INFORMATION TECHNOLOGY GENERATION CLOUD COMPUTING WIRELESS NETWORK ARCHITECTURE

the BIT

JANUARY-APRIL 2013

the Bullettin of Information Technology

TECHNOLOGY

4G

A Dream from "Always Connected" to "Always Best Connected"

PAGE 4

FACULTY CORNER

TRAFFIC FAULTY ROUTER

For Tcp Congestive Loss Control Over Wireless Network

PAGE 5

NEW @ IT

TRENDING NEW TECHNOLOGIES

PAGE 18

visit http://rajagiritech.ac.in

Department of Information Technology
Rajagiri School of Engineering & Technology
Rajagiri Valley, Kakkand, Kochi

RSET
RAJAGIRI SCHOOL OF ENGINEERING & TECHNOLOGY

the BIT

the Bullettin of Information Technology

ON CREATIVE DESK

Editors

Prof. Kuttyamma A.J.
(HOD- Department of Information Technology)

Mariam Varghese
Assistant Professor

Chinchu Krishna S
Assistant Professor

Student Editors

Ashwin Thomas

Smitha J

Akhitha M.D

Illustrations

Krishnadas Naduvath
Programmer

Photo Courtsey

Google Images

HOD'S MESSAGE

Way To Excellence – Role Of Alumni

Alumni are the ambassadors of an educational institution in society and industry. They are important stakeholders of college and lifelong family members of an institution working at various fields and at wide geographical locations.

Alumni can support the institution and its students by giving truthful feedback on design and scope of the courses, promote entrepreneurship, enlarge outreach, promote industrial interaction and research, training to students, placement, scholarship etc. They can give guidance for organizing college programs like teaching, research, innovation and technology transfer to meet the present market and industry needs.

Alumni support is very important for the growth and prosperity of the college. They can give valuable and trusted feedback along with newer ideas needed from time to time to keep the institute in top gear ahead of time. The college and its alumni can function together as one family to reach excellence.

Alumni can support the institute in many ways:

- They can contribute to make education quality and cost competitive.
- They can bring latest professional advancement in college.
- They can bridge the gap between industry and institute.
- They can bring best within the students.
- They can contribute to bring world class professional vision and mission to college.

There are various methods to grab the support of alumni:

• By associating alumni in attaining the goal or vision of the institute.• Having active alumni association.

• Arranging alumni meet every year in the institute.

• Including alumni in the body of governors of the institute.

• Arrange faculty members from college to associate with alumni for organizing activities.

• Build up centres of excellence like patent and IPR, incubator, research park, venture fund etc under alumni initiative.

"Coming together is a beginning, keeping together is a progress, and working together is a success"

KUTTYAMMA A J
PROFESSSOR & HOD, DIT

contents

page 4

page 14

page 5

page 20

page 13

4 4G Technology

A Dream from "Always Connected" to "Always Best Connected" .

5 TRAFFIC FAULTY ROUTER DETECTION

For Tcp Congestive Loss Control Over Wireless Network.

6 NEW GENERATION CHIPSET– TEGRA 4

Nvidia has announced their next generation Tegra 4 chipset for simfree smartphones, tablets and notebooks.

7 SIXTH SENSE FOR SALE!!

'Sixth Sense' as we all know, is the 'Godly' ability to understand the cause and relationship behind many events, which is beyond the understanding of the intellect.

9 GOOGLE GLASSES

Google's Project Glass is Google's attempt to make wearable computing mainstream

11 DIGITS — WRIST WORN SENSOR

Digits is a wrist-worn sensor that recovers the full 3D pose of the user's hand. This enables a variety of freehand interactions on the move.

13 ROLLTOP LAPTOPS

This newly designed laptop uses flexible OLED display on the panel and keyboard.

14 VIRTUAL KEYBOARD

Virtual Keyboard is just another example of today's computer trend of 'smaller and faster'.

15 MULTI-TASKING MICRO-LIGHTS

Tiny LED Lights now being developed could deliver wi-fi like Internet communications

16 BUYING A SMARTPHONE

Everyday new Smartphones are launched.

18 TRENDING NEW TECHNOLOGIES

Virtual Keyboard is just another example of today's computer trend of 'smaller and faster'.

20 Department Activities

4G Technology

A Dream from "Always Connected" to "Always Best Connected"

PREETHA KG Assistant Professor, DIT

4G OR FOURTH GENERATION mobile systems focus on seamlessly integrating the existing wireless technologies including GSM, wireless LAN, and Bluetooth. 4G systems support comprehensive and personalized services, providing stable system performance and quality service.

The 4G wireless uses Orthogonal Frequency Division Multiplexing (OFDM), Ultra Wide Radio Band (UWB), and Millimeter wireless. Data rate of 20mbps is employed and mobile speed will be up to 200km/hr. The high performance is achieved by the use of long term channel prediction, in both time and frequency, scheduling among users and smart antennas combined with adaptive modulation and power control. Frequency band is 2-8 GHz. It gives the ability for worldwide roaming to access cell anywhere. It supports interactive multimedia, voice, streaming video, internet and other broadband services, high speed, high capacity, and low cost per bit, better scheduling and call admission control techniques, infrastructure to handle pre existing 3G systems along with other wireless technologies.

4Gsystems aim at implementing a global communication network by integrating all existing telecommunication standards. The main expectation about 4G is the freedom for the users to choose and switch between services provided by various service providers integrated into the 4G network. A prominent aspect of 4G systems is the network selection scheme by which the users can choose the best connected network available for each of the services required.

Major issues which are delaying the commercial release of 4G devices include network selection, vertical handoff, pricing & billing issues, jamming and spoofing, location privacy, location coordination, network failure & backup and QoS support. To choose the suitable technology for each service at a particular place and time, assessing services provided by each of the service providers can be a tedious and complicated task. Because of the heterogeneous nature of the 4G system network selection became a NP-hard problem. The Network Selection in 4G depends on various criteria like bandwidth, security, cost of service, performance in heterogeneous network, user preference and so forth. Thus analyzing each of these parameter values for all the networks available at each unit time for every single service turns out to be a herculean task. Vertical handoffs, billing frauds, service theft, privacy attacks and the like may also create nuisance in efficient selection of network and its utilization. Network architectures will play a key role in implementing the features required to address these issues.

One of the most challenging problems facing deployment of 4G technology is how to access several different mobile and wireless networks.

Three possible architectures are :

(a) Using a multimode device- A multimode device lets the user, device, or network initiate handoff between networks without the need for network modification or interworking devices.

(b) An overlay network—consisting of several universal access points (UAPs) that store user, network, and device information—performs a handoff as the user moves from one UAP to another.

(c) Common access protocol -A device capable of automatically switching between networks is possible if wireless networks can support a common protocol to access a satellite-based network and another protocol for terrestrial networks.

