SIDDAGANGA INSTITUTE OF TECHNOLOGY

SIGMA

SUMMING UP TALENTS

The Newsletter of Department of CSE

WINTER EDITION 2016-17

Editorial

Sigma, a representation of summation. We like to interpret it as a Summing Up of Talents. The talent of analysis, understanding and creating content for everyone to read. We don't predicate ourselves in being experts at what we do, but we do understand the responsibility of bringing good technical content for our readers. Keeping up with our legacy, on a joyous occasion of Christmas and New Year, we bring to you Sigma's Winter Edition, 2016.

Our Cover Story gives you a choice, Moon or Mars. To help the mind remain unfrozen, this winter, we have a great Cross Word lined up. During winters we all do love to remain curled up in our beds, and enjoy the warmth under the blanket. Just so, that your Christmas Spirits are always high, we have a wonderful Sci-fi story on Soul Travel. If we managed to get your soul elevated, let's take a plunge into an adventurous Hunting with C/C++.

Our Cyber Physical System article might just be the Christmas gift you were looking for. Tired of putting your phone on charge again and again, well we have just the right article on Backing Up Charge on Mobile Devices, that might fulfill your needs. We also have some awesome hacks in our Tips and Tweaks section, that you surely need to get your hands on. We are all now surrounded by technologies that are wireless. The only thing that restricts us from being completely wireless is our smartphone chargers. They DIY hack helps you build a Wireless Charger for your phone.

An alternative to Proprietary software, or in layman terms, Paid-Software, developers around the world are plunging into Open Source Software. The Open Source Page, gives you a list of alternatives for your standard proprietary software.

Since our last edition, we have taken a bold initiative in going green. In doing so, we have switched from regular paper version to a digital version. This helps us to reach to a greater audience and also provide easy reading for our readers.

To all our reader we have a simple message,

"Ability is of little account without opportunity"

When we cultivate our talent and our learning abilities we need to look for places to use them. We need to find the opportunities, else all of our hard work is lost in vain. Keep learning and keep achieving.

-NIRAJ AGARWAL

Moon Or Mars

It's been 47 years since Neil Armstrong spoke out "One small step for man, one giant leap for mankind". 4 decades have passed but the world hasn't seen such a herculean feat be performed again. It is estimated that the Apollo 11 launch and landing on moon was one of the biggest ever watched television broadcast in the world with about 600 million viewers. Imagine such a feat being performed in this era of technology, the record would be impossible to match. The entire lunar mission was achieved on computers that had processing power 1300 times lesser than that of iPhone 5S today. It was done way back with so less technical advantage, so the question does surely arise : Can't a base on Moon or Mars be possible? It can be. But the problem is we got to choose one.

It is not feasible nor viable to be going behind both. They are both important in the space exploration and they equally have their pros and cons. The explorers and scientist around the world are faced with the similar question. To achieve new heights in space all agencies private or government has to work collectively towards anyone of the choices because it is no longer simply a manned mission, it is colonization. Any further space exploration can come only via a setup on either the Moon or Mars, to allow explorers to take the second giant leap.

Option 1: Moon. The satellite and one of the most adorable objects in the sky for our planet Earth. A place where humans have already been to. Destination Moon is always a favorable option considering the fact that what is done can be done again. It is the most likely to succeed and will be of lesser burden in cases of failure. But the challenges of a Moon base is quite huge. It lacks an atmosphere. It is a barren land with direct exposure to space. The chances of devastations happening are with a higher probability. The lack of gravity is simply why a small mishap could never be contained on the Moon. The Moon is a friendly face but not a trusting one.

Option 2: Mars. The Red planet. A lot of a astronomers call it our sister planet. The structural similarity isn't similar but the geological process on Mars is quite the same as on Earth. It has its own atmosphere though mostly comprised of Carbon Dioxide. The length of the day is similar to Earth: 24 hours and 37 minutes. The year period is almost double though: 687 Earth days, that's because it orbits slower than Earth around the Sun. The temperature is about -81 deg F which is cold but it is the next hospitable climate to Earth. The atmosphere and gravity reduces the risk of mission mishaps. The gravity is lesser than that of Earth but is much better than Moon. The atmosphere prevents direct exposure to outer space. A setup on Mars will definitely help in exploring much more of the Universe that we cannot fathom on Earth or Moon.

