DEPARTMENT OF MATHEMATICS
ANNA UNIVERSITY, CHENNAI

MATH COMPUTING SOCIETY

CRUX
The Readers Avenue

Issue III
September 2012

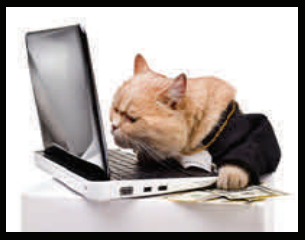
PERSONAL CLOUD ~ THE NEXT PARADIGM SHIFT

Trends in latest technology seem to tug to a level higher than ever. By 2014, the personal cloud will replace the personal computer at the center of users' digital lives, putting aside the reign of the personal computer as the sole corporate access device. Yes folks, PC is finally hailing to a close.

Providing the users with devices flexibility at a new level, the personal cloud will begin a new era. While leveraging the strengths of each device, this is considered to ultimately enable new levels of user satisfaction and productivity. Moreover, this necessitates the enterprises to essentially think on delivering the applications and services to users.

Is it right enough to nmae it the post PC era? Actually not! It isn't really about being 'after' the PC, but rather about a new style of personal computing that frees individuals to use computing in fundamentally novel ways, improving multiple aspects of their work and personal lives by that means. Several driving forces have roots that extend back through the past decade but are aligning in a much better way, blending to create a new era. Many factors come together- Users are more technologically-savvy. The rise of powerful, affordable moible devices changes the equation for users. Virtualization is one major component that alters how the game is being played at IT organizations. Needless to say, app-ification-from applications to apps- has a striking impact on all other panaromas of the market. Today, mobile devices combined with the cloud can fulfill most computing tasks, and any tradeoffs are outweighed in the minds of the user by the convenience and flexibility they render with. With the advent of cloud broadening the levels of opportunity, one can have nearly infinite set of resources available for whatever they need to do. These mega trends, in fast pace, are ushering in the era of personal cloud.

In this new world, the specifics of devices will become less important for the organization to worry about. Emergingcloud services will become the glue that connects the web of devices that users choose to access during the different aspects of their daily life. PC will turn one of many options, but no one device will be the primary hub. Rather, the personal cloud will take on that role.



GOOGLE BUILDS ARTIFICIAL BRAIN THAT RECOGNIZES A CAT

After a line up of inventions like refrigerators ordering groceries when your food runs low, elevators that can perhaps reach outer space, now it's no surprise that Google has popped out with its most recnet design that is the most advanced, highly functioning, most awesome invention ever... a computer that likes watching YouTube Cats.

Amazed isn't it? Okay, it's a bit more advanced than that. Google X scientists had been creating a neural network for machine learning by the adoption of a technique known as "deep learning", wherein they connected 16,000 computer processors and let the network they created roam free on the Internet so as to simulate a human brain for its efficient learning.

The neural network was fed with 10 million random digital images from YouTube videos. The machine was not

"supervised," , it was not told what a cat is or what features a cat has; it simply looked at the data randomly fed into it. Interestingly, it was found that there was a small part of the computer's "brain" that taught itself to recognize felines. After "viewing" random pictures from random digital image of a cat based on its "memory" of the shapes it saw in the images. The cat the computer created is not any specific cat, but what the computer imagines to be a cat. Making it simpler, basically, concept of a cat was invented.

Putting it this way, Google may have created a machine that can teach itself. Does that sound not as new as you think? Really not! This Google X machine is the cream of the crop—twice as accurate as any other machine before it. It is worth noting that the neural network is still tiny compared to the human visual cortex, which is a million times larger in terms of the number of neurons and synapses. And now Google has its computer-generated cat images!!!

