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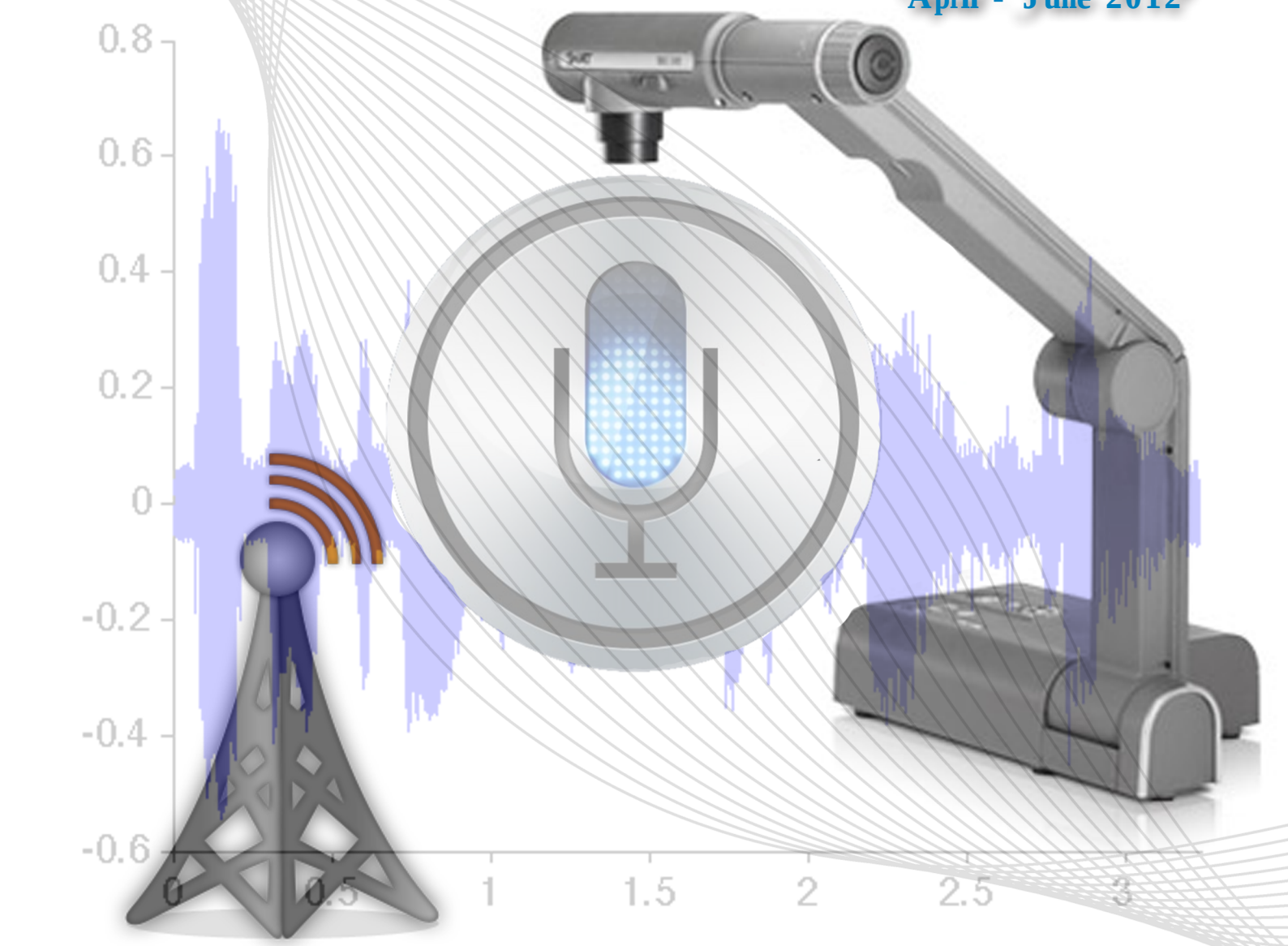

RSET
RAJAGIRI SCHOOL OF ENGINEERING & TECHNOLOGY

Department of Information Technology
Rajagiri School of Engineering & Technology
Rajagiri Valley, Kakkanad,Kochi 682 039

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Empowering women through education and family

Empowerment stands for acquiring the power to think, to speak, to act freely, to exercise choice, to raise voice and to be able to take decision. It is true for both men and women. Empowerments is a process of awareness and capacity building leading to greater participation, to greater decision making power and control, and prepare one to overcome barriers in one's own life. Empowerment of women means equipping women to be economically independent, self-reliant, and having a positive esteem to enable them to face any difficult situation in life.