Around the world, all experts and decision makers have difference of opinions. We don't know how long we have to wait before the final call. With industrialists like Elon Musk, taking on privatization of Space and promoting Mar Missions, chances can be that Mars might be the next stop. However amidst all of these, one thing is almost certain, the space travel is not any futuristic sci-fi anymore.

With reduction in the cost of spacecraft and rockets and building of reusable rockets, the area of space exploration is on a boom.

Private space companies like, SpaceX, Blue Origin, Bigelow Aerospace are now promising to put man into space again. Privatization has forced government space exploration agencies to turn these companies to achieve the space travel, in a cheaper and more convenient way. Star Trek and Star Wars are not far away. The agenda of these companies is not profit, at least for now. Their goal is to make humans a multi-planet species.

The only way to discover the limits of the possible is to go beyond them into the impossible.

If nature wanted to limit us to this planet, it would have never built the Universe. The Earth would be the Universe. But the Universe exists and it is clear since beginning of time, that we are not the only planet. There are planets there. History shows us that we were meant to explore the very world we live in. So why not explore the space that we have been placed in.

It is not a Christopher Nolan movie where you are being bluffed into believing that humans are not meant to die on Earth.

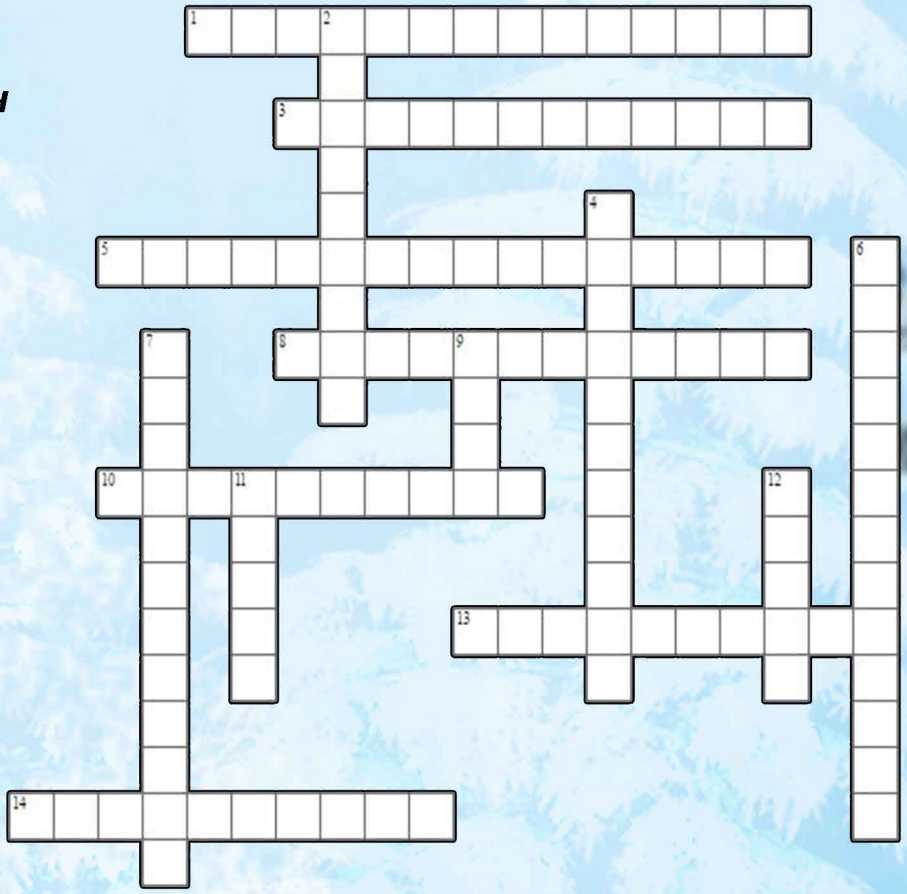
The analogy here is simple. There has to be a purpose for humanity like there is a purpose for everything on this Earth. What if our purpose is to find out what lies in the dark space that is around us? Unless we make feeble attempts in the dark, can we ever turn on the lights?

