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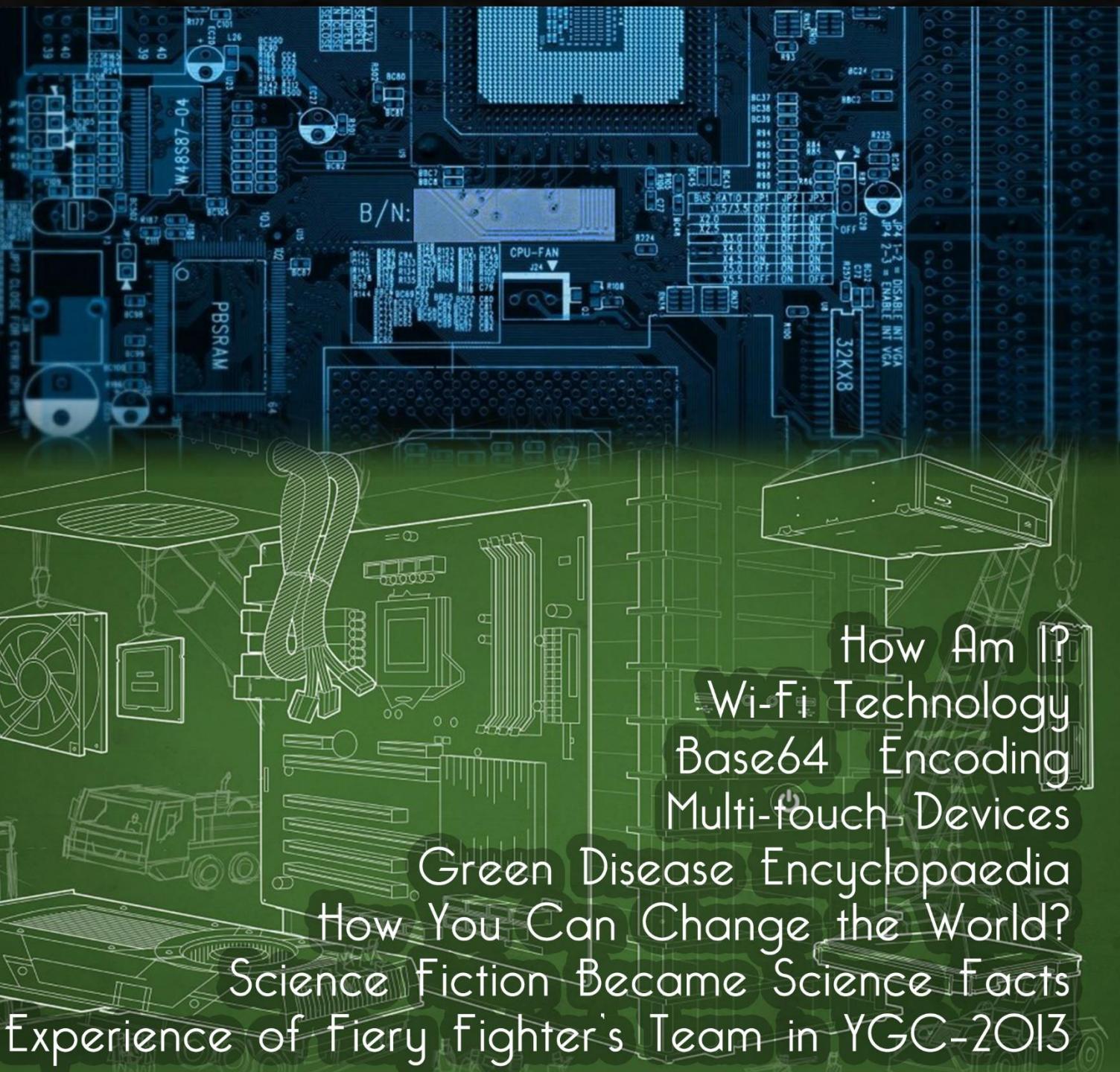
KANANIYAM

NEWSLETTER

Volume - 3

Knowledge is Power

July 2014



How Am I?
Wi-Fi Technology
Base64 Encoding
Multi-touch Devices

Green Disease Encyclopaedia
How You Can Change the World?

Science fiction Became Science facts

Experience of Fiery Fighter's Team in YGC-2013

Department of Computer Science, University of Jaffna, Sri Lanka.

www.csc.jfn.ac.lk/comsoc

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Message from the Patron

I am very happy to note that the Computer Society is ready to publish the next issue of “**Kananiyam**” after an elapse of a decade. I think it is essential that a student society publish such an informative newsletter periodically to well inform and enlighten its members with the latest trends in the related technological fields.

This issue of “**Kananiyam**” contains many articles written by students and it shows the passion and the enthusiasm our students have in knowing and disseminating new knowledge among themselves. This clearly indicates that our students are very much on the right path of knowledge discovery and dissemination.

My vision is that in the next issue of the “**Kananiyam**” many more student writers will contribute and the editorial team will ensure that each and every member of the COMSOC contributes to the publication of the “**Kananiyam**”.

I congratulate the COMSOC team for their hardwork in bringing this issue and wish you all the best!

Thank you.

Mr. K. Thabotharan
Head/ Department of Computer Science

Message from the Editors

Dear Readers,

“**Kananiyam (கணனியம்)**” is the annual newsletter of the Computer Society of the University of Jaffna. The first issue was released in July 1999. The second issue, after a lapse of time due to unavoidable situations, came out only in January 2003. Those two releases were well received and supported by you.

Now we endeavor with fresh mind and peaceful environment and releasing the third newsletter this year. Our sincere thanks go to the HETC/QIG Project team (HETC/QIG/W2/R2/JFN/PHY) for partially funding to print this newsletter. In this issue of the newsletter you will find informative articles related to Computer Science and see the achievements of students of Department of Computer Science. We are looking forward to your generous support to continue this journey.

Thank you.

Ms. J. Jeyapratheepa
Editor 2011/2012

Ms. Y. Kalyani
Editor 2012/2013

Science Fictions Became Science Facts

Students' Achievements

University Mobility Software Development Competition

Inter-University Mobility Software Development Competition which was organised by Motorola Inc., and SLASSCOM. Our teams became Second Runner-Up in year 2011 and 2014. Following are the details of the award winning teams:

Year - 2014

Project Title:

"An ANDROID application 'OCPA'- One Click Public Assistant System"

Team Members:

- Ms. S. Anusha Harshani
- Mr. R. Miller
- Mr. M. Nifras
- Mr. H.M. Rajjaz
- Mr. V. Saahithyan

Mentor:

Mr. K. Thabotharan

Year - 2011

Project Title:

"On the Spot Accident Report System (OSARS)"

Team Members:

- Mr. V. Kaveevendan
- Mr. N. Nilashan
- Mr. S. Ranjith
- Mr. S. Sugirthan

Mentor:

Mr. K. Thabotharan

In the last year, science made a large number of breakthroughs. In this article I collected some of them which I believe would be useful to others as well.

• Human Brain is Hacked

This was an idea of researchers of Usenix Security conference. And they have demonstrated this with an off-the-shelf brain-computer interface (BCI). And they revealed that the human brain can be hacked and they can reveal the information that you kept as secret.

"As we've covered in the past, a brain-computer interface is a two-part device: There's the hardware — which is usually a headset (an EEG; electroencephalograph) with sensors that rest on your scalp — and software, which processes your brain activity and tries to work out what you're trying to do (turn left, double click, open box, etc.). BCIs are generally used in a medical setting with very expensive equipment, but in the last few years cheaper, commercial offerings have emerged. For \$200-300, you can buy an Emotiv or Neurosky BCI, go through a short training process, and begin mind controlling your computer" – News from 'extremetech'.

For more details, visit: <http://www.extremetech.com/extreme/134682-hackers-backdoor-the-human-brain-successfully-extract-sensitive-data>

• Microsoft patented "Holodeck"

I am a fan of games. So, I like this product.

If you've ever wanted to recreate the cinema in your living room, or wondered what Star Trek's holodeck would really be like, Microsoft may have the answer. The firm has revealed an astonishing prototypes projector and scanner than can turn an entire living room into a screen. The IllumiRoom proof-of-concept system from Microsoft Research has been shown off playing games in a stunning promotional video. Microsoft has refused to reveal details of how the system works until it is presented at a computer graphics conference later this year. However, the firm did say: 'It augments the area surrounding a television screen with projected visualisations to enhance the traditional living room entertainment experience.' IllumiRoom uses a Kinect for Windows camera and a projector to blur the lines between on-screen content and the environment we live in allowing us to combine our virtual and physical worlds. The Kinect sensor, more usually used to allow users to control computer games, is known to contain several sensors capable of tracking a user's movement in highly accurate detail. Microsoft also shows of the system scanning a room to create the perfect 'holodeck'.

• Ultra Flexible "Willow" glass will allow for curved Electronic Devices

I like electronic devices which are less in weight and more features.

This is a product of the Corning Company. We couldn't forget the Video "A day made of Glass". That video showed us how our future will be. And they have now announced about their new product, "Willow glass". Corning Willow Glass will help enable thin, light and cost-efficient applications including today's slim displays and the smart surfaces of the future. The thinness, strength and flexibility of the glass have the potential to enable displays to be "wrapped" around a device or structure.

SLITT CODEFEST

CODEFEST is conducted by the Faculty of Computing of Sri Lanka Institute of Information Technology (SLIIT). For the first time our students have participated in CODEFEST 2013.