Traffic Faulty Router Detection for Tcp Congestive Loss Control Over Wireless Network

MUJEEBUDHEEN KHAN A.I Assistant Professor, DIT

THE INTERNET IS not a safe place, unsecured routers are easily compromised within a minute in internet and even well secured computers are also attacked by denial of service. Indeed, through combinations of social engineering and weak passwords, attackers have seized control over thousands of Internet routers. Once a router has been compromised in such a fashion, an attacker may interpose on the traffic stream and manipulate it maliciously to attack others by selectively dropping, modifying, or rerouting packets. Several researchers have developed distributed protocols to detect such traffic manipulations, typically by validating the traffic transmitted by one router is received unmodified by another. However, all of these schemes struggle in interpreting the absence of traffic. While a packet that has been modified in transit represents clear evidence of tampering, a missing packet is inherently ambiguous: it may have been explicitly blocked by a compromised router or it may have been dropped benignly due to network congestion. In fact, modern routers routinely drop packets due to bursts in traffic that exceed their buffering capacities, and the widely used Transmission Control Protocol (TCP) is designed to cause such losses as part of its normal congestion control behavior. Thus, existing traffic validation systems must inevitably produce false positives for benign events and/or produce false negatives by failing to report real malicious packet dropping.

An idea to sort out these problems is to develop a compromised router detection protocol that dynamically infers the precise number of congestive packet losses that will occur. Once the congestion ambiguity is removed, subsequent packet losses can be safely attributed to malicious actions. Apart from traffic validation here we implement distributed detection and response. In distributed detection we implement confidentiality using AES encryption algorithm by asymmetric key. In response we are using CBUHash hashing technique for validating integrity verification. Through integrity verification we are checking whether the message was modified or not. If messages are modified we just block the router

TRAFFIC VALIDATION:

Traffic validation calculates current traffic, for this purpose three values are needed packet size, time-delay and tcp flows. With the help of these values we avoid the congestion in network. Before we send message we take three parameters to calculate the network congestion If network congestion has occurred in router we put the message in waiting state. After our traffic clearance we will send the message to destination.

It's important to validate and clear the traffic because there is two types of packet loss that can happen in router. One is traffic occurrence and another one is malicious action. If we clear congestion, there is another possibility to loss packet is malicious action. So we can easily identify compromised router.

DESTINATION DETERMINATION:

In destination determination we implement AES algorithm for encrypt/decrypt process. In this system we use asymmetric key to evaluate the destination. The advantage of the AES is 128-bit block cipher. The use of this algorithm prevents hacker attack.

This maintains user message confidentiality, because if user is sending some information to destination it passes through several routers. There is a chance that middle router buffer will handle that message. On that time there is a chance hacker will attack the router, he can download the message and he can view that message also. Private signature keys are the private keys of asymmetric (public) key pairs that are used by public key algorithms to generate digital signatures with possible long-term implications. When properly handled, private signature keys can be used to provide authentication, integrity and non-repudiation.

RESPONSE:

This phase finds the alternative path because of attack. This system identifies and removes the conjunction packet loss. If any packet loss occurs after the conjunction is removed, we can easily identify it will happen by hacker attack. If we identify attack in any of the system we have to identify the alternative path also.

INTEGRITY CHECKING:

Finally, we have to verify message integrity to identify whether the packet loss is occurring or not. In this system we have to implement hash algorithm for integrity Checking.

In integrity checking, we use cbu hash algorithm to get hash value for client message. Hash value is important for message because hash value is important for integrity verification. Integrity verification is important for identifying whether the router is malicious or not.

Hash-based verification ensures that a file has not been corrupted by comparing the file's hash value to a previously calculated value. If these values match, the file is presumed to be unmodified. Due to the nature of hash functions, hash collisions may result in false positives, but the likelihood of collisions is often negligible with random corruption.

CONCLUSION

This is a serious attempt to distinguish between a router dropping packets maliciously and a router dropping packets due to congestion. Previous work has approached this issue using a static user-defined threshold, which is fundamentally limiting. Using the same framework as our earlier work (which is based on a static user-defined threshold), we developed a traffic faulty router detection that dynamically infers, based on measured traffic rates and buffer sizes, the number of congestive packet losses that will occur. Subsequent packet losses can be attributed to malicious actions. Because of non determinism introduced by imperfectly synchronized clocks and scheduling delays, protocol uses user-defined significance levels, but these levels are independent of the properties of the traffic. Hence, protocol does not suffer from the limitations of static thresholds.

Traffic Faulty Router Detection for Tcp Congestive Loss Control Over Wireless Network

NEW GENERATION CHIPSET- TEGRA 4

VIVEK E.K 2008-2012 BATCH

Nvidia has announced their next generation Tegra 4 chipset for simfree smartphones, tablets and notebooks. Like its predecessor, the Tegra 4 includes four high-speed processor cores as well as a fifth low-power companion core. The idea is that the four main cores are used for intensive tasks, while the companion

core takes over for easier tasks like playing video or music. This offers a best-of-both-worlds balance between processing power and power consumption.

The fourth-generation chip is built on a new 28 nm architecture, which offers greater efficiency than the previous 40nm process of Tegra 3. Nvidia CEO Jen-Hsun Huang has called the Tegra 4 the world's fastest mobile processor, although he hasn't yet confirmed specifics in terms of CPU frequency and details of the on-chip graphics processor. It's rumoured that the quad-core CPU runs at 1.9 GHz and that the GPU contains 72 CUDA cores – which should result in fittingly brilliant performance.

So far, Tegra 4 has been shown off on just a small number of devices, including an unnamed Windows RT tablet for a demonstration of HDR photography, Vizio's 10 2560 x 1600 tablet running Android and Nvidia's own Project Shield. This is a handheld games console that includes a 5 720p display mounted above an Xbox 360 style controller, within which the Tegra 4 chipset lurks.

It's not yet known how the Tegra 4 chipset will compare to Qualcomm's newly announced 600 and 800 series architecture – while both companies will hold that their mobile processor is superior, it won't really be until we see the first benchmark results with Tegra 4 and Qualcomm 800 devices that we'll really be able to judge the platform's strengths and weaknesses. Either way, both look to be strong upgrades from the previous generation and will no doubt form the core of flagship mobile devices in 2013.

Tegra 4 Key Features

- *GeForce GPU with 72 custom cores*
- *Quad-core ARM Cortex-A15 CPU, plus a 2nd Generation Battery Saver Core*
- *Computational Photography Architecture*
- *LTE capability with optional Icera i500 chipset*
- *4K ultra-high-def video support*

Students Corner

SIXTH SENSE FOR SALE!!