The Moon looks like the best served dish on the table but Mars promises great taste. The Chef (Nature) wants us to choose.

-NIRAJ AGARWAL

CROSS WORD

PRATYUSH



ACROSS

1. Pavement that produces power.
3. A face lift for file sharing.
5. An OS that syncs with your smart phone.
8. Ultra thin chip.
10. Tiny self balancing robot.
13. Cells used virtually that keeps generating .
14. Phone that protects your data-power

DOWN

2. Most precise iPad sketching tool
4. App that bridges worlds
6. Network for indoor navigation
7. Technology to treat brain disorders by passing light deeper into the brain tissue
9. LED based technology faster than WiFi
11. Fastest wireless
12. First intuitive address book

ANSWERS

1. SOLAR ROADWAYS.
2. ADOBE INK
3. POPCORN TIME
4. LEGO FUSION
5. APPLE X YOSEMITE
6. APPLE IBEACON
7. OPTOGENETICS
8. INTEL CORE M
9. LIFI
10. WOWWEE MIP
11. WIGIG
12. HUMIN
13. PEROVSKIITE
14. BLACKBERRY

SOUL TRAVEL

"Only science has the answer to every question. It's said that there is something beyond science. There are many things beyond human's knowledge, not beyond science". I'm a human who believed in this and I still. It all happened someday whose distance from today is unknown. But it happened. Some day in October 2036, New York, I was in my apartment, under the dim light of my bed lamp. Light is such a fascinating thing! Does light really exist? What is the proof of existence? Thoughts filled my mind. It seemed I understand something, it seemed I know something. Yes! This is it, I shouted to myself. My eyes searched for someone to share my thoughts. Yeah!! It happens to me. It was 3am in the morning. I controlled my anxiety till 6am. I called John, my senior, my mentor. I poured my heart out to him. Every thought which flooded me the whole night, every word I missed sharing, every feeling which lacked nurture. After 30 minutes of one way conversation, John spoke. I still remember the exact words, "Thoughts die, and inventions do not. Start the work. You will be given your presentation slot at 2pm today."

"Ladies and Gentlemen, I'm Adam Brown, research scholar, University of Cornell. Let's go back to 3rd standard science classes. What is matter? Just a simple question and we answer rhythmically. Matter is anything that has mass and occupies space. At the same time the problem with the matter is it has mass and occupies space. Just funny isn't it? The saddest part is everything here is matter. I'm matter, you are matter, this mike is matter and you count. Another question comes here. What is the maximum speed of matter? Yeah, may be 771 mph with a Thrust SSC. What determines speed? Is it the rotations of a wheel? What is the maximum speed achievable? Confusing right? No, it's thought provoking. Let us try to figure this out. What is Light? How can it travel with a speed of 300000000 mph speed? Just by answering these two questions one can achieve the speed of light."

Before I could answer the questions which was purely for self, I heard an "Excuse me" from the crowd. David Jones, Billionaire and a huge industrialist spoke. "I will fund for your innovation. Will you sign thecontract with my company?" David was one of the most respectable businessmen of the generation. Dreams would come true if one could get a contract from his company. He, noticing your work is great. Anytime I would blindly say yes to him, so I did. I continued my presentation after he said "Continue my boy, business later".

"Miracles happen. I experienced one; just a few seconds ago. Ok, let's come back to Light. The simple concept behind the speed of light is; it's composed of photons. Its mass less and do not occupy space. Photon is not matter. Let us take this iron rod. Somehow if I convert this into photons, I can make it to travel the light's speed. Simple, isn't it?"