- Swathi.L M.Sc (IT), 3rd yr

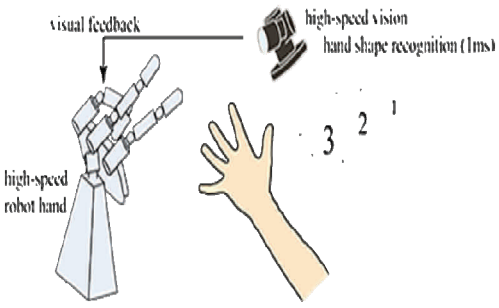
Tech Bits

If you open up the case of the original Macintosh, you will find 47 signatures, which is of each member of Apple's Macintosh division of 1982.

ROCK, PAPER, SCISSORS-HUMAN vs ROBOT

Believe it or not, it is possible to create a robot that will accurately predict and consistently beat humans at rock, paper, and scissors – 100% of the time!

Japanese scientists prove the point. They developed a janken (rock-paper-scissors) robot with 100% winning rate as one example of human-machine cooperation systems. Human being plays one of rock, paper and scissors at the timing of one, two, and three. The vision recognizes the kind based on the shape of the human hand within 1 millisecond. After that, the robot hand plays one of rock, paper and scissors so as to beat the human being in 1ms. One example that shows a possibility of cooperation control within a few milliseconds is this awestruck breakthrough. And this technology can be applied to motion support of human beings and cooperation work between human beings and robots etc. without time delay. But isn't the robot cheating? Yes, the robot cheats. By watching the image from a camera that can determine the position fo your hand every millisecond, it is aware of your move the very moment you make it. And as soon as your hand starts to form that rock, the robot is giving you some paper to wrap it up. Though rock-paper-scissors-ing is a fun way to show off their technology, the robot is much more than just a toy. Though seems silent, it effectively allows human beings and their robot friends to communicate with each other. The machines read our moves, and responds in kind. Pretty damn cool!



- Priyadarshini.K M.Sc(IT), 3rd yr

MCS is doing a great job. They are helping we juniors both in studies as well as they are motivating us. Our seniors are teaching OOPS class during free hours. This is really useful to our class. Personally I felt very satisfied with the seniors' classes.

- Suganya.R, M.Sc. (IT), 2nd yr

MCS team this year is extremely helpful in enlightening us about internships; the various programming contests helped us in understanding the concepts; the GD session made us speak out without fear in front of many. On the whole MCS 2012 is industrious and encouraging! - Priyadharshini.K. M.Sc. (IT), 3rd yr

FROM THE EDITOR'S PLUG-IN...

- Malini.S, M.Sc.(IT), 5th yr
Editor in Chief

With the third edition of Crux unfolding with a new furore, from the all new tagline adding alacrity to the galore of MCS events held beyond imagination, we bring in, for the readers, the diverse vistas that is in store for the future technology. While early humans preferred bones and rocks to pound, cut and kill, technology is being expended to change the world and modify the style of our existence. We could foresee a future where every element of technical emergences is going to drive humans crazy.

What can we expect in terms of succeeding computer engineering? Computers have clearly been getting a lot better-the computational capability is doubling every two years! And that is a fantastic rate of step-up. The edges between artificial and natural are dimming by the day, at the same time that the limits on what can and may possibly lessen with each new technical breakthrough and scientific discovery.

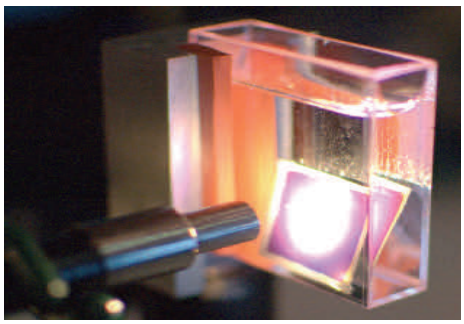
A subject of sometimes heated but highly relevant debate as well is whether or not we choose to change the world with technology or technology changes the world. This matter is dealt in one of the recently developing fields, Personal Cloud Computing. Many call it the post PC era. Will electricity problems drive us hard anymore? Hopefully not, now that the artificial leaf that clears off power crisis is hitting the market in a span of less than 3years! What if you yourself turn into a robot, accomplishing your personal needs? Sounds uncertain? Definitely not, artificial robots and brains are entering into the computer world's scene.