Team Members:

- Ms. S. Jananie
- Mr. R. Jarachanthan
- Mr. R. Miller
- Mr. I. M. Nifras
- Ms. J. Samantha Tharani

SL-SWCS

The Sri Lanka student workshop on Computer Science - SL-SWCS brings student researchers of Sri Lanka together for a one-day workshop to provide an opportunity for young research students across the country to involve in discussions with some top researchers from local or foreign universities. Participants will also have the possibility to present results of their research activities.

Two workshops were held in 2011 and 2013, and awards for Best Presentation and Best Poster were given away:

SL-SWCS - 2011

Best Poster Award

Mr. S. Sivasuthan
(Alumni of UOJ, Sri Lanka,
PhD Student at the Michigan State University, USA)

Best Presentation Award

Ms. G. Yawwani Poornima
(Alumni of UCSC, Sri Lanka,
PhD Student at the University of Southampton, UK)

As well, Corning Willow Glass can be processed at temperatures up to 500°C. High temperature processing capability is essential for today's high end displays, and is a processing condition that cannot be supported with polymer films. Corning Willow Glass will enable the industry to pursue high-temperature, continuous "roll-to-roll" processes – similar to how newsprint is produced - that have been impossible until now. It will support thinner backplanes and colour filters for both Organic Light Emitting Diodes (OLED) and liquid crystal displays (LCD) in high performance, portable devices such as Smartphone's, tablets, and notebook computers.

This new, ultra-slim flexible glass will also help to develop conformable (curved) displays for immersive viewing or mounting on non-flat surfaces. Corning Willow Glass is formulated to perform exceptionally well for electronic components such as touch sensors, as well as leveraging glass's natural hermetic properties as a seal for OLED displays and other moisture and oxygen sensitive technologies.

• Eye Implants give sight to blind

This was made by the company "Second Sight". This is the most advanced prosthetic to date

A prosthetic device that can restore some sight to the blind has been approved by the U.S. Food and Drug Administration. The company that makes the device, Second Sight, based in Sylmar, California, can now market the retinal prosthetic to patients with advanced retinitis pigmentosa, a degenerative eye disease that can cause blindness. This is the first approved treatment for the disease in the United States.

"This enables people who are completely blind to see enough to improve their mobility," says Mark Humayun, a professor of biomedical engineering at the University of Southern California in Los Angeles who has been developing the device for the past 25 years. "It allows people to make out the sidewalk and stay on it without twisting an ankle, see unexpected obstacles like parked cars, make out a table, see someone coming through a doorway," he says. Some patients can make out large letters, but the main function of the implant is to give patients enough sight to restore mobility.

The device, called the Argus II, has three main parts: a glasses-mounted video camera; a portable computer; and a chip implanted near the retina. The video camera sends image data to the computer, which is worn on a belt. The processor converts the image data into electrical signals that are beamed to a chip implanted near the retina. The signals are then sent to an array of 60 electrodes that stimulate the retinal cells. These electrodes essentially do the work of the light-sensing cells that have degenerated. So far, the system can't help patients make out different colours, but it can provide them with enough visual sensation to sense the outlines of things nearby.

• Invisibility Cloak Technology Took a Huge Leap Forward

British Columbia Company Hyper Stealth Biotechnology showed a functioning prototype of its new fabric to the U.S. and Canadian military this year. The material, called Quantum Stealth bends light waves around the wearer without the use of batteries, mirrors, or cameras. It blocks the subject from being seen by visual means but also keeps them hidden from thermal scans and infrared.

Source: toxel.com

SL-SWCS - 2013

Best Poster Award

Awarding holders:

- Ms. D. Luckshica
- Mr. S. Mayooran
- Mr. N. Nilashan
- Mr. S. Thenuzan

Best Presentation Award

- Mr. K. Kanaruban
(Undergraduate Student at University of Moratuwa)

Yarl Geek Challenge (YGC)

The Yarl IT Hub community conducted Yarl Geek Challenge season 1 & 2 in 2012 and 2013. Yarl Geek's Challenge is an annual premier technology competition open to all youth. The intended competition is to nurture IT skills, innovation and creativity and fostering a spirit of entrepreneurship among the entrants.

• YGC Season-1

Second Prize

Team Cybers:

(won cash prize LKR 25000)

- Ms. G. Janany
- Mr. R. Sanjeevan

Third Prize

Team Zeros:

- Ms. D. Luckshica
- Mr. S. Mayooran
- Ms. K. Vanaja
- Mr. G. Vijayakanthan

• 3-D Printer Creates Full-Size Houses in One Session

The D-Shape printer, created by Enrico Dini, is capable of printing a two-story building, complete with rooms, stairs, pipes, and partitions. Using nothing but sand and an inorganic binding compound, the resulting material has the same durability as reinforced concrete with the look of marble. The building process takes approximately a fourth of the time as traditional buildings, as long as it sticks to rounded structures, and can be built without specialist knowledge or skill sets.

Source: gizmag.com

• Artificial Leaves Generate Electricity

Using relatively inexpensive materials, Daniel G. Nocera created the world's first practical artificial leaf. The self-contained units mimic the process of photosynthesis, but the end result is hydrogen instead of oxygen. The hydrogen can then be captured into fuel cells and used for electricity, even in the most remote locations on Earth.

Source: sciencedaily.com

Ivan D. Q. Balendra (2012/CSC/005)

Wi-Fi தொழில்நுட்பம்

தந்தியில்லா வலையமைவு (Wireless Network) நுட்பங்களில் ஒன்றே இந்த Wi-Fi தொழில்நுட்பமாகும். இது எமது நாட்டிலும் இன்று பரவலான பயன்பாட்டிற்கு வந்திருக்கிறது. பொதுவாக மீமிடிக்கணினி தனிநபர் இலக்கத்து உதவியான் தொலைபேசி போன்றவற்றிலும், அலுவலகங்களிலும் இந்தத் தொழில்நுட்பம் பயன்படுத்தப்படுகிறது. பழைய முறையான தந்தியூடு வலையமைவைக் (Wired Network) காட்டிலும் இது சுலபமான முறையாகும். இதனை நிறுவுதலும் இயக்குதலும் சிக்கலில்லாத தன்மையைக் கொண்டுள்ளதை இதன் சிறப்பம் சமாகும்.

இந்த Wi-Fi ஆனது IEEE 802.11 நியமத்திற்குப்பட்டது. தந்தியில்லா வலையமைவு - இது ஒரு சர்வதேச நியமாகும். பானோலி, தொலைக்காட்சி மற்றும் செல்லிடப்பேசிகள் போல ரேடியோ அலைகளைப் பயன்படுத்தி இயங்குகிறது. இதைத் தொழில்நுட்ப வழக்கில் இருவழி ரேடியோ தொடர்பாடல் (Two-way Radio Communication) என அழைக்கலாம். இதன் தகவல் எல்லை சாதாரணமாக 100 மீற்றர்கள் வரை இருக்கும்.

ஒரு கண்ணியில் உள்ள தந்தியில்லா வலையமைவு பொருத்தியானது (Wireless Network Adapter) ஆனது இதன் அருகே உள்ள தந்தியில்லா அடைகைப் புள்ளியிடன் (Wireless Access Point) எப்போதும் தொடர்பில் இருக்கும். அது கண்ணியின் சமிக்கஞ்சகளை ரேடியோ அலைகளாக மாற்றி தன்னிடமுள்ள உணர்கொம்பு (Antenna) மூலமாக தந்தியில்லா அடைகைப்புள்ளி அல்லது செல்வழி காட்டி (Router) இற்கு அனுப்பி வைக்கின்றது. செல்வழி காட்டி ஆனது அந்த அலைகளைத் திரும்புவதும் கண்ணிச் சமிக்கஞ்சகளாக மாற்றி (Decoding) இணையத்துடன் தொடர்புகொள்கிறது. அதே போல, இணையத்திலிருந்து தகவல்களைப் பெற்றுவின் அவற்றை ரேடியோ அலைகளாக மாற்றி (Coding) தன்னிடமுள்ள உணர்கொம்பு மூலமாக கண்ணியின் தந்தியில்லா வலையமைவு பொருத்தியிற்கு அனுப்பி வைக்கிறது. தந்தியில்லா வலையமைவு பொருத்தியானது அவற்றைத் திரும்பவும் கண்ணிச் சமிக்கஞ்சகளாக மீஸ்மாற்றி (Decoding) திரையில் நமக்கு காண்பிக்கிறது.

இந்த ரேடியோ அலைகளின், அலைவரிசை 2.4GHz-5GHz ஆகும். இது சாதாரண ரேடியோ அலைகளை விடவும் அதிக வீச்சைக் கொண்டது. இந்தக் கூடுதல் அலைவரிசை வீச்சு அதிகப்படியான தகவல்களைப் பரிமாற்ற உதவுகிறது. இந்த தொழில்நுட்பப் பிரயோகத்தின் சில அடிப்படை வகைகள் பற்றிப் பார்ப்போம்.

• YGC Season-2

First Prize

Team Cyborgs:

(won cash prize LKR 50000)

- Mr. R. Kumaran
- Mr. V. Saahithyan
- Mr. S. Shanshayan
- Mr. K. Thanushan

Second Prize

Team Fiery Fighters:

(won cash prize LKR 25000)

- Mr. J. Janarththanam
- Ms. Y. Kalyani
- Ms. T. Kirishanthya
- Ms. J. Samantha Tharani

Third Prize

Team Phoenix:

- Ms. P. Arththika
- Mr. Y. Kesavan
- Mr. R. Miller
- Ms. S. Shakila

Opportunity Round

Team (Smart Friends):

- Ms. S. Jananie
- Mr. R. Jarachanthan
- Ms. J. Mariyadelaxy
- Mr. H. M. Rajjaz

Hackathon

Conducted by Yarl IT Hub and held at University of Jaffna from 01.06.2013 to 02.06.2013. It is a great opportunity for computer geeks to bring ideas and spend time developing mobile applications in two days. Our Department students Ms. K. Vanaja and Ms. S. Anusha Harshani were member of this award winning team.