The seminar continued, our favourite "Einstein's mass-energy relation" invaded the discussion. Questions were asked, some I could answer most of them. Discussions were leading to confusions. Many argued that the theory previously existed and there was no need to give it a shot again. I was least worried about the scholars who were ripping off my work. I had my investor and I had my idea. I wasn't talking about research, which many thought I was. I wanted to make a product out of the research. In simple words, I wanted to make a machine which could shift the matter from one place to other in no time.

3 days after the seminar, I had a meeting with David. He personally, in his chamber, gave me the contract. Everything was intact. As it always happens, the company had the whole and soul right on my project. I didn't complain about it. I had blind trust on David. I signed the contract and started my work. Everyday 18 hours, I worked. I enjoyed my work but was frustrated sometimes. It happens to people who are alone. Literally I was the only one who knew me. It hurts sometime, but it's ok. At the end success roars the loudest.

It took me 2 years. I was the proud inventor of "Teleportor". It was not transportation that was happening, it was "Teleportation". My innovation was on hype. Everyone wanted to talk about it. Everyone wanted to experience it. It was my time. I was all that media wanted. But I was nervous. It was the D-day. My work was on test. Parental feel filled me. I was ready. I had to be. I knew my work would work. David had his huge smile, he was more confident than I was. The routine of the test was: One Teleportor was in my lab, New York. The other was in Sichuan, central China. This place was chosen just to avoid disaster if something goes wrong. It was the time. In 30 minutes from then, I was supposed to get into the Teleportor and get teleported. I and David had a huge argument on this. He was completely against of me going in there. But I wanted to. An Iron would do our job. I wanted to go. It's just the simple reason that, I badly wanted to have that experience first. Somehow I managed to convince him. My time had come.

I entered the Teleportor and nothing else I know. I was in the middle of snow filled barren land. None were there. It was me and the nature. It was heaven. I had no worries no responsibilities no deadlines no one to act in front. It was me and my breath. White all over the earth, Blue all over the sky. My eyes relaxed, Bodyrelaxed. I was slowly drifting into myself. Suddenly!!!!! I realized that, my Teleportor worked!!!! I shouted my soul out. I was dancing alone in no man's land. I screamed so that someone could hear me. I was satisfied. It seemed I wanted nothing after that. It was all going calm. I walked. I felt. It was only me. I took shelter from no Sun under a tree. I was slowly falling asleep. I closed my eye.

Jesus!!!! One minute!!! I opened my eyes after a short nap. I saw something unusual. It took me a minute to recall what had happened. It was a baby panda in front of me. It's a strange feel, all the time you Google panda you get cute pictures. Suddenly seeing it would confuse anyone, I was no different. I got scared. I didn't run. I looked into his eyes. He was the purest form of life. His eyes made me feel connected. I looked around. It was all barren. I wanted to escape from his eyes. It was too emotionally tiring to look at him. It never happened with any human I had seen. Why this with him? I was blank. I wanted him to go away, at the same time stand by me. I stopped thinking. I thought, let the time decide. Then I turned to my wrist. Where was my watch? What's happening? It was all beyond my understanding.

Time passed. How much I do not know. It lived with him, the panda. I always had none in my life. The love I had for him was immense. May be he also felt the same. It was a good time together. But I wanted to go home, where no one waited for me. I wanted to go home where; I was the only thing breathing. I wanted to go home with him. Keeping the science aside, I wanted him always by my side. I knew nothing would happen to him. I loved in snow but I wanted my home. I decided. The next day I with my panda, got into my Teleportor.

Within no time I was back in New York in my lab. Panda was with me. No word to describe that feeling. It was all great. What an innovation!! I praised myself. At the beginning it all seemed strange. I and my panda live in my apartment since the unknown time. No one recognizes us. They behave weird. No one talks to us. No one sees us. It's all good now. The funniest thing is my apartment was sold to an old couple before I came here. There is no talk of Teleportation any more. I was curious know what had happened. From an old news article I came to know that the project was a disaster. David died of Heart attack. The company was closed.