ASHWIN THOMAS S8 IT

'Sixth Sense' as we all know, is the 'Godly' ability to understand the cause and relationship behind many events, which is beyond the understanding of the intellect. But in the modern era of technology, 'SixthSense' is something else.

'SixthSense' is a wearable gestural interface that augments the physical world around us with digital information and lets us use natural hand gestures to interact with that information. We've evolved over millions of years to sense the world around us. When we encounter something, someone or some place, we use our five natural senses to perceive information about it; that information helps us make decisions and chose the right actions to take. But arguably the most useful information that can help us make the right decision is not naturally perceivable with our five senses, namely the data, information and knowledge that mankind has accumulated about everything and which is increasingly all available online.

Although the miniaturization of computing devices allows us to carry computers in our pockets, keeping us continually connected to the digital world, there is no link between our digital devices and our interactions with the physical world. Information is confined traditionally on paper or digitally on a screen. SixthSense bridges this gap, bringing intangible, digital information out into the tangible

world, and allowing us to interact with this information via natural hand gestures. 'SixthSense' frees information from its confines by seamlessly integrating it with reality, and thus making the entire world your computer.

The SixthSense prototype is comprised of a pocket projector, a mirror and a camera. The hardware components are coupled in a pendant like mobile wearable device. Both the projector and the camera are connected to the mobile computing device in the user's pocket.

The projector projects visual information enabling surfaces, walls and physical objects around us to be used as interfaces; while the camera recognizes and tracks user's hand gestures and physical objects using computer-vision based techniques. The software program processes the video stream data captured by the camera and tracks the locations of the colored markers (visual tracking fiducials) at the tip of the user's fingers using simple computer-vision techniques. The

movements and arrangements of these fiducials are interpreted into gestures that act as interaction instructions for the projected application interfaces. The maximum number of tracked fingers is only constrained by the number of unique fiducials, thus SixthSense also supports multi-touch and multi-user interaction.

The SixthSense prototype implements several applications that demonstrate the usefulness, viability and flexibility of the system. The map application lets the user navigate a map displayed on a nearby surface using hand gestures, similar to gestures supported by Multi-Touch based systems, letting the user zoom in, zoom out or pan using intuitive hand movements. The drawing application lets the user draw on any surface by tracking the fingertip movements of the user's index finger.

SixthSense also recognizes user's freehand gestures (postures). For example, the SixthSense system implements a gestural camera that takes photos of the scene the user is looking at by detecting the 'framing' gesture. The user can stop by any surface or wall and flick through the photos he/she has taken. SixthSense also lets the user draw icons or symbols in the air using the movement of the index finger and recognizes those symbols as interaction instructions. For example, drawing a magnifying glass symbol takes the user to the map application or drawing an '@' symbol lets the user check his mail. The SixthSense system also augments physical objects the user is interacting with by projecting more information about these objects projected on them. For example, a newspaper can show live video news or dynamic information can be provided on a regular piece of paper. The gesture of drawing a circle on the user's wrist projects an analog watch.

The SixthSense technology is definitely something that will link the physical world to the digital world. The time when everyone clicks a picture with a simple hand gesture and watches movies anywhere is not distant. Let us wait for this interesting future.

GOOGLE GLASSES

SMITHA. J S8 IT

WEARABLE TECHNOLOGY IS going to be the hottest thing in the coming months and years, especially when Google's "Google Glass" units start making it into the wild, turning us all into members of the Borg Collective. Google's Project Glass is Google's attempt to make wearable computing mainstream, and it's effectively a smart pair of glasses with an integrated heads-up display and a battery hidden inside the frame. It is an augmented reality headset that allows users to view information such as map directions and social media notifications through a head-mounted display. It also includes a camera with which the user can take pictures and engage in Google+ Hangouts. But for those already own specs, Google is experimenting with designs that will fit over existing glasses so we don't have to wear two lots of specs. It looks as though Project Glass will see a public release in 2014 at the earliest but developers have got a look with the 'explorer edition' units in the last week of January 2013.

▶ How it works

According to well-informed Google blogger Seth Weintraub, "Google's Project Glass" glasses will probably use a transparent LCD or AMOLED display to put information in front of our eyeballs. It's location-aware thanks to a camera and GPS, and we can scroll and click on information by tilting our head, something that is apparently quite easy to master. Google Glasses will also use voice input and output.

Specifications

The New York Times says that the glasses will run Android, will include a small screen in front of our eye and will

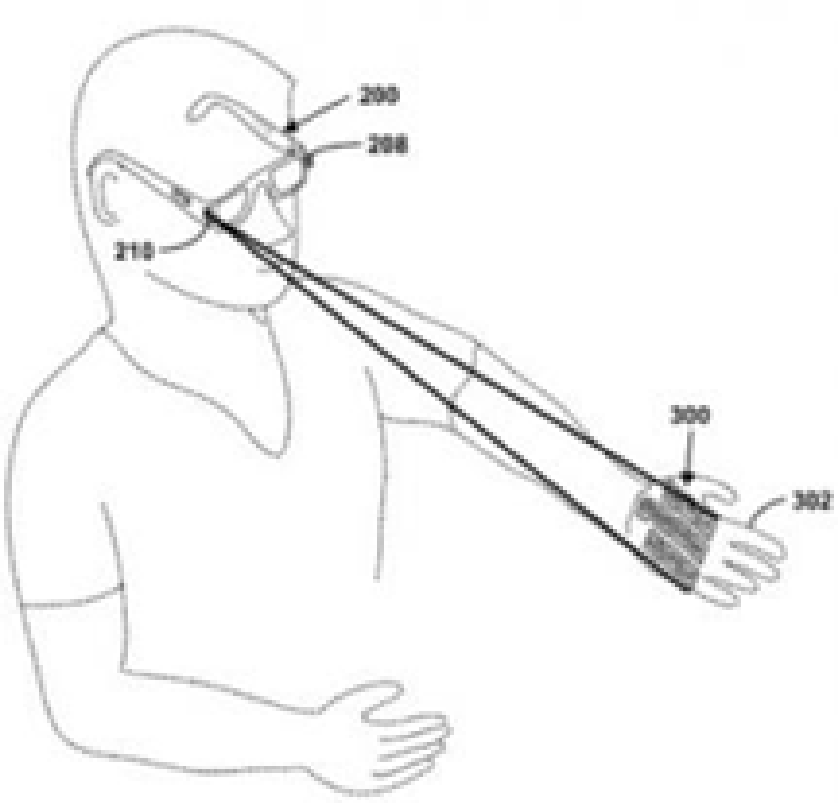
have motion sensors, GPS and either 3G or 4G data connections. Weintraub says that the device is designed to be a stand-alone device rather than an Android phone peripheral: while Project Glass can connect to a smart phone via Wi-Fi or Bluetooth 4.0, “it communicates directly with the cloud”. There is also a front-facing camera and a flash, although it’s not a multi-megapixel monster, and the most recent prototype’s screen isn’t transparent.