802.11a - இதன் அலைவரிசை 5GHz வரை இருக்கும். செக்கனுக்கு 54Mbps வரை தகவல் பரிமாற்றும் செய்யும்திறன் வாய்ந்தது. இது Orthogonal Frequency Division Multiplexing (OFDM) என்ற தொழில்நுட்பத்தைப் பயன்படுத்தி ரேடியோ அலைகளைப் பல அலைக்கந்தைகளாகப் பிரத்துக் கையாள்வதால் தகவல் இழப்பின்றியும் நல்ல வேகத்துடனும் இது இயங்குகிறது.

802.11b - இதன் அலைவரிசை 2.4GHz வரை இருக்கும். செக்கனுக்கு 11Mbps வரை தகவல் பரிமாற்றும் செய்யும் திறன் வாய்ந்தது. இது Complementary Code Keying (CCK) Modulation என்ற தொழில்நுட்பத்தைப் பயன்படுத்துகிறது.

802.11g - இதன் அலைவரிசை 2.4GHz வரை இருக்கும். செக்கனுக்கு 54Mbps வரை தகவல் பரிமாற்றும் செய்யும் திறன் வாய்ந்தது. இதுவும் Orthogonal Frequency Division Multiplexing (OFDM) என்ற தொழில்நுட்பத்தையே பயன்படுத்துகிறது.

802.11n - இதுவும் 802.11g இணைப்பைப் போன்றதுதான். ஆனால் இதன் வேகம் 802.11g ஜி விட மூன்று மடங்கு அதிகம். கிட்டத்தட்ட 140Mbps. இது Multiple Input – Multiple Output (MIMO) என்ற தொழில்நுட்பத்தைப் பயன்படுத்துகிறது.



பொதுவாக நாம் பயன்படுத்தும் தந்தியில்லா வலையமைப்பிற்கு ஒரு பெயர் இருக்கும். இதனை SSID (Service Set Identifier) என்பர். பொதுவாக இது தந்தியில்லா செல்வழிகாட்டி (Wireless Router) இன் தயாரிப்பாளரின் பெயரிலேயே இருக்கும். தேவைப்படுமானால் நாம் இதை மாற்றிக் கொள்ளலாம். ஒவ்வொரு Wireless Router இலும் ஒரு Channel இருக்கும். இந்த Channel இன் அடிப்படையிலேயே தகவல் பரிமாற்றும் நடைபெறும். ஒருவேளை நாம் இரண்டு Wireless Router களைப் பயன்படுத்தினால் இரண்டிற்கும் தனித்தனியே வேறு வேறு Channel களைப் பயன்படுத்தவேண்டும். இல்லையென்றால் தகவல் பரிமாற்றத்தில் சில குறைபாடுகள் ஏற்படும்.

அத்தோடு நம்முடைய தந்தியில்லா செல்வழிகாட்டிகளை SecureMode இலேயே Configure செய்துவைக்கவேண்டியது அவசியம். இல்லையென்றால் வெளியாட்கள் நம்முடைய தந்தியில்லா செல்வழிகாட்டிகளை நாம் அறியாமலேயே உபயோகிக்கக் கூடும்.

Wi-Fi Protected Access – WPA, Wired Equivalency Privacy– WEP போன்றவை Wireless Security இன் சில வகைகள்.

Wi-Fi கண்காணிப்புக் கணிமம்

இன்றைய குழலில் கணனி இல்லாத வீடு கிடையாது.அது போல இணைய இணைப்பு இல்லாத வீடும் கிடையாது அவ்வாறு இணைய இணைப்பு வாங்குபவர்கள் Wireless Fidelity எனப்படும் Wi-Fi உடன் இணைந்து இருப்பவர்கள். திசைவியை அல்லது செல்வழி காட்டியை கட்டமைக்கின்றபோது கடவுச்சொல் கொடுத்து கட்டமைக்க வேண்டும். இணைப்பு ஏற்படுத்துவதற்கு அக்கடவுச்சொல் தெரிந்திருக்க வேண்டும்.

99X Technology PIPE

Our Department students Ms. S. Jananie and Mr. R. Jarachanthan are selected for Pre-Internship Project Experience (PIPE) v2.0 in 2013.

BT-Virtusa Scholarship

Virtusa being one of the leading IT Company in Sri Lanka awarded scholarships to eight of our special degree students in 2011.

Awarded to-

- Mr. A. Chandilyan
- Mr. V. Kaveevendan
- Mr. S. Mayurathan
- Mr. A. Rajeevan
- Mr. S. Ranjith
- Ms. S. Shiyama
- Ms. T. Sinthiya
- Mr. P. Thivakaran

WSA Global Congress 2013

The World Summit Award (WSA) is the global follow-up initiative of the United Nations World Summit in Information Society (WSIS) organised by the International Center of New Media (ICNM) Salzburg Austria. Last time the World Summit Award Global Conference - 2013 was held in Colombo, Sri Lanka. Our students (12 from Level-3 and 2 from Level-2) were successful in obtaining scholarship to attend this conference with the help from Information & Communication Technology Agency of Sri Lanka (ICTA).

கடவுச்சொல் இல்லாது செல்வழி காட்டி (router) கட்டமைக்கப்பட்டிருப்பின் யாரும் தொடர்பை ஏற்படுத்த முடியும். உங்கள் கணக்கில் உங்களை அறியாமல் யாரோ பார்த்து உங்கள் செலவை அதிகரிப்பர்.

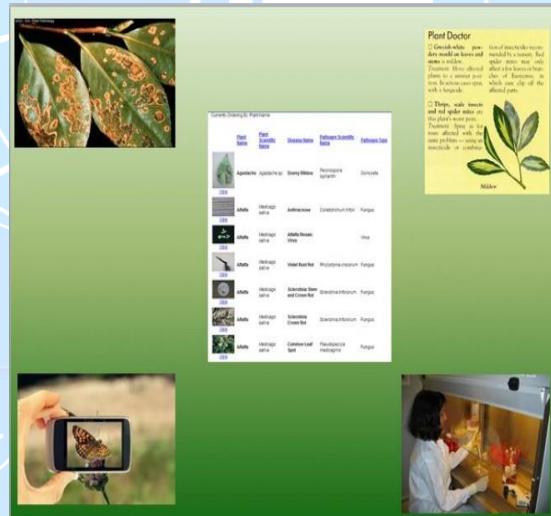
இதனை சமாளிக்க உங்கள் சாதனமுடாக யார் இணைந்திருக்கிறார்கள் என்று கண்டறிய இந்த சிறிய கணிமம் மட்டும் போதும். இந்த சிறிய கணிமம் மூலம் உங்கள் Wi-Fi யில் இணைந்திருப்பவரது IP முகவரி, கணிமியின் பெயர், ஊடக அடைகைக் கட்டுப்பாட்டு முகவரி (Media Access Control Address), எந்த வகையான வலையமைவு பொருத்தி என்றும் தெரிந்து கொள்ள முடியும்.

பதிவிறக்கம் செய்ய <http://www.nirsoft.net/utils/wnetwatcher.zip> ஜீப் பார்வையிடுக.

R. Nirthika (2012/SP/142)

Green Disease Encyclopaedia (GDE)

This is a Smartphone web app. If you are finding a disease in a plant in your garden or in a botanical garden then it is a sign of danger. Because it can spread to other nearby plants. So, only thing we have to do is: identify the disease and do the right treatment to it. However, we can't identify all the diseases by our own. That is why "GDE" is handy. To implement this app first of all we have to create a database with all the plant diseases (as much as possible). Including similar images and details about the disease like symptoms, much photo evidence, how to treat, tools can use and much more...



Simply said we have to create an encyclopaedia of plant diseases. Then by using this database we can simply identify and treat the effected plants.

So the easy way is: "take a photo image of the affected plants and by using it we can go for a similar image search. Then the app will give some recommended images of

plant disease similar to the photo we took. Then we have to choose the right one from the listed images. Then the app will produce all the related details to the user from the database". So the user can easily be aware of the disease that attacks the particular plant and react appropriately.

At the same time we can implement this app to animals and humans also. Having said that we should not forget it involves so many image processing work and image recognition methods resulted in researches done by computer scientists.

R. Miller (2011/SP/200)

உன்னைச் சொல்லிக் குற்றமில்லை

Colours and Medals in Sports

- **Mr. V. Nishanth –**

Discus throw -
Full colour (2011, 2012
and 2013) & record (2011,
2012) in inter faculty
meet. SLUSA - 2013
special award for discus
throw.

- **Ms. Y. Kalyani –**

Table Tennis – Full colour
(2013)

- **Ms. T. Sopitha –**

Elle - Full colour (2012) &
half colour (2011, 2013)

- **Ms. M. Devishanthini –**

Athletic- Full colour
(2013) & Half colour
(2012)

- **Mr. S. Nimishan –**

Football -Champion -
SLUG 2013

SABRA CHALLENGE

“SABRA CHALLENGE” was an outward bound competition, consists of camping, hiking, ground and aquatic activities. This was held for three days. There are two main activities ground base challenges and NonPerial Mountain Base Adventure Activities. Our University team became the overall Second runner-up in SABRA CHALLENGE 2014. Our Department student Ms. Y. Kalyani was a member of this award winning team.