Who am I? Who is this panda? How I reached the snow valley? How did I come back? Am I a matter or a photon? Do I exist after all?

- ARCHANA S

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HUNTING IN C/C++

1.
```
int main()
{
  char arr[2][15] =
   {"HelloWorld",
     "ByeWorld"};
  int no = 5;
  cout << arr[no%2];
  return 0;
}
```

Answer: ByeWorld

2.
```
class Test
{
  static int i;
  int j;
};
int Test::i;
int main()
{
   cout <<sizeof(Test);
   return 0;
}
```

Answer: 4(size of integer)

3.
```
class A
{
public:
    static int a;
    A()
    {cout<<a++<<" ";}
};
int A::a = 1;
int main()
{
    int N = 100;
    A obj[N];
    return 0;
}
```

Answer: 1 2 ... 100

4.
```
class MyClass
{
public:
MyClass()
{
 cout<<"SIGMA";
}
}m;
int main()
{
}
```

Answer: SIGMA

- NISHANK KR PANDEY

CYBER-PHYSICAL SYSTEMS (CPS)

Cyber-physical systems (CPS) are a newer generation of systems with integrated computational and physical capabilities that can also interact with humans through various custom modes. The ability to interact with, and enhance the capabilities of the physical world through modes like computation, communication, and control is why its preferred for future technological developments in the modern era. It is time to introduce systems which can control a larger dimension of vision that stretches through states, countries or even continents.

Physical processes are being integrated with computation for a fair amount of time now. The term "embedded systems" is being used to describe various systems that combine physical processes with computing. Many existing practices in embedded software rely on bench testing for concurrency and timing properties. This has worked reasonably well, because programs are small, and because software gets encased in a box with no outside connectivity that can alter the behaviour hence its offers concurrency in its functioning. However, the applications of CPS we think of demand that embedded systems be enhanced and networked properly, so that bench testing and encasing become inadequate.

The application of CPS undoubtedly has the potential to outshine the developments in the 20th century "IT revolution". These applications include high accuracy medical devices and systems, personal assistants, traffic control and safety, advanced automotive systems, energy conservation, environmental control,, process control, instrumentation, critical infrastructure control, distributed robotics, defence systems, manufacturing, and smart structures. Transportation systems could bloomed using better embedded intelligence in automobiles, which could improve safety and efficiency. Networked autonomous vehicles (E.g. drones) could enhance the effectiveness of our military and could offer substantially more effective disaster recovery techniques.

The lack of timing in computing abstractions has been exploited heavily in such computer science disciplines. To deal with these architectural problems, embedded software designers may choose alternative processor architectures such as programmable DSP. This is not entirely due to hardware architecture techniques, of course. Operating systems, programming languages, user interfaces, and networking technologies have become more elaborate. All have been built on an abstraction of software where time is irrelevant. No widely used programming language includes temporal properties in its semantics, and "correct" execution of a program has nothing to do with time. Embedded systems have always been held to a higher reliability and predictability standard than general-purpose computing. Also designing predictable and reliable components makes it easier to assemble these components into predictable and reliable systems. But no component is perfectly reliable, and the physical environment will manage to show unpredictable results on being presented to unexpected conditions.The major problem the engineers of our current world are facing is the lack of accuracy of the hardware which leads to lack of efficiency in the growth rate as the engineers have to design the system according to the results from checksums and error correcting codes.Cyber-physical systems may well become the theory backing up a new wave of computing but these systems should be able to deliver new levels of performance and efficiency all thanks to the sophisticated control-computing co-design. For this to happen, we must move our understanding of computers beyond information and cyberspace. In the past, we have brought our information to computers in the pre-digested form of keystrokes and mouse clicks. Cyberphysical systems actively engage with the real world in real time and expend real energy. This requires a new understanding of computing as a physical act which will be a trigger to a big change in computing.