According to Google’s own video, we’ll be a super-being with the ability to have tiny people talking to us in the corner of our eye, to find our way around using sat-nav, to know when the subway’s closed, to take and share photographs. The idea is to deliver augmented reality, with information that’s directly relevant to our surroundings appearing in front of us whenever you need it. For example, our glasses might tell us where the nearest decent restaurant is, book our table, invite our friends and show us how to get there, or they might provide work-related information when we’re at our desk.

Price

The NYT says: according to “several Google employees familiar with the project who asked not to be named,” the glasses are expected “to cost around the price of current smart phones.” So that’s around £500, then, possibly with the help of a hefty Google subsidy.

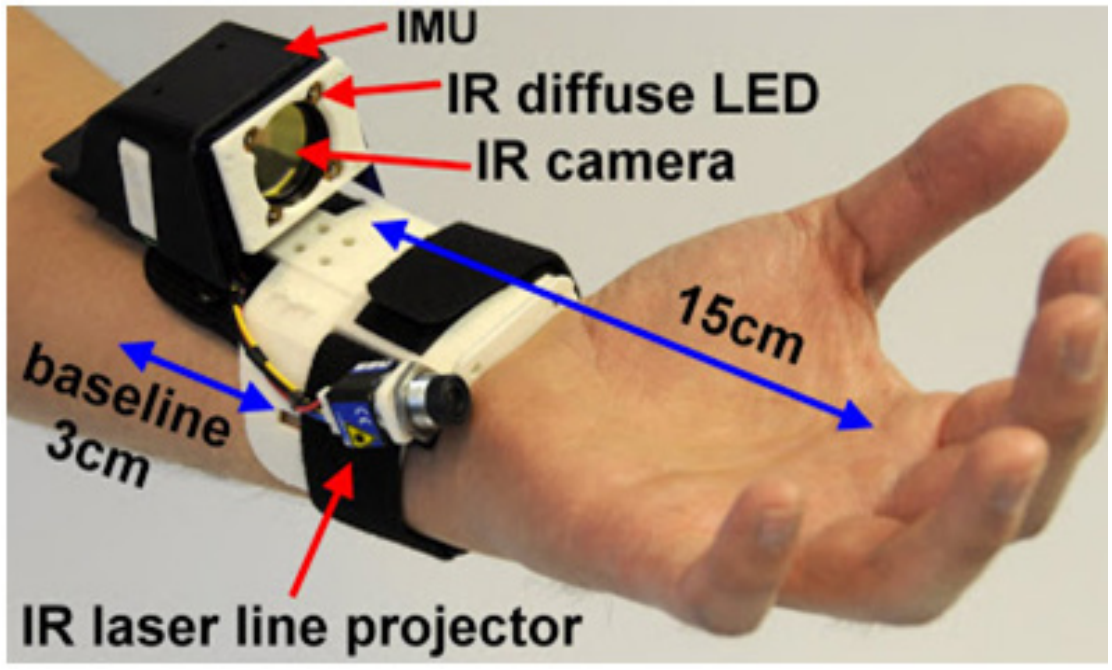
Expected Features: Google Glass features laser projected virtual keyboard that could be projected onto user’s arm



DIGITS – WRIST WORN SENSOR

RENJAN SAJU S6 IT

DIGITS IS A wrist-worn sensor that recovers the full 3D pose of the user's hand. This enables a variety of freehand interactions on the move. The system targets mobile settings, and is specifically designed to be low-power and easily reproducible using only off-the-shelf hardware. The electronics are self-contained on the user's wrist, but optically image the entirety of the user's hand. This data is processed using a new pipeline that robustly samples key parts of the hand, such as the tips and lower regions of each finger. These sparse samples are fed into new kinematic models that leverage the biomechanical constraints of the hand to recover the 3D pose of the user's hand. The proposed system works without the need for full instrumentation of the hand (for example using data gloves), additional sensors in the environment, or depth cameras which are currently prohibitive for mobile scenarios due to power and form-factor considerations. We demonstrate the utility of Digits for a variety of application scenarios, including 3D spatial interaction with mobile devices, eyes-free interaction on-the-move, and gaming.



System overview

Digits is a small camera-based sensor attached to the wrist that optically images a large part of the user's bare hand. The camera is placed so that the upper part of the palm and fingers are imaged as they bend inwards towards the device. Two separate infrared (IR) illumination schemes are used to simplify signal processing. The use of IR allows the illumination to be invisible to the user, and offers a level of robustness to ambient visible light. Both illumination schemes use low cost, readily procurable, and low-power components.

First, an IR laser line generator projects a thin IR line across the user's hand which intersects with the fingers as they bend inwards. This approach can be used to robustly sample a single 3D point on each of the fingers and thumb. From these five sparse samples, and by exploiting biomechanical constraints, we derive a forward kinematics (FK) algorithm to reconstruct a fully articulated hand skeleton. This initial approximation allows us to support a variety of 3D hand poses. However, each fingertip is essentially reduced to a single dimension of input, limiting its motion to curling either towards or away from the sensor. To more faithfully replicate the pose of the hand, more features need to be sampled on the hand. A complimentary method uses a ring of modulated IR LEDs to uniformly illuminate the user's hand. We demonstrate how to robustly extract the 2D positions of fingertips from this IR image, with an associated coarse depth estimate, by modeling the light fall off from the IR LEDs. This fingertip sensing approach can be coupled with the laser line sensing method to derive a new inverse kinematics (IK) based algorithm for computing the full joint-angle configuration of the hand. This method allows for even more realistic reconstructions of the hand. These methods work together to help constrain the otherwise ill-posed problem of recovering the full 3D hand pose from a 2D image. Because each method may be useful by itself, we keep the description of the two approaches separate. This also aids in understanding the underlying concepts, techniques and algorithms presented in this paper. Finally, an inertial measurement unit (IMU) can be used to approximate wrist and forearm motions in 3D.

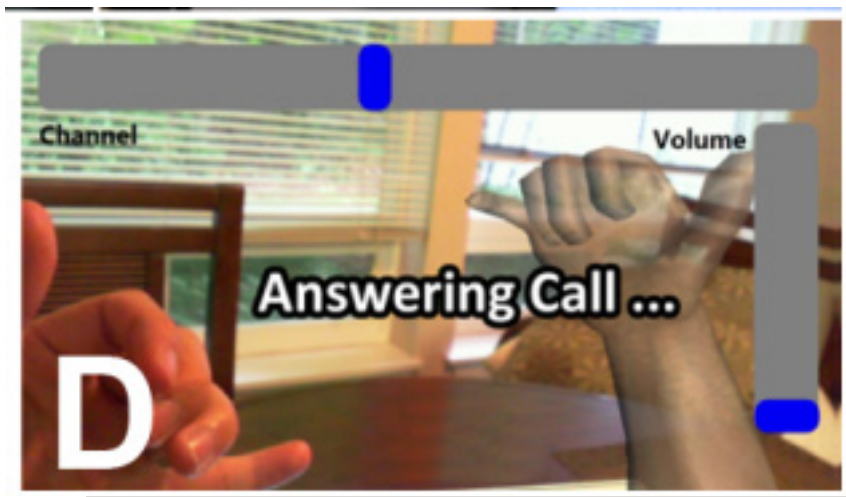
Digits application scenarios:

A+B) Extending interaction space around a mobile device into 3D.