கண்மறைவில் நடக்கும் மாற்றங்கள் பல
கண்ணுக்கு தெரிந்த மாற்றங்கள் சில
வரலாற்றில் பல புரட்சிகள் நடந்ததுண்டு...
விவசாயபுரட்சி, நாகரிகப்புரட்சி
வரலாற்றிலேயே புரட்சியைப் புரட்டிய
புரட்சிதான் கணனியின் பிறப்பு!!!

மனிதமுளை கண்டுபிடித்தவற்றிலேயே
மகாசக்தி வாய்ந்த மூளைதான் கணனி.
நேரத்திற்கு வரைவிலக்கணம்
கொடுத்ததும் அதுதான்.
அதன் துல்லியத்தின் அளவு
இதுவரை துணியப்படவில்லை.

நகத்தோடு சதையாய் இணைந்தது
கணனியோடு இணையம்
உலகமயமாதல் என்று
அகராதியில் மட்டும் இருந்ததை
உலகிற்கு எடுத்துகாட்டியது...

தகவல் தொழில்நுட்பத்தின் தந்தை
யாராகவும் இருக்கலாம்?? - ஆனால்
தகவல் தொழில்நுட்பத்தின் முத்திப்பளை
கண்டிப்பாக கணனி மட்டும்தான்.....!

ஆனால் இன்றைய துர்பாக்கிய நிலையில்
மனிதனே உருவாக்கிய மூளையில்
மனிதமுளையை FACEBOOK என்றும் TWITTER என்றும் தொலைத்துவிட்டு
கணனியை குற்றம் சொல்ல
கணனி ஒன்றும் காரணமில்லை.

I. Fathima Safrana (2011/CSC/015)

Women's Hackathon

SLASSCOM, the US Embassy and Microsoft teamed up to bring an exclusive womens-only Hackathon which is a crowdsourcing event to empower young women leaders in Computer Science. This project is part of Microsoft's Asia Pacific Week of Code. Our fourth year students have participated in "Women's Hackathon 2014" which was held at Dialog Future World, Colombo on the 22 April 2014.

Participants are:

- Ms. A. Ann Sinthusha
- Ms. T. Kirishanthi
- Ms. J. Samantha Tharani
- Ms. V. Thulasika

A Question-Answering Section in Sinhala

Q: මළුට්ටවේ සිවයිකස් යනුවෙන් හැඳුන්වෙන්නේ කුමක්ද?

A: වට් පැඩි හෝ ඕනෑම වට් ස්ක්‍රීන් එකක් විධානය ලබා ගන්නේ තහි ස්පර්ශයකිනි. ව්‍යෙන් එකවර ස්පර්ශ කිපයක් කළුත් වය ගැඹුනා නොගති. මෙය සාමාන්‍ය ක්‍රියාකාරීත්වයයි. ව්‍යෙන් දැන් එකවරම ස්පර්ශ කිපයක් ගැඹුනා ගන්නා උපාග නිපදවා තිබේ. මළුට්ටවේ උපාග (Multi Touch Devices) යනුවෙන් හැඳුන්වෙන්නේ මේවායි. අනුත්ම මැක් ඉක් ලැජ්ටොප් පරිගණකය ව්‍යෙන්නකි.

Q: විෂ්වේස් ඔවෝමැචික් අප්‍රේවික් (Windows Automatic Updates) යනුවෙන් හැඳුන්වෙන්නේ මොනවාද?

A: ව්‍යිධ විෂ්වේස් ම්‍යෙනුම් පද්ධති සංස්කරණවල ඇති සූල් අඩු ග්‍රහ්‍යිකම් ප්‍රභාව වරින් වර සොය ගන්නා විට රේවා නිවැරදි කිරීම මයෙනු සොර්ට සාමාගම විසින් සොර්. විසින් විසින් වැනි නරක වශයෙන් වෘත්ත ඔරෝත්තු දිමේ පැකියාව වැඩි කිරීම්, නැවීන මෘදුකාංග සහ දැඩිංග වලට ගැලුපෙන ලෙස පරිගණක පද්ධතිය සහක් කිරීම් ස්වයංක්‍රීයව කරන්නේ ඔවෝමැචික් අප්‍රේවික් මහිනි. මේ අනුව පාරිභා විෂ්වේස් ම්‍යෙනුම් පද්ධතියක් අනුත්ම මෘදුකාංග සහ දැඩිංග වලට ගැලුපෙන ලෙස පරිගණක පද්ධතිය සහක් කිරීම් ස්වයංක්‍රීයව කරන්නේ ඔවෝමැචික් අප්‍රේවික් මහිනි.

මොලයේ ගොන් නිකා මොලයේ ගොඩි හැදෙන්නේ නය!!

දිගටම ජාලම දුරකතන පාව්චිට කළුත් මොලයේ ගොඩි හැදෙන්නට පූලත් බව කළක් සංවාදයට බඳුන් වූ මහ වාදයකි. ව්‍යෙන් මොලයේ ගොඩි හෙවත් ටුමෝර් (tumors) හැදෙන්නට ජාලම දුරකතන පාව්චිට විසින් මොලයේ ගොඩි හැදෙන්නේ නැති බව විශ්වාස්‍ය එකයේ වැනිවිශ්චිතයේ විද්‍යාලයේ වෛද්‍ය මහාචාර්ය පෝත් බොධිස් ආනුම පිරිය පෙන්වා ද තිබේ. ඇමරිකන් ජර්නල් ඔෆ් එපිඩෝමොලොජි (American Journal of Epidemiology) වෛද්‍ය සහරාවේ ප්‍රති කළුපයේ මේ පර්යේෂණ ගැන විස්තර සඳහන්ට තිබුණි.

අවුරුදු 15කට වඩා වැඩි කාලයක් නිස්සේ ජාලම දුරකතන පාව්චිට කළ විසින් අට ලක්ෂණයක් සොනා මේ පර්යේෂණය සඳහා යොදා ගෙන ඇති. ඒ අය අනුත්ම මොලයේ ගොඩි සඳහා අය වෙත් සොට ගත බවුත්ව එනිදි හෙමි වූයේ ජාලම දුරකතන පාව්චිට කරන්නන් අනර මොලයේ ගොඩි පැතිර යාමේ සාමාන්‍ය අගය; විශ්වාස්‍ය එකයේ සොඩ කා අනරත් මොලයේ ගොඩි පැතිර යාමේ සාමාන්‍ය අගයට වඩා අඩු බවයි. ඒ අනුව පර්යේෂකයින් සංඡ නිගමනයකට ආවේය. විනම් අවුරුදු දහායක් නිස්සේ වික දිගටම ජාලම දුරකතන පාව්චිට කළන්, මොලයේ ගොඩි සැදෙන්නේ නැති, යන්නයි.

මොලයේ ගොඩි කිය හැඳුන්වන්නේ විකොස්ටික් නියුරෝමා (Acoustic neuromas / Vestibular Schonnonoma) කිය හැඳුන්වන ගොඩි වර්ගයයි. මද කනේ සිට මොලය දක්වා වැට් නිබෙන ග්‍රව්‍ය ස්නායුව ආක්‍රිතව මේ ගොඩි හෙවත් ටුමෝර් සැදේ. මේවා පිළිකා වර්ගයක් නොවේ. මෙම ගොඩි විශාල වෙන විට ක්ලුන්තය, කුරු - කුරු භඩක් ඇසිම මෙන්ම සිරුරේ සමුහුලනනාවය නැතිවේ යාම වැනි ලක්ෂණ පෙන්වයි. ගොඩි හොඳවම විශාල වි මොලය තුළට වැඩුණු විට, මොලයේ ඒ ආක්‍රිත පුද්ගල ව්‍යුත් පාලනය වන අංග අප්‍රාථික වෙයි. ජාලම දුරකතන ක්‍රියාන්මක වන විට නිස්මෙන විද්‍යාත් වූම්බක තරංග නිකා මෙම විද්‍යාත් සැදිය හැකි බව බොහෝ දෙනා ගේ විශ්වාස්‍ය වය. ගරීහමන් කුමයකට විය නෙහුවරු සොට නිබුණේ නැති. ව්‍යෙන් දැන් වින වුදිනය වූ ජාලම දුරකතන වෝදනාවෙන් තිබුණ් වි සිටි.

ජාලම දුරකතනයක් දිග කාලයක් නිස්සේ පාව්චිට කිරීමෙන් සිංහල සොයින හැඳුන් නැතියි මින් කියවෙන්නේ නැති. පසුගිය මැයි මාසයේදී ලේඛ්‍ය සොයින සංවාන්‍ය විසින් මෙහෙයුවන ලද පර්යේෂණයක් පූඟාව කියුවෙන් ජාලම දුරකතන, සැලකිය හැකික් පිළිකාකාරක උපකරණයක් කියයි. මෙයේම පසුගිය පෙබරවාරි මාසයේදී අපොලොකානු වෛද්‍ය සංඡමයේ පර්යේෂණ පිළිබඳ සහරාව (Journal of the American Medical Association) පළ කළ පර්යේෂණ වාර්තාවකින් පෙන්වා ද තිබුණ් ජාලම දුරකතන ක්‍රියාන්මක වන විට මොලයේ අකාමාන්‍ය ක්‍රියාකාරීත්වයක් පෙන්වන බවයි. පිළිකා සොසුල වැඩින විට මොලයේ ග්‍රුකොක්ස් මට්ටම ඉහළ යැන්නාක් මෙත් ජාලම දුරකතන පාව්චිට කරන විටද මොලයේ ග්‍රුකොක්ස් මට්ටම ඉහළ යන බවයි.