What has MCS to do with all these? The survival of the fittest, becoming unmanageable, is the one that is under question now. The MCS' team works on making its fellow people worth playing the shuttle. The need of

the hour is to bring out the psychological result of perception, learning and reasoning in a better way. On that note, the society, with utmost support of our beloved Dean and HOD, strives firmly to evoke the inner talents by channeling a string of technical and non technical events ranging from programming and aptitude contests to group discussions, for the world outside is getting indescribably competitive and war ridden as well. Nonetheless, what reasonably be denied is that decisions of the future technology applications will in no small part shape the destiny of all of us. Happy reading guys!

AN ARTIFICIAL LEAF SOLVES POWER CRISIS

A leaf may be viewed as a solar collector crammed full of photosynthetic cells. Who would have thought it can be used as a source of energy! Well, MIT Scientists have created the world's first practical artificial leaf that can turn sunlight and water into energy, which they claim could pave the way for a cheaper source of power.



This artificial leaf made of silicon, electronics and various catalysts that spur chemical reactions within the device uses sunlight to break water into hydrogen and oxygen which can then be used to create electricity in a separate fuel cell. Its invention marks a milestone in the history of science since a practical artificial leaf has been one of the Holy Grails of Science for decades. These artificial leaves can provide a home in the developing world with basic electricity for a day.

How nice would it be if each home has its own power station? Precise isn't it? Scientists proclaim that one can envision villages in India and Africa not long from now purchasing an affordable basic power system based on this technology. Firstly, devices that combine a standard silicon solar cell with a certain catalyst were produced. When submerged in water and exposed to sunlight, the devices caused bubbles of oxygen to separate out of the water. The next step required the integration of an additional catalyst to bubble out the water's hydrogen atoms. In the current devices, hydrogen atoms are simply dissociated into the solution as loose protons and electrons. If a catalyst could produce fully formed hydrogen molecules (H_2), the molecules could be used to generate electricity or to make fuel for vehicles.

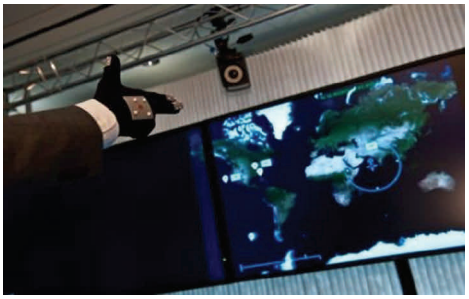
Ultimately, it all comes down to producing an "artificial leaf" so simple and so inexpensive that it could be made widely available to billions of people in the world who lack access to adequate, reliable sources of electricity. What is to be accomplished, in addition to stepping up the voltage, is the addition of a second catalyst material to the other side of the silicon cell.

The "leaf system", by contrast, is still a science project. Surprisingly, the engineering design is yet to be framed. Nevertheless, it is believed that the artificial leaf would become a reality within three years. Let us hold back until it proves to be a realism.

-Lavanya.S M.Sc(IT), 3rd yr

MINORITY REPORT~ FROM REEL TO REAL LIFE !

Can technology predict bad intentions? The Department of Homeland Security hopes it can, though experts working on the technology are dubious that this is a silver bullet. The answer is yes, now that 'Minority Report' software turns real from reel. The software behind the fomaus film "Minority Report" -- where Tom Cruise speeds through video on a large screen using only hand gestures -- is making its way into the real world. Being the latest anti-terrorism idea, it sounds far-fetched. The prime motive was to develop systems that can analyse behaviour remotely to predict which of the 400 million people who enter the US have current or future hostile intentions. It is all about on how a "battery of lasers, cameras, eye trackers, microphones begin secretly compiling information about your body." The goal is to predict future intentions. It is said to help in searching through "big data" for information. It can also create souped-up video-conference capabilities where participants share data from multiple devices like smart phones integrated into a large video display. A key part is the gesture interface, which the company calls the "g-speak" spatial operating environment. What makes the real life version of



this different from the one seen on film is that Oblong does not supply the analytics of the future pre-crime division. Sure there will be a civilian component that can use this for business means. Yet another technology used against instead of for the welfare of humanity. What a shock!!!