C+D) Nonvisual UIs allow users to manipulate application parameters without looking at or touching a physical device (GUI elements are for illustration only).

We envision Digits will expand the physical interaction area of mobile devices beyond the display. In one application scenario (see Fig. A+B) the user holds and interacts with a tablet (or phone) using the dominant hand and uses the non-dominant hand

to provide 3D input to the application. For example, semantic zooming is initiated with an in-air pinch gesture, and the zoom factor is controlled with the remaining digits. An interesting possibility here is to support on-screen interactions and simultaneous freehand interactions. For example, dividing between fine-grained interactions on the touch-screen and coarser navigation tasks using the non-dominant hand and Digits. Our tracker is gloveless and enables the user to interact with the mobile device and operate Digits with the same hand. This allows standard 2D touch gestures to be coupled with above-the-surface interactions in 3D. For example, for quickly changing the Z-order of a selected object by first touching the target and then performing an in-air pinch-based zoom. Finally, the display could be removed entirely in an eyes-free interaction scenario. The 3D input capabilities of Digits can allow spatial interactions with invisible UIs, such as dials, sliders, or buttons without visual output (see Fig. C+D). For example, we can leverage both proprioceptive knowledge and spatial memory to allow the user to set the volume on a mobile phone by directly reaching out and interacting with a virtual dial turning their hand to the right of the body and performing typing gestures on a virtual number pad to place a call or moving the hand to the left of the body and touching their thumb and individual fingers to activate other phone functions. One interesting possibility here is to detect the type of action by the initial 3D shape of the hand. For example, if the user requires to change the volume, they simply configure their hand as if they are holding a virtual dial, which can then be rotated to set the desired level.



ROLLTOP LAPTOPS

AKHITHA MD - S6 IT

All-In-One Rolltop Laptop :

This newly designed laptop uses flexible OLED display on the panel and keyboard.

• It replaces the conventional physical keyboard so the 13” laptop transforms into the graphics tablet with its 17” flatscreen

• It’s a new concept in notebook design with a flexible display

• The OLED-Display technology has a multi touch screen

• All computer utilities from power supply through the holding belt to an interactive pen are integrated into this rolltop

• The shutter also incorporates the system’s hardware itself

• The wireless station can recharge the PC which provides two USB ports for connecting peripherals.

COMPONENTS:

Most of the components for the Rolltop already exist within the modern day designs such as the main board, processor, memory (flash), working memory, etc. The Rolltop does not have a CD/DVD reader or Floppy disc because they’re obsolete. Other components, such as the loudspeaker, Internet, web cam, USB ports and power supply are based in the cylinder in which the screen would roll around. The Rolltop’s success hinges on the utilization of OLED Technology, or organic light emitting diode. This technology would be the main component of the laptop’s monitor. It is tough, flexible and energy saving, flexible to roll it, tough to draw on it, and energy saving to have a smaller battery than what is already being implemented.

STRUCTURE OF ROLLTOP:

The Rolltop laptop incorporates energy-efficient flexible OLED technology and a multi-touch screen. As you unroll it, you get a laptop with a 13-inch screen. Flattened out, it becomes a graphics tablet for use with the enclosed stylus pen. On the back the Rolltop laptop is a stand that can be pulled out into a 17-inch display for viewing videos. A webcam, loudspeaker and power/data supply are included in the core cylinder.

The Orkin laptop can also transform into a tablet PC operable with a stylus, or become a standup flat screen display. A power adapter and other features fit with the carrying canister that comes with a convenient holding strap.

While there really isn’t anything unique from a technology perspective (it does however feature fabulous packaging), it is only made possible and constructed with the broad range of rare metals: rare earth magnets in the voice coils, indium-tin-oxide in the OLED screens, tantalum in the capacitors, lithium in the batteries, beryllium in the connectors and wires etc.

BENEFITS OF ROLLTOP:

• One, the Rolltop combines the laptop, monitor and graphic tables without any problem (such as small display in monitor modus or fold on screen in graphic tablet modus).

• Secondly, the Rolltop is an all-in-one gadget that integrates the power supply, loud speaker, laptop bag and mouse into one. You don’t have to carry extra accessories.

• Lastly, due to the new available technology, the design is very compact.

• Provide ease in carrying

VIRTUAL KEYBOARD

ELDHO PETER S4 IT

VIRTUAL KEYBOARD is just another example of today's computer trend of 'smaller and faster'. It uses sensor technology and artificial intelligence to let users work on any surface as if it were a keyboard. Virtual Keyboard is a small Java application that lets you easily create multilingual text content on almost any existing platform and output it directly to web pages. Virtual Keyboard, being a small, handy, well-designed and easy to use application, turns into a perfect solution for cross platform multilingual text input.

The main features are: platform-independent multilingual support for keyboard text input, built-in language layouts and settings, copy/paste etc. operations support just as in a regular text editor, already existing system language settings remain intact, easy and user-friendly interface and design, and small file size. Virtual Keyboard is available as Java applet and Javascript. It uses a special API to interact with a web page. You can invoke its public methods from Javascript to perform certain tasks such as Launch Virtual Keyboard, Move the Virtual Keyboard window to exact screen coordinates, etc. The application also uses a bound text control to transfer the text to/from the page. Brother set had private his letters

Virtual typing: Virtual Devices have developed a flashlight-size gadget that projects an image of a keyboard on any surface and let's people input data by typing on the image. This system comprises of three modules, the sensor module, IR-light source and the pattern projector .The device detects movement when fingers are pressed down. Those movements are measured and the device accurately determines the intended keystrokes and translates them into text. This is a set of clips that fit into your hand and try to sense the motion of the fingers and the hands (wrist) and translate them into keystrokes. The translation process also uses artificial intelligence. Once the keystroke has been decoded, it is sent to the portable device either by cable or via wireless.

The Virtual Keyboard uses light to project a full-sized computer keyboard onto almost any surface, and disappears when not in use. Used with Smart Phones and PDAs, the VKey(TM) provides a practical way to do email, word processing and spreadsheet tasks, allowing the user to leave the laptop computer at home. VKey technology has many applications in various high-tech and industrial Sectors. These include data entry and control panel applications in hazardous and harsh environments and medical markets.