VERSITY OF JAFFNA

A. Anusha Harshani (2011/SP/013)

President's Award

Our senior lecturer Dr. E. Y. A. Charles received the President's Award for Scientific Research evaluated by peers and published in Scientific Journals in the year 2008 cited in the Science Citation Index.

Experience of Fiery Fighter's Team in Yarl Geek Challenge (YGC) – 2013

Q: වරින් වර සිදුවෙන විදුලිය ඇතු වැඩිවිම පරිගණකයට බලපෑමක් අයිතිවේද? විසේ හම් එම තත්ත්වය වෙළක්වාගන්නේ කොයේද?

A: පරිගණකයට සැපයෙන විදුලිය වරින්වර වෙනස් වීම පරිගණකයේ ක්‍රියාකාරිත්වයට සැපු බලපෑමක් ම්‍යුල් කරයි. විශේෂයෙන්ම දැනු තැබෙය වැනි කොටස් වලට භාති සිදුවීමට නිබෙන ඉඩකඩ වැඩිය.

සමහර අවස්ථාවලදී තත්ත්ව කිපයක් විදුලිය ඇතු හිටිමෙන් පරිගණකය ස්ථූතිකව ක්‍රියා විරෝධ වී නැවත ක්‍රියාත්මක වන අවස්ථා අපමණු දක්නට ඇතු. මෙය පරිගණකයට ඉතා භාතිදාය තත්ත්වයකි. පරිගණකය ගැටවෙකින් තොරට කාලයක් භාවිත කරන්නට සිහානවා හම් මේ ආකාරයට සිදුවෙන විදුලිය සැපයීමේ වෛලනයන්ට හොඳින් මුහුණ දිය යුතුය. ඒ සඳහා අඛණ්ඩ බල සැපයුම් රේකකයක් (UPS) සංවි කිරීම ඉතා වැදගත් පියවරකි.

Q: කමාන්ඩ් පූම්පර් විසෙන් බුදිවි එකක් ගොෂැට් කරන්නේ කොයේද?

A: කමාන්ඩ් පූම්පර් විසෙන් යම් බුදිවි එකක් ගොෂැට් කිරීමට කමාන්ඩ් පූම්පර් එකට ප්‍රවිහුණු පසු වින් Format යන විධානය ලබා දී හිස්නැනක් තබා බුදිවි එකෙහි අකුර බවාදිය යුතුය. එයින් පසුව : ලකුණ ලබා දුන් විට බුදිවි එක ගොෂැට්වීම ආරම්භ වනු ඇත. (දුන්කරනු ලෙස Format F:) මෙයට අමතරව විස් විස් ආකාරයට ගොෂැට් කර ගැනීම සඳහා මෙම විධානයෙන් පැහැවා / ලකුණ ලබා දී ඒ සඳහා වූ අකුරක් සටහන් කළ යුතුය. මෙහි දැක්වෙන්නේ විසේ දැක්වා ගැනීම වැදගත් වන විධාන කිපයකි.

This conversation is about the experience of the four members of Fiery Fighters' team in Yarl Geek Challenge - 2013

Kals: Hai guys, what do you think about the Yarl Geek Challenge?

Jana: It is a great platform for all school and university students. It gives a chance to study new technologies.

Kals: Can you remember how we got this opportunity?

Sam: Yeah... Why not! We got this opportunity from Yarl IT Hub website; they are the organisers of this event.

Kicha: Last time most of our seniors participated in this competition they also encouraged us to participate.

Kals: Then we formed a group, right?

Sam: Yeah... we selected our group members and named our group as "Fiery Fighters".

Kicha: Then searching... started

Kals: What searching?

Sam: Have you forgotten the searching? Searching for an idea.

Kals: How can I forget that? We searched for ideas, but finally we got a great idea. That came from the deep discussion with our lecturers and mentor.

Kicha: That is SIL-Bridge!

Jana: A bridge among students, industries and lecturers.

Kals: We performed four rounds namely requirement, design, user experience and product strategy.

Kicha: In the requirement round all teams performed well. In that round we did our presentation in Prezi.

Kals: Prezi, mmm... it was a new & great experience. It was a nice tool for presentation indeed.

Sam: We presented our project's scope and solutions. Can you remember we conducted our presentation as a channel interview?

Kicha: Yeah, Yeah... and we were selected as one of the best four teams.

Jana: My favourite round was the design round.

Sam: Why? Did you forget that we were in nail biting moment on that round?

Jana: Yeah, I know but I studied many tools to create different designs using Activity diagram, Class diagram, Component diagram and Architecture diagram. We used Pencil, Giffly and Star UML tools.

Kicha: Oh! That round, I didn't forget that. We didn't understand that concept clearly so we performed with nervous. Judges also were not satisfied.

Kals: According to judges' comments we prepared our next round. We put our full effort.

Sam: User experience. Yeah... on that night we drew our system's interfaces with Pencil. You said that "one way I

- /Q ඉක්මනින් ගෝලැට් කරගන හැකිය. එහෙත් පුර්ණ ගෝලැට් කිරීමක් සඳහා මෙය බො තොදුය යුතුය.
- /S ගෝලැට් කරන බවකයට සිස්ටම් ගකිල් පිටපත් කළ හැක.
- /S: filesystem මෙහි අනි filesystem යන්න වෙනුවට FAT, FAT32, NTFS වනි ගකිල් සිස්ටම් වික්ස් බො දී, එම ගකිල් ගෝලැට් එකෙන් වුයේ එක ගෝලැට්කළ හැක. (format d: /fs:NTFS)

Q: වසරුම්, ඩියුම් හා රියුම් අතර වෙනස කුමක්ද?

A: ඩියුම් කිය හඳුන්වෙන්නේ වියිනමික් රුමිය (Dynamic RAM) මේවායේ මහකය රුදී තිබෙන්නේ ඉතා කුළ කාලයකි. මේ නිය දුරක වෙළුවක් මෙම රම් වල දත්ත රුදව තබා ගැනීමට අවශ්‍ය නම් එවා නිතර නිතර ඇඟුන් කළ යුතුය. පැරිගණක වල හාවිනා වන SD, DDR, DDR II, DDR III වනි රුම් මෙයිදුල් වල හාවිනා වෙන්නේ මෙම ඩියුමිය. මේවායේ මිල අඩු විම නිකා වැඩි බැංගාවක් ඇති රුම් මොඩියුල් වික්ස් මුවද අඩු මදුලකට බො ගන හැක. වසරුම් කිය හඳුන්වෙන්නේ ස්ටැට්ඩ් රුමිය (Static RAM) මේවායේ රුදවන මහකයක් පරිගණකයට විදුලිය සපය ඇති හෙක් පවති. පරිගණකයේ විදුලිය වියන්ධි කළ විට වසරුම් වල මහකය නැති වියයි. මේවා ඩියුම් වලට වඩා මිලන් අධිකය. වෙන්ම දත්ත කුවමාරු වෙගයද ඩියුම් වලට කාපේක්ෂව ඉතාමත් වැඩිය. වසරුම් හාවිනා කරන්නේ ප්‍රාසේකර මදර් බොඩිවල ඇති කැස් මෙමරි සඳහාය. ඉදිරියෝගී ජනප්‍රිය වේයැයි සිතිය හැකි රුම් විශේෂයක් වෙන්නේ රිරුමිය (Resistive RAM) මේවා RRAM හා ReRAM යන කෙටි නම් වලින් හඳුන්වෙයි. විදුලි බලය නොමැතිව මුවද මේවා තුළ දත්ත ගබඩ කර තැබිය හැකිය. මෙය හාමානස ඩියුම් තරම් වෙගවත්සය.

understood, our mentor said in another way". Then I got confused.

Kicha: Mmm... In that round we became real fiery fighters. Finally we got some interfaces but that did not satisfy us or our mentor.

Kals: Then we lost our confidence, and thought in that round we were going to be eliminated. Fortunately, we were not eliminated compared with other teams.

Sam: We were in the finalist. I didn't expect that. But judges selected six teams as finalists. Other teams were given an opportunity round to show improvements.

Kals: Next day was the final day! So many excitements and so many expectations! Then we decided we must rock in the final.

Sam: Yeah... On that night we worked very hard preparing our presentation and practising again and again.

Kicha: Then discussed about the type of questions from the judges. Because our project had less marketing strategy.

Kals: Then the final day came. It was in the Jaffna Library auditorium. All teams and their mentors worked hard...

Jana: ... and some of the event coordinators gave suggestions to do a good performance in that round. They asked question like judges to check on our answers.

Kicha: Those questions gave some idea about that round and also it helped to prepare our presentation.

Sam: We were the fourth team to present our final round. Then I got tensed.

Kals: Mmm ... We lost our first place from that question.

Kicha: That question... I didn't forget that in my life. "Why did you get the payment for the profile upgrade from student for job seeking?"

Jana: It decided our place. We didn't answer well and judges got disappointed.

Sam: Our mentor felt very sad. She asked "What happened to you, why did you do like this?" and thus I lost my confidence.

Kals: Then they called all the final participants team one by one and gave their suggestions pointing out what sort of mistakes we had made. Then they eliminated some of the teams.

Kicha: At that moment my heart beat was very high.

Jana: Then we were in the last three finalists.

Sam: When they announced the result we were the first runner up!

Kals: Then they asked a question?

Kicha: What question?