Education plays the most crucial role in empowering women. Education is important for income generation and behavioral change. It is used as an agent of basic change in the status of women. For social and economic development female education is very important. Educated women can play an equally important role as men in nation building.

Kerala is a state where women get equal treatment in areas like education, job etc. During selection process also companies make it a point that women get equal opportunity as their male counterpart. Striking 40% is the representation of women seen at entry level positions in most organizations. This number dwindles down to 15% at middle level and falls below 5% when it comes to senior levels. Gradually when women reach the experience to take on senior positions the trend is that they pull themselves back. The main reason being the responsibilities they have to take up in family life like taking care of parents and children, adjusting to spouses work life etc.

So family plays the next crucial role in empowering women. The right family support ensures that women will take up more responsibilities at work. This will help them to achieve a work-family life balance.

- **Prof. Kuttiamma A.J**
Head of Department,
Dept. of Information Technology

Text To Speech Synthesis

Over the past years, there has been a great development in speech understanding and synthesis technology. The voice user interface (VUI) is plays an important role in human-machine communication applications such as computer systems, mobile multimedia, online ticket information, market information, customer services, personal banking information, voice-enabled equipment maintenance devices, and paperless tasks. Most of these voice-enabled applications have imparted huge financial benefits for the multimedia industries. Among the applications of speech technology, the automatic speech production, which is referred to as text-to-speech (TTS) system is the most natural-sounding technology. The text-to-speech (TTS) system will convert ordinary orthographic text into acoustic signal which is indistinguishable from human speech.

Today's interest is high quality speech application combined with computer resources. Text-to-speech synthesis system can be useful for several multimedia applications. For developing a natural human machine interface, the TTS system can be used as a way to communicate back through human voice. The TTS can be a voice for those people who cannot speak. The TTS system can be used to read text from emails, SMSs, web pages, news, articles, blogs, and Microsoft office tools and so on. In such reading applications, the TTS technology can reduce the eye-strain. The TTS system can be useful for disabled person to make effective communications. The existing TTS systems can be broadly classified into three groups: i) articulatory synthesis; ii) formant synthesis; iii) concatenative synthesis. In the past decades, the TTS has been the main research focus automatic speech production in Indian languages.

Some of TTS systems for Indian languages like Hindi, Telugu, Tamil and Bengali have been developed using the unit selection and festival framework. In literature, each approach has its own purposes, strengths, and limitations. In practice, listener should be able to understand language information of the user textual information in generated synthesized speech waveform.

In most of multimedia applications, listeners demand high quality of synthesized speech compared with natural speech. Generally speaking, the intelligibility and comprehensibility of synthesized speech should be relatively good in the naturalistic environments. Furthermore, listeners are able to clearly perceive the message with little attention, and act on synthesized speech of a command correctly and without perceptible delay in noisy environments.

Although many TTS approaches, the intelligibility, naturalness, comprehensibility, and recallability of synthesized speech is not good enough to be widely accepted by users. There is still considerable room for further improvement of performance of the text-to speech production system.

Below Figure 1 shows the block diagram of Malayalam Text –To- Speech Synthesis System.

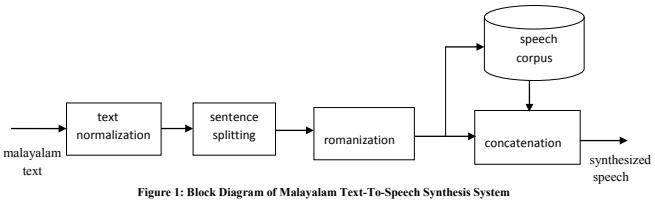


Figure 1: Block Diagram of Malayalam Text-To-Speech Synthesis System

- Arun Soman
Dept. of Information Technology

How Your Mobile Carrier Decides Whether to Pamper You

Carriers are turning to sophisticated data analytics to give better service to high-paying customers.

The controversy over "data throttling" has drawn attention to the way mobile carriers manage their networks: they target heavy users—the ones with unlimited data plans—by slowing down data-transfer speeds after they hit a certain threshold.

But carriers worldwide are also using sophisticated data analysis to give other customers—the ones with high-priced plans—gold-plated customer service to keep them happy, industry players say.