Cyber-physical systems are expected to play a major role in the design and development of future engineering systems with new capabilities that far exceed today's levels of automations, functionality, usability, perfection, reliability, and cyber security. Advances in CPS research can be accelerated by close collaborations between academic disciplines in computation, communication, control, and other engineering and computer science disciplines, coupled with grand challenge applications. The approach will lead to young creative minds to excel their skills solving real life challenges, so that somewhere in near future, CPS gains its full essence.

- DIVYANSHU ANAND

BACKUP CHARGE ON MOBILE PHONES - SOLAR PANEL

Kyocera partnered with SunPartner Technologies has introduced a revolutionary way of charging in its Torque smartphone prototype, in the late 2015.

"At less than 0.5 millimeters in thickness and as much as 90% transparency, the screen technology could fit any of today's popular smartphones without inhibiting their users", said SunPartner Technologies in a press release. "The component that captures sunlight, called Wysips Crystal, can be installed just below the touchscreen panel of the smartphone, so it doesn't affect the user experience, and feeds the solar energy into the battery".

While the technology may not be strong enough to replace plug-and-charge smartphone battery, it certainly is not a waste, since, in the time of need, this goes on even when the battery is dead, though it might be limited only to day time.

Statistics show that 10 minutes of exposure to sunlight generates minutes of stand-by use and about 2 minutes of talk time.

Successive improvements have shown that every 3 minutes of direct sunlight absorbed by the phone equates to 1 minute of talk time, and efficiency improvement of 8 times than previous attempts.

The smartphone Torque, currently in concept phase comes loaded with an app that lets users know about charging conditions, ranging from 'Excellent' to 'Not Charging'.

PATHIKRIT

TIPS AND TWEAKS

1: Shutdown your computer giving a funny reason:

- Open cmd prompt
- Type shutdown -s -t 500 -c "I am tired. I don't want to work anymore." (with the quotes) in the Command Prompt and press Enter.

2:To have one such cool processor name displayed in your computer, follow these steps:-

- Click on Start.
- Click on Run.
- Type "regedit" without quotes.
- Navigate to HKEY_LOCAL_MACHINE/HARDWARE/
- From HARDWARE, navigate to DESCRIPTION/System/CentralProcessor/.
  In the work area, double click on ProcessorNameString, and change its value according to your choice.
- Click OK

3. Show your name after time in taskbar

- Go to Start->control panel->Regional and Language Option->Customize->
- Go to TIME tab -> Change AM symbol and PM symbol from AM and PM to your name->
- OK
- If this doesn't work try out this
- Go to time in taskbar and Click it to open "Date and time property".
- Click to arrow to change the AM or PM by selecting and press arrow
- Apply->OK

4. Gmail Shortcuts:-

1. Shift + C: Open a new window to compose a new message
2. J: Switch focus to the next oldest email
3. P:Switch focus to the previous message
4. R: Reply to an email
5. A: Reply to all the recipients of the email

5.Some Run commands in Win 8

1. fsquirt -> transferring content through bluetooth
2. dialer-> Phone dialer
3. Refresh your PC -> systemreset
4. Steps Recorder-> psr
5. Sticky notes-> stikynot

ABHISHEK, PRATYUSH

DO IT YOURSELF

MAKE YOUR OWN WIRELESS CHARGER

Materials required
1. A USB cable
2. A travel adapter
3. Copper wire
4. Rectangular magnet
5. Aluminium foil
6. Electrical tape

Procedure

Step 1: Take a standard usb cable and cut out(remove) the wire leaving 10cm(approx.) wire on each each end.

Step 2: Peel off approximately 1 inch of the external coating layer by layer until you get three wires. Cut off the earth(green) wire as it is no longer necessary. Peel of the plastic from the remaining exposed wires(expected to be red and black) (repeat step 2 for both the pieces...)

Step 3: Cut out square portions from the aluminium foil and roll it upon the two wires on both ends.

Step 4: Take a few thin strands of copper wire and wind it upon all four naked wires (including both ends).

Step 5: Cover the windings(all four) using electrical tape completely. Furthur wind the tape over the Mini USB piece with another coat of copper wire(both wires).

