Store.



Fig. 6: iOS Screen layout

Above given is the horizontal screen layout of an iPad where the apps are arranged in such a way that the normal users can be able to easily access it and this concept generally takes a good breakthrough for better app marketing.

The term app has become a popular buzzword; in January 2011, app was awarded the honor of being 2010's "Word of the Year" by the American Dialect Society. Apple does not hold a trademark on, or claim exclusive rights to the term app, which has been used as shorthand for "application" since at least 2002, for example Google Apps (first introduced in 2006).

On October 20, 2010, Apple announced the Mac App Store which was eventually launched on January 7, 2011. It is similar to the one for iOS devices, only it has applications designed for Mac computers. The Mac App Store is only accessible by using Mac OS X Snow Leopard or Mac OS X Lion.

The App Store is accessible from the iPhone, iPod Touch and iPad via an iOS application by the same name. It is also the only way to directly download native applications onto an iOS device without jail breaking the device.

Web applications can be installed on these devices, bypassing the App Store entirely, but they tend to have less functionality. The store is also accessible through iTunes, and then on any operating system for which iTunes is provided (Mac OS X and Windows).

V. CLOUD BASED OCR

iCloud automatically backs it up daily over Wi-Fi when your device is connected to a power source. Once you plug it in, everything is backed up quickly and efficiently. That's because Backup is like

everything else in iCloud: convenient and completely effortless.

When you set up a new iOS device or need to restore the information on one you already have, iCloud Backup does the heavy lifting. Just connect your device to Wi-Fi and enter your Apple ID and password. Your personal data — along with your purchased music, TV shows, apps, and books from iTunes — will appear on your device.

The iCloud updates them with your most recent appointments — saving you time for all the other things you have going on. You can also share calendars with other iCloud users. A datebook your whole family can add to. Or a team schedule that every player can access. As soon as someone adds or edits an event, iCloud updates it wirelessly on everyone's devices.



Fig. 7: Cloud storage implementation

It's clear that the expansion of the cloud will be both as exciting as it is scary — just like every other computing advancement has been. But since we are moving on slowing into the era of cloud, we hereby design an OCR which connects with the application in the iPhone, iPad to the cloud storage server so that the user can just start using the application to handle the characters. Also this clearly means a very light application by which we can easily start using with less energy consumption which will fall under the category of "Green IT".

On-line character recognition is sometimes confused with Optical Character Recognition (see Handwriting recognition). OCR is an instance of off-line character recognition, where the system recognizes the fixed static shape of the character, while on-line character recognition instead recognizes the dynamic motion during handwriting. For example, on-line recognition, such as that used for gestures in the Pen point OS or the Tablet PC can tell whether a horizontal mark was drawn right-to-left, or left-to-right.

On-line character recognition is also referred to by other terms such as dynamic character recognition,

real-time character recognition, and Intelligent Character Recognition or ICR.

It is necessary to understand that OCR technology is a basic technology also used in advanced scanning applications. Due to this, an advanced scanning solution can be unique and patented and not easily copied despite being based on this basic OCR technology.

VI. CONCEPT MIXING – OCR, CLOUD, APPLE

On-line systems for recognizing hand-printed text on the fly have become well known as commercial products in recent years (see Tablet PC history). Among these are the input devices for personal digital assistants such as those running Palm OS. The Apple Newton pioneered this product.

OCR systems require calibration to read a specific font; early versions needed to be programmed with images of each character, and worked on one font at a time. "Intelligent" systems with a high degree of recognition accuracy for most fonts are now common. Some systems are capable of reproducing formatted output that closely approximates the original scanned page including images, columns and other non-textual components.

As it is, the cloud isn't a one-stop solution for storing you data, just as anyone who keeps everything on one storage drive and one drive only is rolling the dice.

iOS 5.1 and its features were announced on June 6 at the WWDC 2011 keynote address. The update was released at 6pm GMT on October 12, 2011. iOS 5 introduced the iCloud service and the Notification Center, as well as improvements to native apps such as Camera. The operating system also features new applications, such as the "Reminders" app and "Newsstand", a special home screen folder and App Store category that contain newspaper and magazine apps.

VII. CONSTRAINTS IN APPLE

Some iTunes Products, including but not limited to Content rentals, may be downloaded only once and cannot be replaced if lost for any reason. It is our responsibility not to lose, destroy, or damage iTunes Products once downloaded, and we may wish to back them up.

The delivery of iTunes Products does not transfer to you any commercial or promotional use rights in the iTunes Products. Any burning or exporting capabilities are solely an accommodation to you and shall not constitute a grant, waiver, or other limitation of any rights of the copyright owners in any content embodied in any iTunes Product.

Apple has the right, but not the obligation, to monitor any materials submitted by us or otherwise available on the iTunes Service, to investigate any reported or apparent violation of this Agreement, and to take any action that Apple in its sole discretion deems appropriate, including, without limitation, termination hereunder or under Apple's Copyright Policy

As an Account holder of the iTunes Service in good standing, you may be provided with limited access to download certain album cover art for music stored in Apple mobile devices. So hereby we generated an application so that it can easily use the data server in the cloud to implement the users with particular services.

Apple though supports iCloud storage through which it is possible to trace out the character in iPhone and iPad, still further advancements are done in the application design to make it more effective



Fig. 8 : POWR in Cloud [Virtualization]

Finally, this must be transformed for our future work where the Music OCR construction work is done thereby handling it efficiently for the vision impaired users. Also the user interface is to be designed for the application in such a way to support, and last one is all about moving to make the support of POWR app based on cloud.

the iTunes Library of your iTunes application. Such access is provided as an accommodation only, and Apple does not warrant, and will not have any liability or responsibility for, such album cover art or we use it.

VIII. CONCLUSION & FUTURE WORK

In this work we have presented a simple but effective solution to use the OCR application in Cloud installed in

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