It is also a superior desktop computer keyboard featuring dramatically easier to learn touch-typing and leaving one hand free for mouse or phone. Combination key presses ("chords") of five main and two extra control keys allow users to type at 25-60 words per minute, with possibly greater speeds achieved through the use of abbreviation expansion software. Most users, however, will find memorizing the chords easy and fun, with the included typing tutorial. The scanner can keep up with the fastest typist, scanning the projected area over 50 times a second. The keyboard doesn't demand a lot of force, easing strain on wrists and digits. Virtual keyboards solve the problem of sore thumbs that can be caused by typing on the tiny keyboards of various gadgets like PDAs and cell phones. An infrared adapter allows PC usage without any driver software being necessary. The standard coin-sized lithium battery lasts about eight months before needing to be replaced.

The Virtual Keyboard uses an extremely durable material which is extremely easy to clean. The Virtual Keyboard is not restricted to the QWERTY touch-typing paradigm, adjustments can be done to the software to fit other touch-typing paradigms as well, such as the DVORAK keyboard. It will work with all types of Bluetooth enabled devices such as PDAs and smart phones, as well as wearable computers. Applications include computer/PDA input, gaming control, TV remote control, and musical applications. Canesta appears to be the most advanced in this class of technology and the only one who is shipping product. Other products are KITTY, a finger-mounted keyboard for data entry into PDA's, Pocket PC's and Wearable Computers and KITTY, a finger-mounted keyboard for data entry into PDA's, Pocket PC's and Wearable Computers. Thus virtual keyboards will make typing easier, faster, and almost a pleasure.

MULTI-TASKING MICRO-LIGHTS

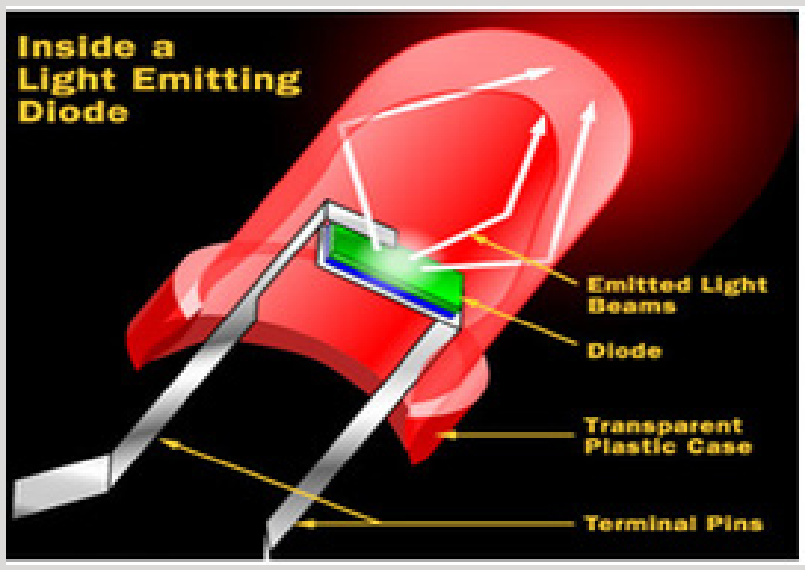
ANJALI THOMAS S4 IT

TINY LED LIGHTS now being developed could deliver Wi-Fi-like internet communications, while simultaneously displaying information, and providing illumination for homes, offices etc. Developing this innovative technology will help unleash the full potential of 'Li-Fi' – the transmission of internet communications using visible light rather than the radio waves and microwaves currently in use.

Underpinning Li-Fi is the use of light emitting diodes (LEDs), a rapidly spreading lighting technology which is expected to become dominant over the next 20 years. Imperceptibly, LEDs flicker on and off thousands of times a second. By altering the length of the flickers, it is possible to send digital information to specially adapted PCs and other electronic devices. This would make the visible part of the electromagnetic spectrum available for internet communications.

But rather than developing Li-Fi LEDs around 1mm2 in size, which other researchers around the world are concentrating on, the EPSRC-funded team is developing tiny, micron-sized LEDs which potentially offers a number of major advantages: Firstly, the tiny LEDs are able to flicker on and off 1,000 times quicker than the larger LEDs this also means they can transmit data more quickly. Secondly, 1,000 micron-sized LEDs would fit into the space occupied by a single larger 1mm2 LED, with each of these tiny LEDs acting as a separate communication channel. A 1mm2 sized array of micron-sized LEDs could therefore communicate 1,000 x 1,000 (-i.e. a million) times as much information as one 1mm2 LED.

Moreover, each micron-sized LED would act as a tiny pixel. So one large LED array display (e.g. used to light a living room, a meeting room or the interior of an aircraft), could also be used as a screen displaying information at exactly the same time as providing internet communications and the overall room lighting.



Eventually, it could even be possible for the LEDs to incorporate sensing capabilities too. For example, your mobile phone could be equipped with a flash that you point at a shop display where everything has been given an electronic price tag, and the price of all the items and other information about them would show up on your phone's display.

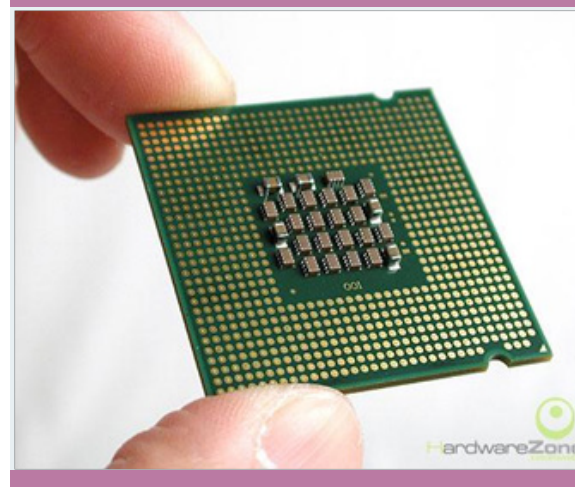
This innovative technology can help tackle the many formidable challenges involved – in electronics, computing and materials, for instance – in making this vision a reality. This technology could touch every aspect of human life within a decade.

BUYING A SMARTPHONE

PARVATHY RAMESH - S1S2 E

THESE DAYS MARKET is flooded with lot of Smartphones, every single day a new smartphone is launched, that makes you confused about which one you should buy. If you are planning to buy a new smartphone basic thing you look for is its camera, screen size, looks, builds and lastly its price. But after buying the phone, you find it a little slower in processing or the phone freezes often that can disappoint you. So instead of going for the looks, better go for the one with good performance.