Carriers increasingly have access to huge quantities of data about their users, and they are mining this information for all sorts of insights. This is part of a broader trend across many industries; the practice of collecting and analyzing this information is often referred to as "big data."

Carriers use the big data they collect to detect whether customers enrolled in profitable data plans are experiencing problems or complaining. If so, the carriers then pamper those people selectively, says Chris Lynch, CEO of Vertica, a Cambridge, Massachusetts, firm that provides data analytics to many mobile carriers, and which was recently purchased by HP.

Carriers merge data about network problems—such as how many dropped calls a consumer experienced—with unstructured data such as the transcripts of complaints to customer-service representatives, deciphered by voice-recognition software and searched for angry keywords, Lynch says.

For customers enrolled in expensive "tiered" data plans, the carriers are vigilant to respond with refunds or discounts on reënrollments; they tend not to be so generous to customers with resource-guzzling unlimited data plans, Lynch says.

Lynch and other industry officials discussed such mobile-data-mining trends at a conference in Cambridge, Massachusetts, today.

Lynch did not name carriers, but says selective customer-service treatment is common industry practice in the United States. Representatives for the main industry trade group, the Communications and Telecommunications Industry Association, and from AT&T declined to comment.

Last month, AT&T decided to slow down data-transfer speeds to unlimited-data customers once they'd consumed three gigabytes of data in a month. This was an adjustment from a previous policy in which the carrier said the top 5 percent of data users with unlimited plans could be subject to throttling.

In Europe, the disparate treatment of users on different plans goes beyond offering better customer service to high-paying customers, Lynch says. There, when congestion forces a carrier to push users to another carrier's network, customers on unlimited data plans are the first

"If I have a premium plan, [European carriers] want me on their network and to make sure I have the most robust, reliable experience," Lynch says. "I can identify in real-time—as the switching infrastructure is making decisions—who I want to be on and off network."

Since the carrier in the second network will offer the best service to its own customers, users that have been handed off from another carrier will bear the brunt of any congestion-related slowdowns.

The telecom industry is working hard to sharpen the analytics tools its uses to tweak rates, and to refine service quality in specific high-traffic areas, says Chetan Sharma, a wireless analyst in Seattle. "They will use it for all sorts of purposes—they will try to monetize what can be understood from the big data," he says. "It's about how they want to treat congestion and how they want to treat customers who fall in different tiers and at different points in time."

In the United States, there is no indication that carriers give people with unlimited data plans subtly inferior treatment, except in imposing throttling, as the carriers already spell out in their policies.

Any such disparate treatment would not run afoul of FCC network neutrality regulations, which only apply to wired connections. And in any event, anecdotal reports about inferior service are hard to ascribe to any cause, because many factors can contribute to slower access or bumpy downloads.

As part of this trend, Nokia Siemens Networks launched a new tool last month at the Mobile World Congress in Barcelona that lets carriers mine and view information about network performance to find ways to change users' rates or improve service. For example, if a client used less data, the carrier could tell whether service in that neighborhood was poor and whether it would be profitable to improve it by installing another transmitter.

Of course, carriers also have troves of data on past network usage and Web access—information that will likely be used to sharpen targeted advertising in the future. "We're at the beginning of an era in big-data analytics," says Antonio Rodriguez, a venture capitalist who works at Matrix Partners in Cambridge, Massachusetts. "If you think about the treasure trove of data they have—it's question of how they tow the privacy line between what they have access to and what they do with it."

- **Balu V Thayil**
S8 IT

QNX

QNX is a commercial Unix-like real-time operating system, aimed primarily at the embedded systems market. The product was originally developed by Canadian company QNX Software Systems, which was later acquired by Canadian BlackBerry-producer Research In Motion.

As a microkernel-based OS, QNX is based on the idea of running most of the OS in the form of a number of small tasks, known as servers. This differs from the more traditional monolithic kernel, in which the operating system is a single very large program composed of a huge number of "parts" with special abilities. In the case of QNX, the use of a microkernel allows users (developers) to turn off any functionality they do not require without having to change the OS itself; instead, those servers are simply not run.

QNX Neutrino (2001) has been ported to a number of platforms and now runs on practically any modern CPU that is used in the embedded market. This includes the PowerPC, x86 family, MIPS, SH-4 and the closely related family of ARM, StrongARM and XScale CPUs.

The BlackBerry Playbook tablet computer designed by Research In Motion uses a version of QNX as the primary operating system.