- Divya.S M.Sc(CS), 3rd yr

The class taken by seniors is like extra guidance. Thanks to them for their sincere effort and I would want this to continue in future. -R. Tamilarasi , M.Sc. (CS), 2nd yr

MCS is guiding us in academic level which is helping us a lot. Seniors are more helpful as they teach us by their teaching. -Jayanthi .J,M.Sc. (IT), 2nd yr

Without inspiration the best powers of the mind remain dormant. There is a fuel in us which needs to be ignited. And I guess that spark is MCS which guides us to our dream career. -Yaasmin, M.Sc. (IT), 3rd yr

MCS helps in many ways to improve and strengthen our technical skills by taking classes, conducting tests all of which are really useful for us. -Ramya Sanju, M.Sc. (CS), 3rd yr

INTERN HEADER

CATERPILLAR

At Caterpillar, we are given domains like C# and Java to work on and wherein our implementation knowledge goes a level high. Also, work culture is great.

R. Gayathri - K. M. Keerthana, - A. Archna - N. Swetha -S. Bhuvaneshwari

THOROGOOD

Thorogood provides us a chance to work on new tools like IBM's TM1 thats used for forecasting organisation's capacity, income,etc., and platforms like Vb.Net, SAAS and client projects. We are learning a lot as these kind of tools and technologies are completely new to us and our communication with people is getting improved during this period..

K. Anupama- P. Bala Kumar- M. Divya

COGNIZANT TECHNOLOGY SOLUTIONS

All of us are given java as our domains and the projects- Speech recognition, Image processing, Simulations are really challenging.. We got to learn a lot of things new by ourselves during this 6 months..Useful indeed.

V. Indumathi, S. Meenakshi Shilendhari, G. Saranya, R. Aishwarya

ORACLE

Ours is a product company focussing on retail products(software). Projects here are based on oracle ADF, C++,Java and Pl/Sql. Being here enables us in acquiring technical acumen, provides attractive pay and of course funny 'Team building Activities' would be indispensable part of work.

S. Siva Ranjini -V. Ishwarya - S. Nivedha- J. Vignesh

ERICSSON

This internship means a lot to us as it provides a great platform to implement things so far we had studied. Also here we get to work on challenging stuff like communication services, mobile broadband, etc., that gives us an opportunity to learn and grow.

G.Pourneema - T. S. Raghavendar- S. Yogashree- B. Dhivya Dharshini

SILVER STRIPE SOFTWARE

A company that develops web apps. We are developing on Django framework(Python language) and using Mongodb which is a NoSQL database. As all these technologies are new to me, I am learning a lot working along with the founders.

P. Deepthi

RURAL TECHNOLOGY AND BUSINESS INCUBATOR

Being an ERP company,we got to develop Memory Mapping Tools for latest piracy protection like Water Marking.Everyday we get to learn a lot, technically making us strong enough..

S. Vidya- A. Ranjitha

LANSON INDIA LTD.

Lanson is one of the BPS companies and I'm working under SQL domain. Working across umpteen number of databases corporate made me aware how simple things could change things widely.

S. Bharathy

Here is to all juniors to get rid of what Internships are all about. The current 4th years practicing at various companies present you an insight about it...

MCS has done a great job this year by conducting useful activities like aptitude tests, group discussions and OPC's. It has been a great experience. The briefing on internships was good. The events have been successful as well.
- Sai Vidhya.S, M.Sc. (IT),3rd yr

WHAT I WILL MISS MOST ABOUT CEG...