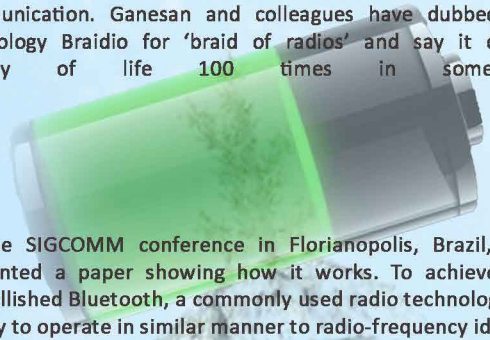
Step 6: Take the magnet and paste it over the travel adapter(top side). Plug the USB to the travel adapter and the other piece to your phone.

Step 7: Plug in the charger to the socket. Depending upon the quality and quantity of wires used, you will get a wireless charger of ranging from anywhere between 1 to 10 feet and you are no longer tied to the wall for the juice.

DIVYANSHU, PATHIKRIT

BRAIDIO

Do you also spend your whole day worrying about your devices battery life? Between camera, mobile phone, smart watch, laptop and a fitness tracker an average technology enthusiast needs to c arge at least five devices on regular basis. What is worst when you have a fully charged device beside you and another device runs out of battery. Now when we hold granted the flexibility to dump storage and computation from our personal computers to the resou ce rich cloud in similar fashion, it is smart that devices be ready to offload the power they consume for communication to devices that have a lot of energy. The current development for this oh-so-first world of problem can take the electronic world by storm. During a recent paper presentation by an enthusiastic team of computer science researchers led by professor Deepak Ganesan introduced a new technology that allows small mobile devices to take advantage of battery power in large devices nearby for communication. Ganesan and colleagues have dubbed the new technology Braidio for 'braid of radios' and say it can extend battery of life 100 times in some cases.



At the SIGCOMM conference in Florianopolis, Brazil, the team presented a paper showing how it works. To achieve this they embellished Bluetooth, a commonly used radio technology, with the ability to operate in similar manner to radio-frequency identification (RFID) which operates asymmetrically. While a tag typically embedded in a similar device or object, is extremely power-efficient.braidio operates like a standard Bluetooth radio when a device has sufficient energy, but operates like RFID when energy is low, offloading energy use to a device with a larger battery than needed. So, when a smartwatch or smartphones are equipped with Braidio, they can work together to proportionally share the energy consumed for communi c a ti o n .

The team designed Braidio's radio frequency front end so that it could operate in different modes while consuming power comparable to Bluetooth radio and using simple low cost components. They also designed algorithms that monitor the channel and energy at the transmitter and receiver and switch dynamically, between modes to achieve power-proportional communication.

Wearable devices and other daily life electronic items are often bulky due to large batteries required for better battery life but perhaps such energy offload techniques can reverse this trend and enable thinner and lighter devices.

- Pranay

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Archana
Aayush Pratik
Soumya Kavya Pathikrit
Shwetabh Niraj
Abhishek
Divyanshu SIGMA Tanya
Vishal Pratyush
Summing Up Talents
Sathish Babu Sneha Chandraprabha
Sankalp Abhishek Nivedita
Satyansh Prachee Abhinav
Meshram Cover Story Shyam
Personality Dedication
Tips & tweaks
crossword
C-C++
Sci-fi
Tech-Talk
Do-It-Yourself
TEAM WORK

FEEDBACK

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THE OPEN SOURCE SECTION

BookRead

This software is a boon to visually challenged as well as the readers who want to avoid the strain of reading e-books. First you have to convert your e-book into a text file. Taking an Ubuntu 14 laptop copy the content from your sample pdf and save in mysample.txt on your desktop. Now open your terminal and type the following commands. Let's not get into details of the commands. You might be asked for user password when executing the commands starting with sudo.

```
~$ cd ~
~$ sudo apt -get install git
~$ git clone https://github.com/theSage21/BookRead
~$ cd  BookRead
~$ sudo  chmod  u+x  bkrd
~$ sudo ln -s bkrd  /usr/bin
~$ sudo apt -get install espeak

Now go to your mysample.txt location  :-
~$ cd  ~/Desktop
 bkrd  mysample.txt
```

Open Source web apps testing tools

JMeter :- This is an open source load testing tool, written in java and it supports all platforms. It was orignally designed for testing web applicatons but has expanded to other test functions. Apache JMeter is one of the most reliable tools for testing the performance of a web application. It supports various protocols like HTTP, HTTPS, REST/SOAP, FTP and database via JDBC LDAP.