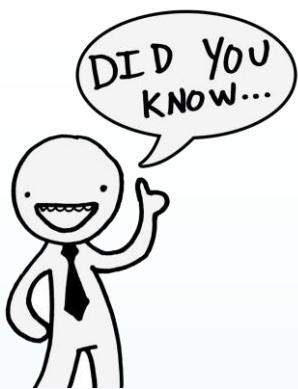
Kals: "What are you going to do with this winning prize?" I said we would use it to implement our project.

Sam: Then we took many photos. And also we gave a nice interview to media (Readme). Did you forget that?

Kals: How can I forget that! But... we forgot one thing.

Sam: What was it?

Kals: Those school students' performance.



Internet Error Codes...!!!

- **Error 400** - Bad request.
- **Error 401** – Unauthorized request.
- **Error 403** - Forbidden.
- **Error 404** - Not found.
- **Error 500** -Internal error.
- **Error 501** - Not Implemented
- **Error 502** - Bad Gateway
- **Error 503** -Service unavailable.
- **Error 504** - Gateway Time Out
- **Error 505** - HTTP Version not supported/ DNS Lookup Fail/unknown host
- **Error 500-599** - Server Errors.

How far do you know?

- 1 Bit = Binary Digit
- 4 Bits = 1 Nibble
- 8 Bits = 1 Byte
- 1024 Bytes = 1 Kilobyte
- 1024 Kilobytes = 1 Megabyte
- 1024 Megabytes = 1 Gigabyte
- 1024 Gigabytes = 1 Terabyte
- 1024 Terabytes = 1 Petabyte

Jana: There were so many schools participated. Their ideas were very innovative.

Sam: We got more information from their ideas. They used so many new software tools like HTML5 and Bootstrap. Their designing was also better than ours.

Kicha: They presented their projects with much confidence. They didn't have any stage fear, and also they got their certificates from Dr. Ethirweerasingam.

Kals: How did you feel about those four days?

Jana: It was a great experience in my life. I learnt a lot of things like how to present a new product in front of the audience and how to lead a team in a competition.

Kicha: We met so many IT personnel. They gave their suggestions about our projects and also they encouraged us to implement our project.

Sam: Also we had a good mentor. She was securing our success. I learnt so many things from her. Ok then shall we go.

Others: Ok bye see you later.

Kals: Hey guys wait what about our implementation?

Others: We have already started!

J. Janarththan (2010/CSC/016)

Y. Kalyani (2010/CSC/031)

T. Kirishanthi (2010/SP/087)

J. SamanthaTharani (2010/SP/035)

INDUSTRIAL VISIT

Industrial visit in 2010 was a proud initiative of the Department of Computer Science at the University of Jaffna in collaboration with the Sri Lanka Association of Software and Service Companies (SLASSCOM). Thereafter in every year our final year students visit the IT industries. As an outcome of the industrial visits most of our graduates were success in finding immediate job opportunities in the IT sectors. Following is the list (in alphabetical order) of our alumni who work as Software Engineers:

Virtusa	WSO ₂	Scinter Technologies
• Mr. K. Anurathan	• Mr. R. Jarachanthan	• Mr. M. Manivasakan
• Mr. A. Chandilyan	• Mr. R. Kathees	hSenid Mobile Solutions
• Mr. V. Kaveevendan	• Ms. M. Keerthika	• Mr. S. Mayooran
• Mrs. A. Niroginy	• Mr. Y. Kesavan	IFS
• Mr. P. Pratheepan	• Mr. S. Naasheer Ali	• Mr. S. Mayurathan
• Mr. A. Rajeevan	• Mr. N. Nilashan	ITPS
• Ms. T. Sinthiya	• Mr. S. Paraparan	• Mr. K. Nitharshan
• Ms. S. Shiyama	• Ms. S. Shakila	Motorola Solutions
• Mr. T. Tharopan	• Mr. S. Thenuzan	• Mr. S. Ranjith
• Mr. P. Thivakaran	99x Technology	Cinergix Pty Ltd
• Ms. M. Vijitha	• Ms. D. Luckshica	• Mr. A. Rasekaran

Inventors of Computer

Hardware

- **Keyboard** — Herman Hollerith, first keypunch device in 1930's.
- **Transistor** — John Bardeen, Walter Brattain & Wiliam Shockley (1947 - 1948).
- **RAM** — An Wang and Jay Forrester (1951).
- **Trackball** — Tom Cranston and Fred Longstaff (1952).
- **Hard Disk** — IBM, The IBM Model 350 Disk File (1956).
- **Integrated Circuit** — Jack Kilby & Robert Noyce (1958).
- **Mouse** — Douglas Engelbart (1964).
- **Laser printer** — Gary Stark weather at XEROX in 1969.
- **Floppy Disk** — Alan Shugart & IBM (1970).
- **Microprocessor** — Faggin, Hoff & Mazor – Intel 4004



How Am I?

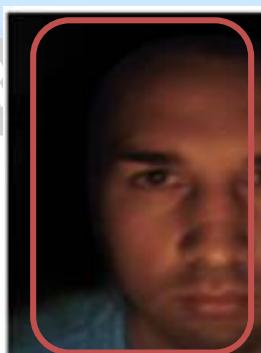
“How am I?” is a phrase we use when we come in a new dress. However, there is difference between satisfaction and perfection. When we go to a café for a coffee, we find there is only tea available, no coffee. We make ourselves satisfy with the tea, because of our valuable time – cannot waste in searching for coffee for the sake of our taste. Most of us meet this situation in our busy schedules. This is what satisfaction means. But in the situation of buying a dress, on the other hand, we would need a beautiful dress with perfect fit. Here the perfection comes in. This perfection in many situations may not be fully satisfied in the view of customers. They need a solution. I believe “How am I?” will be the perfect solution.

As a first step in our effort we went and met dress shop owners and retailers to collect some information about the issues they have been facing. They submitted the needs of their customers. For example, customers need fit-on rooms. Even though there are fit-on rooms, always long queues with mumbling from customers about wasting their valuable time. In some other shopping malls, owners have concern of their dress quality only, not worrying about having fit-on rooms. We posed a question to owners and retailers: why they don't think about any online shopping websites? Why not, they have websites. But there is a problem in their website - there are 2D images of dresses with details of measurements. Still, customers lack information for perfect fitness of dresses.

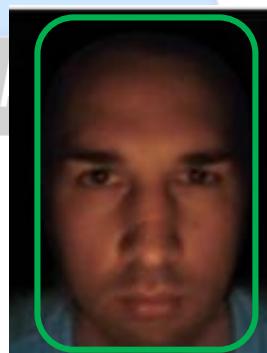
Considering these situations we came to the conclusion of an online fit-on facility - “How am I?” that can be provided to shopping mall websites. This facility would hold models and dresses, so that customers try the dresses to their models to see how it fits to the model to decide on buying the dress.

For that “How am I?” needs to have the customer model with accurate measurements. We use some research proven results for this. When a customer log into our “How am I?” in a shopping website that have the How am I application as a plug-in, they can create their 3D models. For this customers have to give some poses in front of their webcam as face front, body front, back and side by following the instructions from our solution. Until you give a correct pose it will show you the wrong poses by rounded red circle.

Wrong Pose



Correct Pose



Versions of Android

Cupcake- 04/2009 - 1.5

- Bluetooth A2DP and AVRCP support.
- Uploading videos to YouTube.



Donut- 09/2009 - 1.6

- WVGA screen resolution support.
- Google free turn by turn support



Eclair-10/2009 - 2.0-2.1

- HTML5 file support.
- Microsoft exchange server.
- Bluetooth 2.1.



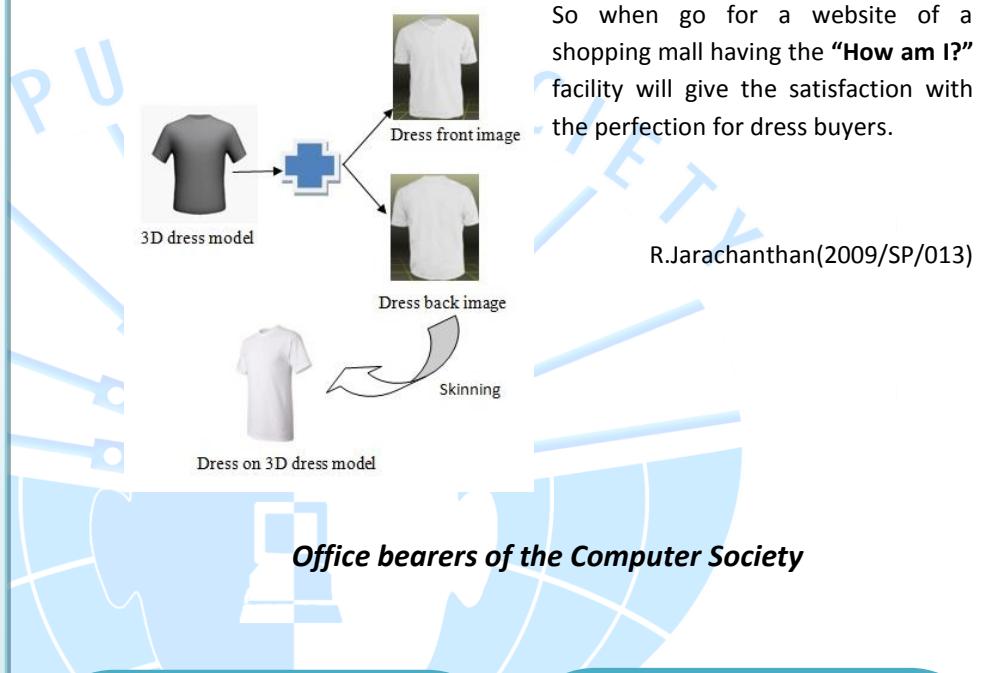
Froyo – 05/2010 - 2.2

- USB tethering and wi-fi hotspot functionality.
- Adobe flash 10.1 support.