That morning sky was surrounded by a hint of grey and tiny dewdrops marred the clear view of the red building as I entered CEG with a slight tinge of nervousness overshadowing my otherwise pumped up spirit. The first day of school has always made me apprehensive and the first day of college promised nothing less. The fear of settling in, making friends and fitting-in was playing mind games with me.

Five years hence, as I jog down memory lane, I find that CEG has taught me a lot, in terms of friendship, experience, failure, success and what not. The very mention of CEG is enough to make some lovely and bittersweet memories surge ahead. First, the dingy bus ride pops into my head. The one which helped me revise for numerous assessments even cost me several attendances and which even made me learn by heart several song lyrics. This would be one thing that I'd really miss about going to college.

Next up, the campus life. Our college, with its lush greenery has always been a nature lover's delight especially during rains when the entire campus sports a green look with all the leaves blanketed by raindrops shaped like pearls hanging loose from their tips. Teh flora and fauna aside, there is even an animal kingdom that CEG can boast of. The monkeys that rule every tree can make anyone coming out of the canteen with juice or ice-cream to shriek and drop everything they have and run for their lives, inducing fits of laughter to anyone watching it.

But the thing that I will miss most will be my friends. The fun, the laughter, the teasing, such a happy go lucky gang of friends will be missed more than anything. Those sunny afternoon escapades to A2b, Adyar Bakery or some cinema hall to catch up some random movie, fighting over every rupee and every handful of popcorn. The countless photographs and videos have managed to freeze several of our wondrous moments together and will be a fitting reminder of all the flashes which we have captured all the way. CEG has only knitted our friendship tighter and brought us closer. Techofes, Agni and many other cultural events have been the finest of times for us with all of us intoxicated in blissful happiness, laughter, song, dance and merriment.

Now as I bid farewell to CEG, I am bombarded with the recollections of the good and the bad times I spent here and the way it has transformed my life. This will certainly be the best and memorable phase for me and maybe five years was not a long duration after all!

- **Anjana.U M.Sc(IT), 5th yr**

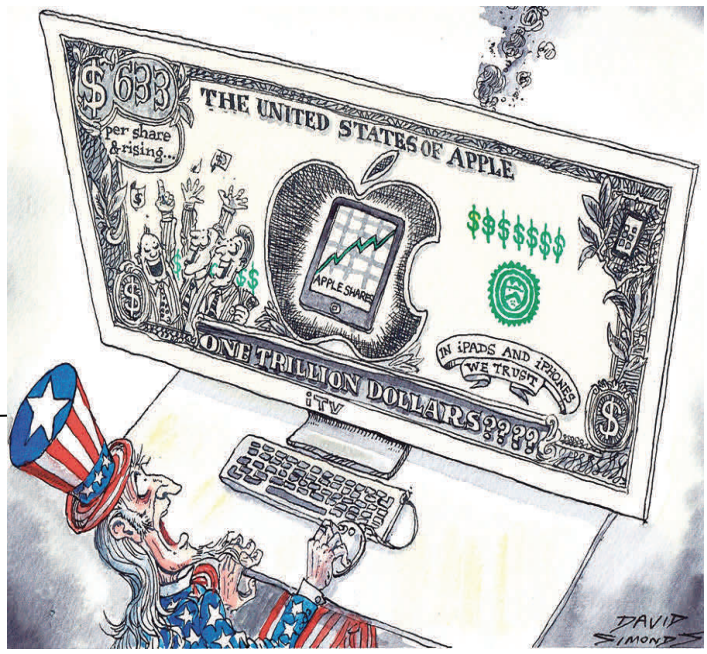
Tech Bits

The first domain name ever registered was Symbolics.com

On one of the world's most popular shopping website eBay, there are transactions of approx. $680 per second.