1. Processor: Processor is the core functioning element or brain of the smartphone. You can find processors as single core or double core or quad core in smartphones. Having four different cores allows your phone to do more things at once without slowing down. Quad-core processors are also more efficient and have better battery life than some dual-core CPUs. When it comes to the fastest processor speed, the HTC one X+ wins, with it's over clocked 1.7GHz quad-core processor.



2. RAM: RAM is also among the most important factor as the processing speed or the rate of multitasking. Smartphone performance depends on RAM or physical memory of the smartphone. These days smartphones come with up to 2 GB RAM. Samsung Galaxy S III and LG Optimus G have a 2 GB RAM.

3. Battery: Battery is an important factor as later on you find that your smartphone battery finishes very early, it will ruin your Smartphone experience. Battery capacity is specified in mAh. So when you are buying Smartphone, make sure that the battery capacity is such that it does not drain quickly. Samsung Galaxy Note II is powered by a 3,100 mAh battery.

4. Operating System: The iOS 6 and Andriod 4.2 (Ice Cream Sandwich) are two of the best operating system available now. Windows 8 is also becoming popular now..

New @IT

Trending new TECHNOLOGIES

Iphone 5

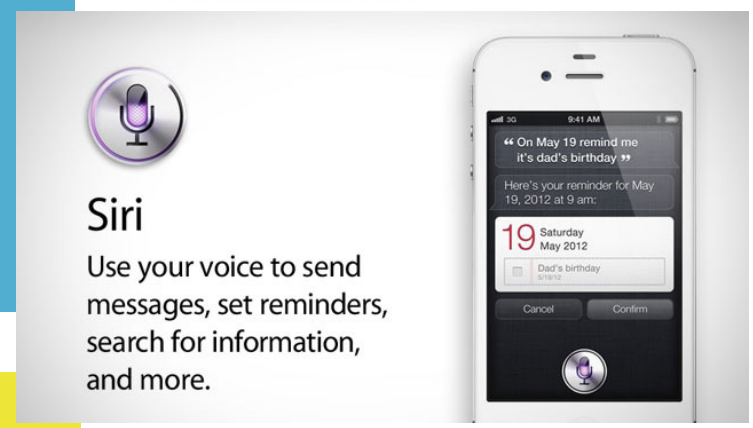
It is the sixth generation of the iPhone and succeeds the iPhone 4S. The phone is a slimmer, lighter model that introduces a higher-resolution, 4-inch screen to the series with 16:9 widescreen aspect ratio.

Google Nexus

Nexus 10 is the newest tablet from Google. With the world's highest resolution tablet display, all new multi-user support, immersive HD content and the best Google apps – Nexus 10 has something for everyone.

Voice control

The novelty of Siri on the iPhone 4S - which allows you to send texts, create reminders, search the Web and much more using just your voice was just the start of a new trend in voice controlled devices.
Google with its new Google Voice is a strong competitor in the area. Though not as advanced as Siri, Google voice is definitely coming up with more features powering devices run on Android Jelly bean.



Android 4.1

Android 4.1 takes the speed and simplicity of Android to a different level – a completely new camera experience that's beyond smart, a new form of typing that helps you power through your messages, and much more.devices run on Android Jelly bean.

Microsoft Surface

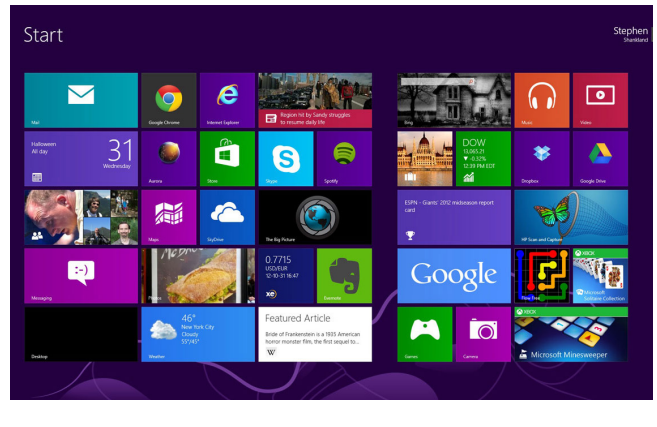
It took a while, but Microsoft blasted into the tablet market with Surface, which is not quite a tablet, nor is it a computer. In fact, it's a PC in tablet's clothing.

Flexible screens

These awesome new bendable interfaces will let you zoom in, zoom out and scroll around a page simply by twisting your phone or tablet.
Nokia and Samsung have both hinted they may release phones with bendable displays in 2012. The really exciting stuff, however like paper-thin devices that roll up to fit in your pocket is still years away.

Windows 8

In the works for years, Microsoft officially rolled out the golden master of Windows 8 on Oct. 26. A dramatic departure from Windows 7, it introduced the controversial Start Screen, eliminating that start orb that many had gotten so accustomed to.



HTML5

The fifth iteration of the HTML standard.It lets developers create richer, more interactive applications than ever. As developers tire of building applications for every operating system out there - from Android to iOS to Windows Phone and beyond - HTML5 offers the opportunity to build an app once and have it work everywhere.

Google Fiber

Google Fiber is a combination broadband and television service that's lighting up the Kansas City, with an unheard 1Gb-per-second connectivity. Residents are paying a mere $70 a month to take part in this unprecedented experiment. Now, Google spread it all over everywhere.

Kindle Paperwhite

Graced with a built-in light with a series of LEDs that evenly illuminate its 6-inch display, its excellent performance and Amazon's established ecosystem of products and services are tough to beat.

iTRAX

i-TRAX(2012-2013), Association of Informa¬tion Technology Department, was inaugurated by Mr. Gopalakrishnan Prakash (Senior HR Manager) of UST Global Technologies, Kochi on 13th August 2012. He inaugurated the activities of iTRAX by delivering a talk on “The importance of life beyond Studies” which was presided by our principal Dr J Isaac. Student representatives were selected for the year 2012-2013 and have assigned duties for better performance of i-TRAX were called upon by the HOD, Prof Kuttyamma A.J.

Chairman	-Aleena Nazar (S8 IT)
Vice Chairman	-Menokil Nirmal (S8 IT)
Treasurer	-Haripriya (S6 IT)
Secretary	-Milan Koshy(S6 IT)
Documentation In Charge	-Parveen (S4 IT)
Student Rep.	-Don Thottan (S4 IT)

Mr. Jimmy Mattew, Assistant Professor from Department of IT and Ms. Abey Abraham Assistant Professor from Department of IT were the coordinators of this program.

I-TRAX, the also conducted a Technical video presentations on latest trends and events in IT industry on 10th September 2012. The talk shed light upon the new generations upcoming” Sixth Sense Technology” this was delivered by Mr. Jimmy Mattew.