After that, customer have to give measurements for their perfect real model creation. It will be helpful for the fitness check with the selected dress. After all procedures finished, at anytime they can login and can see their models with the chosen dress, and see the dress fitness in some preferred parts of their body by zooming their model.

For this “**How am I?**” needs the dresses also be in 3D. These data were given by forming 3D dress models obtaining from 2D front and back images and skinning them by our 3D designers.



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Base64 – encoding

Gingerbread – 12/2010 -

2.3, 2.3.2, 2.3.3, 2.3.7

- Multi touch software keyboard
- Support for extra large screen sizes and resolutions



Honeycomb – 02/2011 – 3.1, 3.2

- 3D desktop
- Video chat and gtalk support



Ice cream Sandwich – 10/2011 – 4.0.2, 4.0.3



JellyBean – 08/2012 – 4.1.x, 4.2.x, 4.3



Kitkat – 09/2013 – 4.4



When you send a binary file over a network, it is not normally sent in its raw form, rather it is sent in a text form after by encoding the binary data file. When it is sent in binary form it is not guaranteed the file is received in its original form, the transmission protocol and the device program might consider the data stream as a stream of commands and the commands executed, producing an unexpected results. This would not happen if the data are sent in pure text form. The mailer programs, for example, transfer binary file in Multipurpose Internet Mail Extensions (MIME) standards using the encoding system known as *base64* to encode the binary files into text files. To represent complex data XML uses *base64* encoding to include binary data files, media files or executable files.

What is *base64* encoding? *Base64* encoding is an encoding system that encodes input data into text of characters using 64 printable characters: 26 upper-case letters & 26 lower-case letters of English alphabet, 10 digits, '+' (plus sign) and '/' (forward slash). These characters are assigned against numbers from 0 to 63, respectively. The following look-up table represents the assignment, and is used in the encoding process.

Note: There are variants for the last two indices 62 and 63. For 62, in place of '+', '-' (minus), '_' (under-score), '.' (period) or '!' (exclamation mark) is used whereas for 63, in place of '/', '-' (minus), '_' (underscore) or ':' (colon) is used. However, we stick to the above table.

How Base64 Encoding Works:

The process of *base64* encoding can be described in five easy steps:

Step 1: Each character in the input data would be converted into its ASCII value.

Step 2: Each ASCII value is represented in 8-bit binary form resulting in a stream of bits.

Step 3: The stream of bits so obtained is grouped into consecutive chunks of six bits, adding two or four zeros, when necessary, at the end of the stream so as to make the length of the stream be divisible by 6.

Value	0	1	2	3	4	5	6	7
Char	A	B	C	D	E	F	G	H

Value	8	9	10	11	12	13	14	15
Char	I	J	K	L	M	N	O	P

Value	16	17	18	19	20	21	22	23
Char	Q	R	S	T	U	V	W	X

Value	24	25	26	27	28	29	30	31
Char	Y	Z	a	b	c	d	e	f

Value	32	33	34	35	36	37	38	39
Char	g	h	i	j	k	l	m	n

Value	40	41	42	43	44	45	46	47
Char	o	p	q	r	s	t	u	v

Value	48	49	50	51	52	53	54	55
Char	w	x	y	s	0	1	2	3

Value	56	57	58	59	60	61	62	63
Char	4	5	6	7	8	9	+	/

Backend Language used in Social Networks

Facebook:	PHP
Youtube:	Flash, Python, Java
Google:	Java (web), C++ (indexing)
Yahoo:	PHP & Java
Blogger:	Java
MSN:	.NET
Twitter:	Ruby on Rails, Scala, Java

Heart bleed

Heart bleed is a security bug in the open source OpenSSL cryptography library, widely used to implement the Internet's Transport Layer Security (TLS) protocol. This weakness allows stealing the information protected, under normal conditions, by the SSL/TLS encryption used to secure the Internet.



Step 4: Each chunk of six bits is written in its decimal form between 0 and 63 inclusively.

Step 5: Each decimal number is replaced by the corresponding character according to the lookup table given above. In case two or four zero bits added at the end in Step 3, one equal sign or two equal signs would be added in respective cases.

This can be better explained by considering an example. For easy understanding let us consider text based input unlike inputs from a media file or an executable file.

Let us consider the word: Man

Following the above steps, the result at the end of each step would be given as follows:

Step 1: (char to ASCII) 77 97 110

**Step 2: (ASCII in binary)
01001101 01100001 01101110**

**Step 3: (Regrouping six by six)
010011 010110 000101 101110**

Step 4: (Decimal form) 19 22 5 46

**Step 5: (Look up table translation)
T W F u**

That is Man is encoded as TWFu

Notice that a three-character group is encoded into a four-letter code. You may consider the input as groups of three characters. In case the last group has only one character you need to pad with four zeros, and encoded form will have two equal signs at the end indicating last triplet has only one byte.

Let us consider another input: Mahesan

Step 1: 77-97-104 101-115-97 110-?-? (Need to add four zeros at the end in the binary form)

**Step 2: 01001101-01100001-01101000 01100101-0110011-01100001 01101110
0000**

**Step 3: 010011-010110-000101-101000 011001-010111-001101-100001 011011-
100000**

Step 4: 19 22 5 40 25 23 13 33 27 32

Step 5: T W F o Z X N h b g

Top 5 Android Phones in 2014

- Galaxy S5



- HTC One (M8)



- Xperia Z2



- Moto X



- Galaxy Note 3



That is, Mahesan would be encoded as TWFOZXNhbg==

The last two equal signs in the encoded text indicate that when you group the original stream of characters into triplets, the last group will have only one character. This information would be used for decoding. Remember that four zeros have been added to make the length of stream be divisible by six, indicating the requirement of two equal signs at the end in the encoded form.

Let us consider yet another example where the last group will have two characters.

Consider the input: SMahesan

Step 1: 83-77-97 104-101-115 97-110-?

(Need to add two zeros at the end in the binary form)

Step 2: 01010011-01001101-01100001 01101000-01100101-01110011
01100001-01101110 00

Step 3: 010100-110100-110101-100001 011010-000110-010101-110011
011000-010110-111000

Step 4: 20 52 53 33 26 6 21 51 24 22 56

Step 5: U 0 1 h a G V z Y W 4

That is, SMahesan is encoded as U01haGVzYW4=

The last equal sign indicates that when you group the original stream of characters into triplets, the last group will have only two characters. This information would be used for decoding. Remember that two zeros have been added to make the length of stream be divisible by six, indicating the requirement of one equal sign at the end in the encoded form.

The input “S Mahesan” without double quotes will have 3 triplets. “S M”, “ahe”, “san” - meaning, the corresponding encoded form will need to have no equal sign.

The encoded form would be UyBNYWhlc2Fu

IVERSITY OF JAFFNA

The above examples show the three possible situations that may arise in *base64* encoding. One may ask how to decode to the encoded form into its original form.

Actually, the decoding, no need to say, would be the reversal of the steps starting from the encoded form ignoring any equal sign. Equal sign would be used as follows: Once you converted to binary form, ignore the last two zero bits when the encoded form has only one equal sign, and ignore the last four zero bits, when the encoded form has two equal signs.

Top 5 Most Earning Sites

- **Google**

Founders: Larry Page and Sergey Brin.

Income per sec: \$691.29

Average income of the year:
\$22,000,000,000

- **Amazon**

Founders: Jeff Bezos

Income per sec: \$607.05

Average income of the year:
\$19,200,000,000

- **Yahoo**

Founders: Jerry Yang and David Filo

Income per sec: \$228.3

Average income of the Year:
\$7,200,000,000

- **EBay**

Founders: Pierre Omidyar

Income per sec: \$199.45

Average income of the Year:
\$6,300,000,000

- **Msn/Live**

Founders: Nathan Myhoid

Income per sec: \$102.00

Average income of the Year:
\$3,200,000,000

COMPUTER

Common Operating Machine Purpose Use for Technological Education Re-search

Tools for *Base64* Encoding:

Linux based operating systems and Mac OS X have a command called base64 that can be used to encode or decode. For encoding, the command can be used in the format:

```
base64 -i input_file_to_be_encoded -o encoded_output_file,
```

or equivalently,

```
base64 -input input_file_to_be_encoded --output encoded_output_file
```

When -o (or --output) option is omitted the encoded file is listed on the screen as the default standard output file. For decoding, the command should be used in the format:

```
base64 -D -i input_file_to_be_decoded -o decoded_output_file,
```

or equivalently,

```
base64 --decode --input input_file_to_be_decoded --output decoded_output_file
```

Where -D (uppercase D) / --decode option is mandatory and when -o option is omitted the decoded file is listed on the screen as the default standard output file.

Suppose you have an image file called chrome.png, then the command

```
base64 -i chrome.png --output chrome.png.bs64.txt
```

Will encode the file chrome.png and output the result to the file chrome.png.bs64.txt

To decode the encoded file:

```
base64 --decode --input chrome.png.bs64.txt -o decoded-chrome.png
```

Comparing chrome.png and decoded-chrome.png, in this example, would prove that they are the same.

Similarly, the encoding and decoding can be done through another Linux-based command openssl, being used in the format:

```
openssl base64 -e -in input_file_to_be_encoded -out encoded_output
```

for encoding where -e option can be omitted, and

```
openssl base64 -d -in input_file_to_be_decoded -out decoded_output
```

for decoding, where -d (lowercase) option is mandatory.