Mail us to win the Jumble Contest!!! **Here is what you have to do.. Collect the jumbled words from each article, align them to find the hidden question! Get the answers right, win prizes!**

TECH TOON



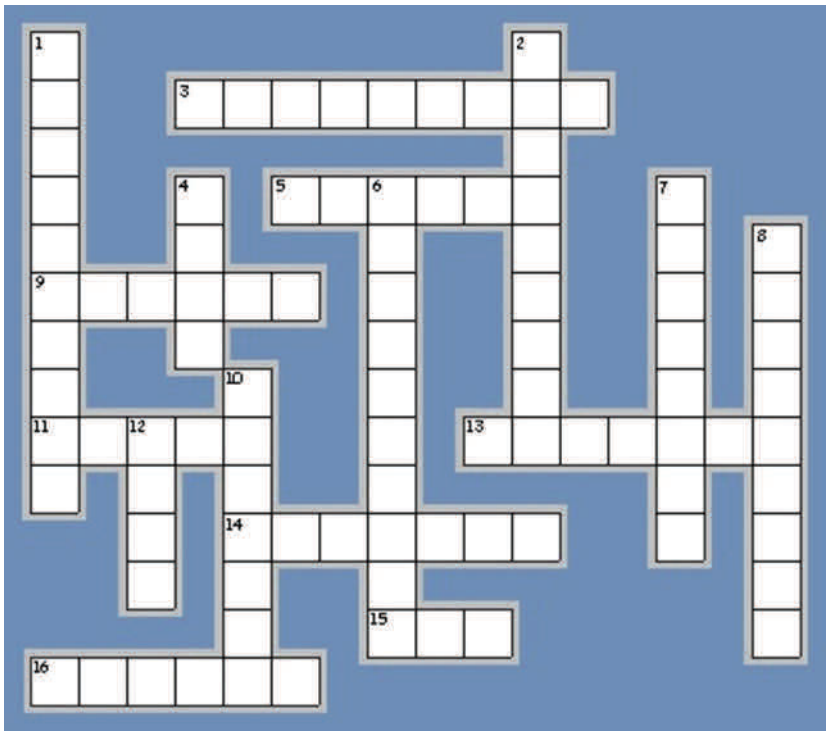
RISING THE BAR HIGH !

MCS'12 has been leaping high in all facets, providing a cutting edge in its eminent standards. Having plunged into action with a prominent goal, we piled up to conduct an aptitude contest that marked the beginning of all. With the support of all, we happened to guide the students with several events like Biz Quiz, Programming Contests-online and paper tests, Brainstorming sessions, technical classes on concepts like OOPS, DBMS and Data Structures, Group Discussions. The team promises to provide better platforms for exploring the best out of its fellow students in the times yet to come.

Tagline Contest Winner : Sowmi.P, M.Sc.(CS), 5th yr
Sponsor Courtesy: Deepthi.P, M.Sc. Integrated., Software Analyst, Symantec Corp., Chennai.
Place your answers and feedbacks at mcsteam2012@gmail.com Visit us at www.mcsau.in

TECHNICAL RIDDLER

Puzzle out the answers and place your mails.



Across

3. A computer that has minimal components
5. The base layer or the foundation of an operating system
9. A constantly running program that triggers actions when it receives certain input
11. Stores recently-used information in a place where it can be accessed quickly
13. To copy programs and data onto an auxiliary storage medium for long-term retention
14. A network created using a wireless Bluetooth connection
15. The "Millennium Bug"
16. A small program run by the Mac SO X Dashboard

Down

1. Duplicating devices for backup purposes
2. A program that records the keystrokes on a computer
4. A wireless transmission technology that was developed during World War II
6. Used by vesrion control systems to store multiple versions of files
7. A file that describes the contents of other files
8. A list of items that are granted access to a certain system or protocol
10. Software customized for a specific purpose
12. Data type used to store large amounts of character data

MCS TEAM