One of first widespread uses of the QNX real-time OS (RTOS) was in the non-embedded world, when it was selected as the operating system for the Ontario education system's own computer design, the Unisys ICON. Over the years QNX was used mostly for "larger" projects, as its 44k kernel was too large to fit inside the single-chip computers of the era. The system garnered a reputation for reliability and found itself in use running machinery in a number of industrial applications.

Technology

The QNX kernel contains only CPU scheduling, interprocess communication, interrupt redirection and timers. Everything else runs as a user process, including a special process known as proc which performs process creation, and memory management by operating in conjunction with the microkernel. This is made possible by two key mechanisms - subroutine-call type interprocess communication, and a boot loader which can load an image containing not only the kernel but any desired collection of user programs and shared libraries. There are no device drivers in the kernel. The network stack is based on NetBSD code. Along with its support for its own, native, device drivers, QNX supports its legacy, io-net manager server, and the network drivers ported from NetBSD.

QNX interprocess communication consists of sending a message from one process to another and waiting for a reply. This is a single operation, called MsgSend. The message is copied, by the kernel, from the address space of the sending process to that of the receiving process. If the receiving process is waiting for the message, control of the CPU is transferred at the same time, without a pass through the CPU scheduler. Thus, sending a message to another process and waiting for a reply does not result in "losing one's turn" for the CPU. This tight integration between message passing and CPU scheduling is one of the key mechanisms that makes QNX message passing broadly usable. Most UNIX and Linux interprocess communication mechanisms lack this tight integration, although an implementation of QNX-type messaging for Linux does exist. Mishandling of this subtle issue is a primary reason for the disappointing performance of some other microkernel systems such as early versions of Mach.

Due to the microkernel architecture QNX is also a distributed operating system. All I/O operations, file system operations, and network operations were meant to work through this mechanism, and the data transferred was copied during message passing. Later versions of QNX reduce the number of separate processes and integrate the network stack and other function blocks into single applications for performance reasons.

Message handling is prioritized by thread priority. Since I/O requests are performed using message passing, high priority threads receive I/O service before low priority threads, an essential feature in a hard real-time system.

The boot loader, although seldom discussed, is the other key component of the minimal microkernel system. Because user programs can be built into

the boot image, the set of device drivers and support libraries needed for startup need not be, and are not, in the kernel. Even such functions as program loading are not in the kernel, but instead are in shared user-space libraries loaded as part of the boot image. It is possible to put an entire boot image into ROM, which is used for diskless embedded systems.

Neutrino supports symmetric multiprocessing and processor affinity, called bound multiprocessing (BMP) in QNX terminology. BMP is used to improve cache hitting and to ease the migration of non-SMP safe applications to multi-processor computers.

Neutrino supports strict priority-preemptive scheduling and adaptive partition scheduling (APS). APS guarantees minimum CPU percentages to selected groups of threads, even though others may have higher priority. The adaptive partition scheduler is still strictly priority-preemptive when the system is underloaded. It can also be configured to run a selected set of critical threads strictly real-time, even when the system is overloaded.

Transparent Distributed Processing, or TDP, is the name that the QNX operating system uses to refer to its network distributed architecture. Since QNX is a microkernel it is inherently network distributable, so TDP actually boils down to a protocol module that plugs in to the QNX networking stack. This protocol module (known as qnet) links the microkernels across the network together, so that operating system services are accessed using exactly the same mechanism without regard to the computer node on which they reside.

- **Amrutha Jose**
S4 IT

Mixed Reality

"Reality is merely an illusion, albeit a very persistent one"

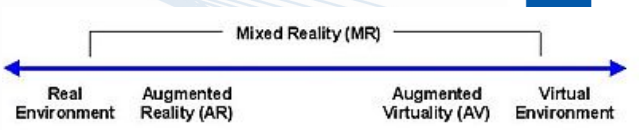
-Albert Einstein

There was a time when a Google employee Orkut Büyükkökten came up with this very famous social networking site www.orkut.com that took the breath away from every social enthusiast. Then came facebook that provided an impetus to the field of social networking. 'Second life' introduced to mankind the concept of virtual world. Virtual reality has managed to trap millions of people around the globe. Ever wondered what lies between the two extremes of virtual and real world? In virtual world the real and physical world including the users real physical body disappears from both his or her sight and consiuosness.