There are many sites providing *base64* encoding and decoding as on-line service. For simple encoding of text based input, the <http://www.base64encode.org/> can be tried, and for uploading small size file for encoding service at <http://www.motobit.com/util/base64-decoder-encoder.asp> can be utilized.

For those who use Microsoft Windows operating system can download a command-line application from <http://www.f2ko.de/downloads/base64.zip>.

3D printing

3D printing or additive manufacturing is a process of making three dimensional solid objects from a digital file. It all starts with making a virtual design of the object you want to create. The scanner makes a 3D digital copy of an object and puts it into a 3D modeling program. The software slices the final model into hundreds or thousands of horizontal layers. The printer creates the object layer by layer.



ProjectAra

ProjectAra is an initiative by Google that aims to develop a free, open hardware platform for creating highly modular Smartphone.

These modules can be a camera, battery, wireless radios, really anything partners can come up with. The hot-swappable modules give users the power to create a phone that works exactly how they want.



In fact, this has versions for all operating systems. The format of command is
base64 -e input_file output_file for encoding, and
base64 -d input_file output_file for decoding

Note:

It is worth noting that these programs may add a newline character (ASCII 10) at the end of the data in some operating systems, and thus the output would not look the same as described above. For example, if you encode "AA" (without quote!), it would actually encode the stream composed of "AA" appended with a new-line character, whose ASCII value is 10, and thus encoding would result in QUEK.

If you decode this:

Q U E K would be replaced by the numeric values according the lookup table given at the beginning.

That is, 16 20 4 10

Each of these values would be represented in 6-bit binary form yielding

010000 010100 000100 001010

This stream of bits would be regrouped into 8-bit chunks:

01000001 01000001 00001010

Equivalently in decimal:

65 65 10 corresponding to A A and the new-line character (10 corresponds to the new-line character and it is invisible).

The objective of this article to make the readers be aware of how *base64* encoding works. The decoding process is easily conceivable as a reverse process of encoding. There are many places where *base64* encoding is in use such as in MIME and XML.

For further reading, materials are available over the Internet, with a good start at <http://en.wikipedia.org/wiki/Base64>.

Dr. S. Mahesan

Senior Lecturer, Gr.I

Department of Computer Science

LIVE


"Knowledge is the best tool of power"
- BILL GATES


"Being the richest man in the cemetery doesn't matter to me... Going to bed at night saying we're done something wonderful... that's what matters to me..."
- STEVE JOBS


"You know you're brilliant, But may be you'd like to understand what you did two weeks from now"
- LINUS TORVALDS

How You Can Change the World

-Satron Team

C++ "Hello World"

```
#include<iostream.h>

int main()
{
    cout<< "Hello World!";
    return 0;
}
```

Java "Hello World"

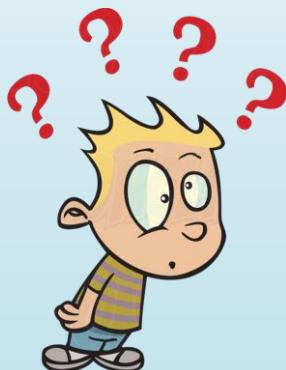
```
class HelloWorldApp
{
    public static void
    main(String[] args)
    {
        System.out.println("Hello World");
    }
}
```

Python "Hello World"

```
print "Hello World";
```

PHP "Hello World"

```
echo "Hello World";
```



Do You Know?

Every second, 21.6 people will get their first mobile device. This means our mobile population is growing 5 times faster than the human population. That's a lot of new technology per second!

Students are busy. Yes, there's no doubt about it. Between coursework, research, group meetings, conferences, there's very little time left in the day. And in this controlled chaos, we sometimes lose sight of what we are a part of.

But take a moment to consider what those outside our field see: A field filled with nuances and complications; a field of dizzying proportions that is slowly being applied to every aspect of their lives. When you stop and think about the rapid-pace of computing, it's easy to see why many think computer science is not unlike the fluorescent green falling digits of "The Matrix."

Is this how we want computing to be viewed by the public, as inaccessible and labyrinthine? Absolutely not. We should make research and education equal parts in all of our work.

It is our responsibility to change the way the public sees computing. By showing our communities exactly why we choose to study computing, we can grow along with them. This kind of outreach has finally gone mainstream thanks to famous physical scientists like Brian Greene, Neil DeGrasse Tyson, and the late Carl Sagan. But other than projects like IBM's Deep Blue and Watson, computer science has fallen behind in the realm of scientific outreach. We, as students, can change that. We can build this outreach into our education, to not only teach our communities but also to enhance our own educations.

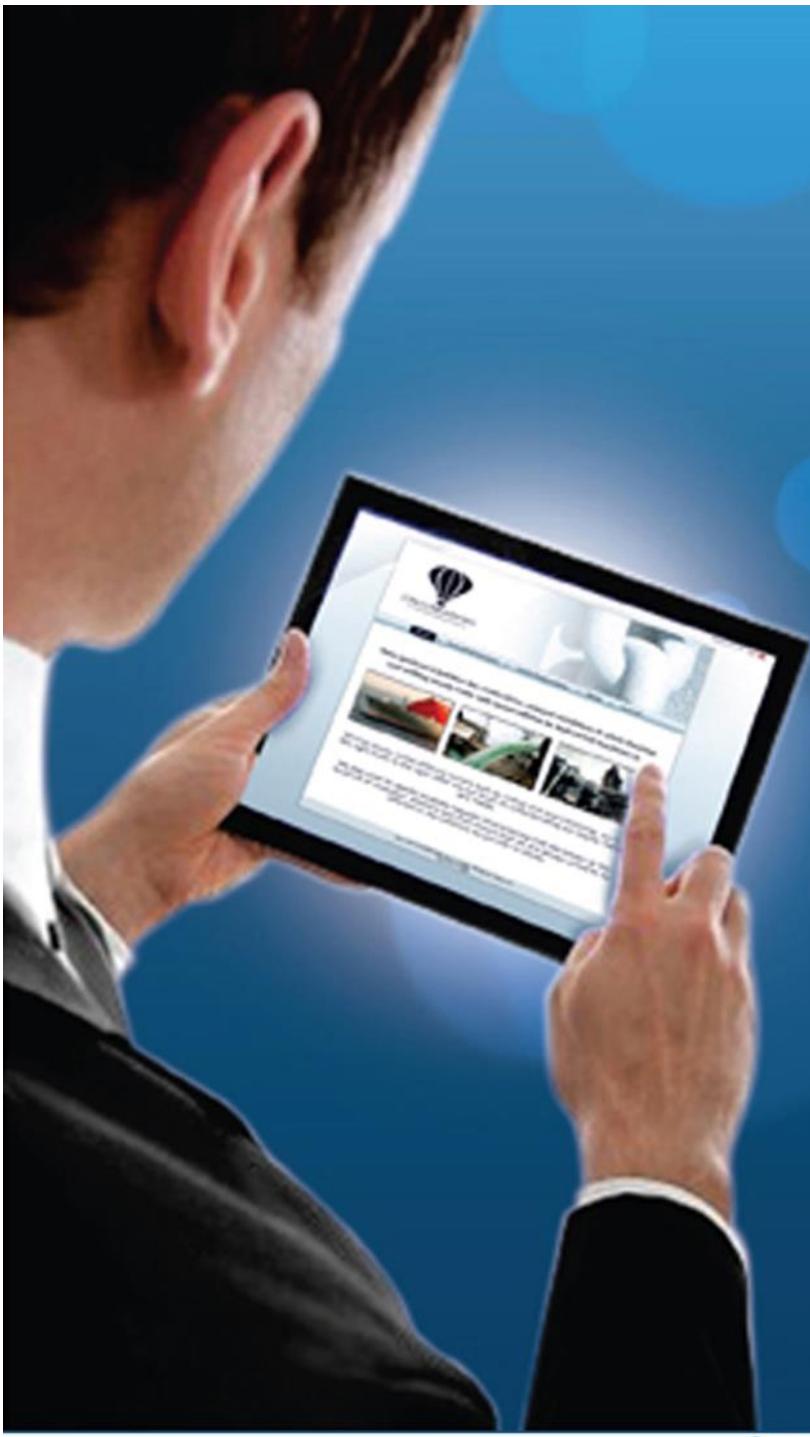
Outreach provides a venue unlike any professional conference. You can no longer use the jargon, shortcuts, and acronyms with which you've become so familiar. You can no longer assume your audience has an all-encompassing knowledge of your field. As you begin to adapt to this vastly different type of audience, you begin to form a new understanding of the field you thought you knew.

Think of community outreach as job training. You will get to practice how to lead a class, how to answer questions quickly and concisely, and, most importantly, start to become more comfortable in front of a large audiences. Through community outreach not only do you have the opportunity to inspire the next generation of students, but you also have an invaluable opportunity to practice the skills you will spend the entirety of your life using.

So why not get involved? See if your university has a science outreach program that you can join. Find out if your city is hosting a day of civic hacking or a hackathon. Help your department host a day for community members to come and have their computers diagnosed, repaired, and even properly recycled. Offer to teach a programming or Web design class at your local library. Volunteer for a local FIRST Robotics or Lego Mindstorms Team. The possibilities are endless. Get out there and share what you're passionate about with your community.

We have both the opportunity and the responsibility to show the world the true beauty and intricacy behind computing. We can be the difference.

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Batch Trip



Women's Hackathon – 2014



Industrial Visit - 2013



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SLIIT CODEFEST – 2013



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President's Award



Yarl Geek Challenge Season – 2 - 2013



SLUSA Award for Discus Throw
- 2013



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