Selenium :- Selenium is one of the most popular open source testing tool for web applications. It supports automation testing of Web based applications for some of the largest browser vendors. It has five basic components - the Selenium IDE, the Selenium Remote Control, the Selenium Web Driver, the Selenium Grid and Selenium client API. Selenium IDE is a Fire Fox add on.

Other Tools are also available such as :- The Grinder,Vega, SiteDigger etc

Mobile Application Development

1. Codename One:- Codename one is a set of software developing tool aiming to provide "write once run anywhere" (WORA) code for desktop and mobile operating systems like android,IOS, Windows etc. It was described at the time by the authors as a cross device platform allowing to write your code once in java and have it work specifically on various operating systems. The biggest goals for the project are ease of use rapid application development, deep integration with native platform and native speed. Codename one is a combination of open source and SAAS, most of the client code is open source including I.O.S, android, windows etc.

2. Phone gap(apache cordova):- Apache cordova was originally created by Nioti. Adobe systems purchased Nioti and reframed it as "phone gap". Apache cordova enables software programmers to build applications for mobile devices that are using CS3, HTML5 and java script instead of relying on platform specific APIs like those in android, IOS, windows. It extends the feature of HTML and java script to work with device. The resulting application are hybrid, meaning that they are neither truly native mobile application nor purely web based application.

Open Source Database

MongoDB :- is an open source, document-oriented database designed with both scalability and developer agility in mind. It is classified as (non-relational) NoSQL, Instead of storing your data in tables and rows as you would do with a relational database, you can store JSON-like documents with dynamic schemas. The database uses a document storage and data interchange format called BSON, which provides a binary representation of JSON like documents. It is used in web applications.

Apache HBase

It is an open source NoSQL(non-relational) database that provides real time read/write access to large datasets. HBase scales linearly to handle huge datasets with billions of rows and columns, and it easily combines data sources that uses a wide variety of different structures and schemas. HBase is natively integrated with Hadoop and works seamlessly alongside other data access engines through YARN.

ElasticSearch

A distributed search engine: ElasticSearch is a highly scalable open source full text search and analytics engine. ElasticSearch allows you to store, search and analyse large volumes of data quickly and in near real- time. It provides a distributed, multitenant-capable full-text search engine with a RESTful Web interface and Schema-free JSON documents. ElasticSearch is developed in java , and is released as open source under the terms of Apache License. Some well known users of ElasticSearch are Wikimedia, GitHub, Stack Exchange(Stack Overflow), Mozilla, Netflix etc.

Docker

Docker is a new container technology. It's very popular nowadays because it allows users to run multiple apps on the same old servers, and it also makes it very easy to package and ship programs. A Docker container has all the dependencies it requires to run an application. It automates the deployement of applications inside software containers, by providing an additional layers of abstraction and automation of operating-system-level virtualisation on Linux. It also allows independent containers to run within a single Linux instance, avoiding the overhead of starting and maintaining virtual machines.

GO programming language

GO(often referred it as GOLANG) is a free and open source programming language created at Google in 2007 by Robert Griesemer, Rob Pike and Ken Thompson. It is compiled and statically typed language in the tradition of Algo and C with garbage collector. It is used in some of Google's production systems, as well by other firms. It is really good for network and web servers with features like go-routines and channels. It is also good for stand alone command line applications and scripts due to its consistent behaviour across platforms. It also makes many changes to improve conciseness, simplicity and safety. It supports multiprocessing as well.

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