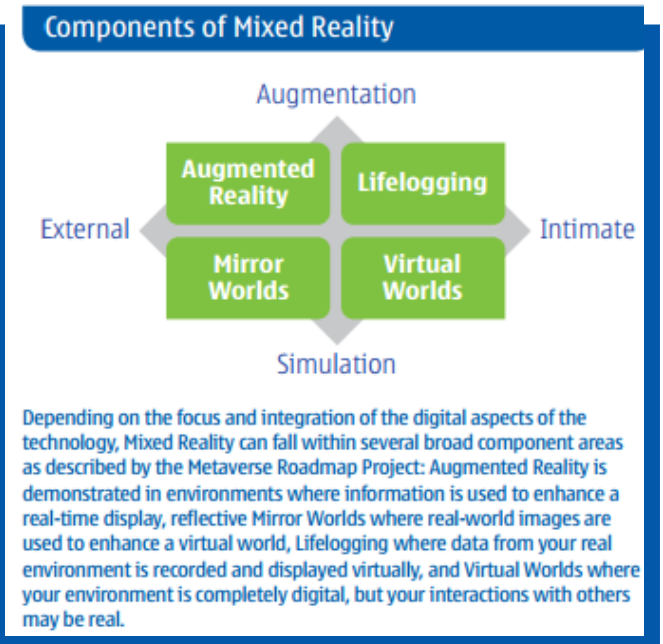
Digital media and telecommunication technologies have changed our sense of space, as well as of reality. In our real life we live in environments surrounded by images and sounds that consist of bits, not atoms, which are sent from or generated somewhere. The boundary between real and imaginary is no longer clear. Today we live in what is called a mediated society. Both real and imaginary information arrive through media technologies in the same manner, forming our knowledge of the world. In such a situation, maintaining a sound sense of one's own body is an important issue. We have been developing the way how to deal with the real and unreal at the same time.Mixed reality can be considered as a technical answer to the above discussed situation. It combines the real and the virtual world. The way the real world and additional information from the virtual world are integrated in one's perception can be identified as a simulation of our nature; perception/recognition system. Actually that might be why mixed reality seems to be familiar to us, and will have a great possibility in visualizing our thought and the way we see the world.

Paul Milgram introduced the concept of reality virtuality continuum. The Virtuality Continuum is a phrase used to describe a concept that there is a continuous scale ranging between the completely virtual, a Virtuality, and the completely real:

The reality-virtuality continuum therefore encompasses all possible variations and compositions of real and virtual objects.



In mixed reality there is no boundary between the real and the virtual world. The real and virtual coexist and overlap in the environment around the user. By mixing the optical information from both on our retina and sending the mixture to our brain, the real and the virtual are theoretically treated equally in our cognitive systems. If the virtual world is created realistically enough, the boundary becomes invisible. Since images from the virtual world will be shown typically either on see-through glasses or as projection on real space, the user's body is visible and integrated into the mixed reality environment. Therefore there is a critical difference between VR and MR in the way a user relates him/herself with the environment. While VR brings the user into an artificial environment, MR keeps the user in the real space. However, the boundary between the real and the virtual, and the distance between here and there, become blurred with mixed reality.



Mixed reality computer systems aim to fuse digital and physical information and features, either as an augmentation of real-world environments or as a means of providing physically-based interaction with computer-based systems.

So – for example – museum displays can be augmented with added information about their history and provenance, and this information delivered to a visitor via their mobile telephone as they pass in front of the display.

An increasing number of systems are exploiting mixed reality but to date there are no systematic methods, techniques or guidelines for the development of such systems.

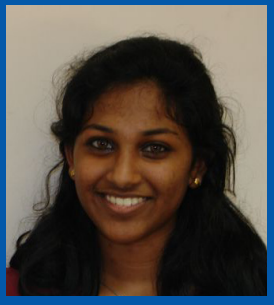
Figure 1 shows the result of using the immersive VR system called CAVE. The operator enters into a 3m cube, and by using stereoscopic vision, can have the experience of being in the actual church. Figure 2 shows the same building using Web3D, which displays 3DCG on an Internet browser. Although an immersive VR system is more realistic than Web3D, financially Web3D is more practical. Figure 3 shows the exterior of the same church displayed on top of a hand. In an MR environment, the displayed image can be shown on a person's hand; therefore, the operator can experience an animated image, which is embedded on an actual hand in a normal environment.

MR technology has tracking technology in which an animated image can follow a person's head or hand. In such a tracking method, there are a magnetic position sensors, gyroscopes, etc., to calculate position and inclination by recognizing the images of the two-dimensional markers in the real world.