SECOND INTERNATIONAL CONFERENCE ON ADVANCES IN COMPUTING AND COMMUNICATIONS (ICACC 2012)

INTERNATIONAL CONFERENCE ON ECO-FRIENDLY COMPUTING AND COMMUNICATION SYSTEMS (ICECCS)

The second International Conference on Advances in Computing and Communications (ICACC-2012) International conference on Eco-friendly Computing and Communication Systems (ICECCS) was hosted by Department of IT and CS during August, 9-11, 2012 at Rajagiri School of Engineering & Technology (RSET) Kochi, Kerala, India. The conferences focussed on Advances in Computing and Communications Green & Eco-friendly Computing". The conference witnessed and provided a forum for sharing insights, experiences and interaction on various facets of evolving technologies and patterns related to Computer Science, Information Technology, Electronics and communication. The conference proceedings are published in IEEE and Springer.

The conferences were inaugurated by Honourable Minister for Food and Civil Supplies, Consumer Protection and Registration Shri.Anoop Jacob. In his inaugural address he wished all success for the institution and conference, and made an impressive talk on the strength of untapped power of will and knowledge in youth.

Dr. Raju Narayana Swamy IAS, offered felicitations and also released the conference proceedings, which is published by IEEE. Rev. Fr. Jose Alex, CMI, Provincial and manager, offered Presidential address. He stressed on the importance of gaining knowledge about new technologies and producing results by exchange and development of new ideas.

Shri. K.S.Jamestin, Director of HR and Business Development, ONGC was also presented on the occasion and released the conference proceedings published by Springer.

Rev. Dr. Antony Kariyil CMI, Director, RSET, addressed the gathering and talked about the importance of specialization in each area in the present era.

The workshop proceedings were released by Dr.Jimson Mathew from University of Bristol, UK. Dr. Jimson Mathew also gave a brief overview of the two conferences.

Plenary sessions were given by Dr. Raju Narayana Swamy,IAS, Dr. Florian Schatz, Christian-Albrechts-university, Germany, Dr. Rakesh Kumar Bajaj, Jaypee University of Information And Technology, Dr. Tuhina Samanta, BECS, Calcutta, Dr. Vijay Kumar CTO, ASSYST, Dr. S K Sinha,IISc, Dr. K. P. Ray, SAMEER, Bombay, and Prof. Govindan Rangarajan, Indian Institute of Science, Bangalore.

The collocated workshops are

1. International Workshop on Green Energy Technologies (I-WGET 2012)

2. National Workshop on Software Defined Radio in Signal Processing- by Amritha Viswa Vidyapeetham, Coibatore

3. International Workshop on Advances in Wireless and Microwave Technology (I-AWMT 2012)

4. International Workshop on Mathematical Modeling and Scientific Computing (I-MMSC 2012) by IISER, Trivandrum

5.International Workshop on Applications of Signal Processing (I-WASP 2012)

A conference banquet was held on the second day and Sri Murali Narayanan and his team impressed the audience by his magical flute performance. Of the total 600 plus received papers for ICACC conference, 360 papers

were reviewed, each by three expert reviewers and 116 papers were finally accepted. 90 research papers were presented in the conferences by researchers.

The conferences financially supported by Oil & Natural Gas Corporation (ONGC) and Kerala State Council for Science Technology and Environment (KSCSTE)

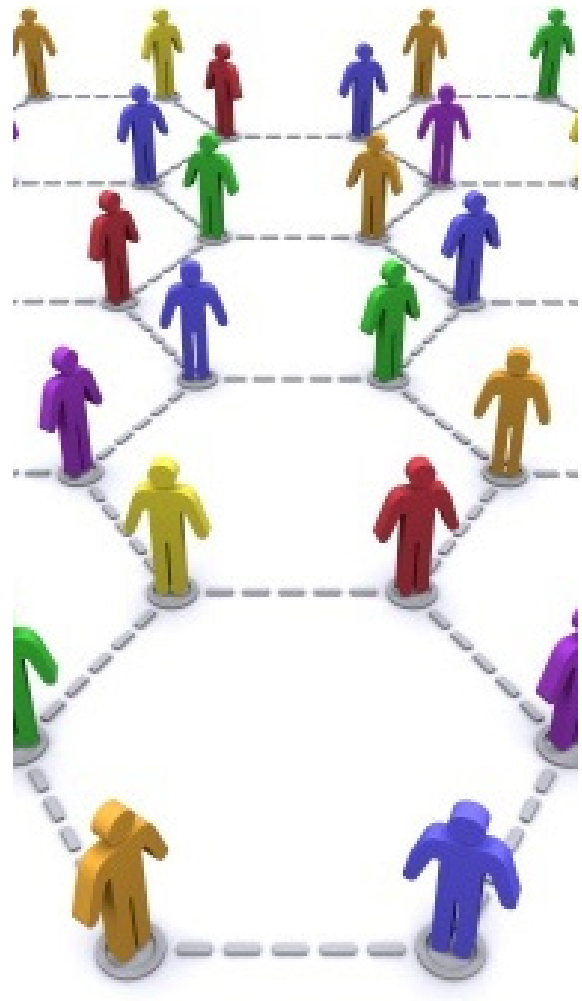
WORKSHOP ON NETWORK PROGRAMMING LAB

A one day workshop on network programming lab was conducted by Department of IT for faculty members of IT Department of Engineering Colleges under MG University on 23rd January, 2013. This was inaugurated by Rev. Fr. Dr. Antony Kariyil CMI, Director, RSET.

The objective of the workshop was to maintain uniformity in the conduct of Network Programming lab sessions for S6 students among IT Departments and to design a lab cycle which covers all the concepts within the time constraint of this semester.

The workshop included sessions which discussed the course contents, tools and experiments. At the end of the session experiments to be included in the lab was finalized.

The session on Java Network Programming and Network Simulation Tool was handled by JishaG, Assitant Professor, RSET. Arun Soman, Assistant Professor, RSET gave an idea on UNIX network Programming and simulation of network protocols. 21 Faculty members from 11 Engineering Colleges attended the workshop.



REPORT ON CYBER AWARENESS CAMPAIGN AT SCHOOLS

Department of Information Technology, RSET initiated the cyber awareness workshop for school children (targeting 11th and 12th standard). The first drive was at Govt. Girls Higher Secondary School, Ernakulam on 4th January 2013. The program was organized in association with Cyber Crime Investigation Cell, Kochi and CDAC, Trivandrum. The formal inaugural function was presided by Rev. Dr. Antony Kariyil, CMI and inaugurated by Deputy Mayor of Kochi, Ms Bhadra. The program had excellent coverage in all leading newspapers of Ernakulam edition. Also there were live programs on all FMs regarding the program.

The students at school numbered to around 450. The school managements were really supportive and the students were highly interactive. The immense success of the program is attributed to the team work of the entire faculty group of IT department.