Researchers at Nokia have started pushing the boundaries of Mixed Reality by making it mobile. A phone becomes a "magic lens" which lets users look through the mobile's display at a world that has been supplemented with information about the objects that it sees. The various rich sensors that are being incorporated into new phones such as GPS location, wireless sensitivity, compass direction, accelerometer movement as well as sound and image recognition enable a new dimension of understanding and interacting with the world around us. Contextually tied to time, place and user, the information provided will be invaluable.

As our lives become increasingly digital, and information about our environment becomes both more contextual and readily available, we will soon want to interact with the ever-growing amounts of information and expect capabilities provided by mixed reality to be delivered in more intuitive and convenient ways. Rather than having to actively initiate a request for information or a service, we will want it to seamlessly blend into our daily routine, providing immediate feedback to us, as we need it, without disrupting our current activity.

- Haripriya S
S4 IT



-Lakshmi Ramesh
S4 IT

Siri

Siri is an intelligent personal assistant and knowledge navigator which works as an application for Apple's iOS. The application uses a natural language user interface to answer questions, make recommendations, and perform actions by delegating requests to a set of web services. The software adapts to the user's individual preferences over time and personalizes results, and performing tasks such as finding recommendations for nearby restaurants, or getting directions.

Siri was originally introduced as an iOS application available in the App Store by Siri Inc. Siri Inc. was acquired by Apple on April 28, 2010. Siri Inc. had announced that their software would be available for BlackBerry and for Android-powered phones, but all development efforts for non-Apple platforms were cancelled after the acquisition by Apple.

Siri was launched first as an application available on Apple's App Store in the US. It integrated with services such as OpenTable, Google Maps, MovieTickets and TaxiMagic. Using voice recognition technology from Nuance and their service partners, users could make reservations at specific restaurants, buy movie tickets or get a cab by dictating instructions in natural language to Siri.

Apple introduced the iPhone 4S with their implementation of Siri. The new version of Siri is integrated into iOS, and offers conversational interaction with many applications, including reminders, weather, stocks, messaging, email, calendar, contacts, notes, music, clocks, web browser, Wolfram Alpha, and maps Currently, Siri only supports English (US, UK, Australian), German, French, and Japanese, and has limited functionality outside the US.Independent developers have succeeded in porting Siri into the iPhone 4, iPod Touch, and iPad. Siriport.ru, a Russia based team, have demonstrated Siri working as intended on the iPhone 4, iPod Touch, and iPad, communicating with the Apple servers.

The sources in Apple's implementation of Siri differ from the original iPhone application. It integrates with default iOS functionality, such as contacts, calendars and text messages. It also supports search from Google, Bing, Yahoo, Wolfram Alpha and Wikipedia. Siri also works with Google Maps and Yelp! search in the United States only.

Siri offers humorous answers to questions that do not have a practical answer. Siri was met with a very positive reaction for its ease of use and practicality, as well as its apparent "personality". Google's executive chairman and former chief, Eric Schmidt, has conceded that Siri could pose a "competitive threat" to the company's core search business. Google generates a large portion of its revenue from clickable ad links returned in the context of searches. The threat comes from the fact that Siri is a non-visual medium, therefore not affording users with the opportunity to be exposed to the clickable ad links. Writing in The Guardian, journalist Charlie Brooker described Siri's tone as "servile" while also noting that it worked "annoyingly well."

However, Siri was criticized by organizations such as the American Civil Liberties Union and NARAL Pro-Choice America after users found that it would not provide information about the location of birth control or abortion providers, sometimes directing users to anti-abortion crisis pregnancy centers instead. Apple responded that this was a glitch which would be fixed in the final version. It was suggested that abortion providers could not be found in a Siri search because they did not use "abortion" in their descriptions.

Siri has not been well received by some English speakers with heavy accents, including Scottish and Americans from Boston or the South. Apple's Siri FAQ states that, "as more people use Siri and it's exposed to more variations of a language, its overall recognition of dialects and accents will continue to improve, and Siri will work even better."

Despite many functions still requiring the use of the touch screen, the National Federation of the Blind describes the iPhone as "the only fully accessible handset that a blind person can buy".

- **Suchitra**
S1S2

On Creative Desk
Prof. Kuttyamma A.J.(HOD) |
Ms.Neeba E A (Asst Prof) |
Mr.Sijo Cherian (Asst Prof) |
Bobby Kariyatty | Balu V Thayil | Amrutha Jose
Department of Information Technology