



# SIGMA

SUMMING UP TALENT



THE NEWSLETTER OF CSE DEPARTMENT

## Editorial

Wearing masks, using sanitizers, and keeping social distance has been the trend for the last few months. The world is fighting a deadly virus that has killed more than 1.9 million people to date. The COVID-19 pandemic is the most crucial global health calamity of the century and the greatest challenge that humankind faced since the 2nd World War. It has rapidly spread around the world, posing huge health, economic, environmental, and social challenges to the entire human population. It has affected the global economy severely.

Technology played an important role during the pandemic. It accelerated the growth of digital platforms, which would have otherwise taken years to achieve. During this period, many educational institutes and companies shifted to the virtual mode, and work from home became the new normal. Many new projects have been sanctioned to ensure that our lives are as comfortable as it was in offline mode.

The pandemic has seen many people losing their jobs. Companies are looking for quality employees. Finding a job has certainly not been the easiest thing in the pandemic. As computer science students, it is very important to learn new skills like Data Science, Machine Learning, Blockchain, Web development, Application development apart from having good coding skills. Websites like Hackerrank, Codechef, LeetCode, GeeksforGeeks can be used to practice competitive coding. Many companies are still preferring work-from-home mode, which increases the importance of platforms like Github to help developers collaboratively work on projects. Apart from academics, it is also important to develop good projects to solve real-world problems.

This winter edition has been prepared to encourage the readers to explore new technologies in the field of computer science. The technical articles are written for the readers to know about new advancements in technology. Technology like the 'Braingate technology' can be used in the healthcare sector. There is also an article about the 'Google Easter Eggs' and another about a malicious worm called 'Stuxnet'.

The cover story gives some insights into the future of communication through Holoportation. The sci-fi section takes the reader to a fictional world. Hunting in C and C++ section helps the readers to test their coding skills. Tips and Tweaks is the section that has some useful technical tips, shortcuts, and many more. The Crossword section is lined up as a to-do exercise for the readers. DIY is for the braves who love to build. The open-source section includes open-source alternatives to commonly used paid applications.

We urge our readers to go through the sections and grasp the knowledge that we want to share through this edition. Sit back and enjoy the Winter Edition.

- EESHAN GUHA

## HOLOPORTATION - The Future of Communication

Have you ever thought of being in a place and being in another place at the same time? Is it possible for us to sit in our homes and traverse the globe? The answer is a simple 'yes'. As we approach the third decade of the 21st century, the furtherance and increased use of evolving technologies have paved a way for this to happen. This latest technology is known as holoportation, a true application of Extended Reality (XR). Holoportation is a new immersive telepresence system that combines the ability to capture high quality, real-time 3D models of an entire space, including people, furniture and 1objects, using a set of new depth cameras. These 3D models can also be transmitted in real-time to remote users. This allows users to wear HMDs (Head Mounted Displays) to see, hear and interact with remote participants, almost as if they were co-present in the same physical area.

Despite the assurance of telepresence, we are spending a considerable amount of time and money, moving around to meet people face-to-face. Somehow much of the restraints of face-to-face communication such as physical presence, eye contact, body language are still lost in even high-end audio and video conferencing. There is a clear gap between the highest veracity telecommunication tools and physical presence. Thus, holoportation will be a step towards addressing these issues of telepresence. This is a new immersive communication system that powers consumer augmented reality (AR) and virtual reality (VR) display technologies and combines these with a real-time 3D capture system. This system can capture in full 360o the people, objects, and motions within a room, using a set of custom depth cameras. This 3D content is captured and transmitted to remote participants in real-time.

Any person or object entering the equipped room will be captured in full 3D, and virtually teleported into the remote participant's space. Each user can now see and hear these remote participants within their physical space when they wear their AR or VR headsets.

From an audiovisual perspective, this gives users the impression that they are co-present in the same physical space as the remote participants. This allows both local and remote users to move freely within an entire space, and interact with each other and with objects. This system shows unique quality for real-time capture, allows for low communication latency, and further eases remote interpreting latency to avoid discomfort.

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Figuring 3D geometry information of the scene from multiple viewpoints is the important aspect of the system. The two key constraints are estimating steady depth information from multiple viewpoints and doing the same in real-time. Depth estimation is a well-studied problem where a lot of varied and effective solutions have been put forth. The popular depth estimation techniques such as structured light, time-of-flight, and depth from stereo are considered.

Audio is a basic characteristic of human communication. Without proper audio, visual communication is futile. To boost the sense of involvement, auditory and visual signs must match. If a user sees a person to the right, the user should also hear that person to the right. Audio originating from a spatial source outside the user's field of view also helps to establish a sense of involvement and can help to compensate for the limited field of view in some HMDs. In holoportation, each remote audio source, namely the audio captured from a remote user, as coming from the position and orientation of the remote user in the local user's space are synthesized. This confirms that audio and visual signs are coordinated. Even without visual cues, users can use the spatial audio cues to locate each other. To the best of our knowledge, holoportation is the first example of auditory augmented or virtual reality to enable communication with such autonomy of movement. Holoportation is proposed with many applications. They can be broadly categorized as one-to-one and one-to-many applications. First, one-to-one applications are scenarios where two remote capture rigs establish a direct linking so that the virtual and physical spaces of each rig are in one-to-one correspondence. This allows remote participants to be properly occluded by the objects in the local space. One-to-one calls are similar to a telephone or a video-chat between two users. However, the ability to move around the space and benefit from many physical cues make the difference. The second category consists of one-to-many applications. This is where a single capture rig is broadcasting a live stream of data to many receivers. In this case, the physical space within the capture rig corresponds to the many virtual spaces of the remote viewers. This allows remote participants to be properly occluded by the objects in the local space. One-to-one calls are similar to a telephone or a video-chat between two users. However, the ability to move around the space and benefit from many physical cues make the difference.

The second category consists of one-to-many applications. This is where a single capture rig is broadcasting a live stream of data to many receivers. In this case, the physical space within the capture rig corresponds to the many virtual spaces of the remote viewers. This is equivalent to the broadcast television model, where a single image is displayed on innumerable screens. In both one-to-one or one-to-many scenarios, holoportation content can be recorded for replay from any viewpoint, and any scale. Room-sized events can be scaled to fit on a coffee table for comfortable viewing. Content can be paused, rewound, fast-forwarded, to view any event of interest, from any point of view.

Even though this high quality 360o immersive 3D telepresence system is more advantageous, it also has many limitations. Firstly, the system is dependent on reliable connectivity, significant band-width and other internet-related issues which can be problematic. Further, there exists an ethical concern that humanity, that comes with face-to-face human interaction may be lost due to lack of sensory connection. Furthermore, security and privacy pose a definite threat to these kinds of technologies as hackers can steal data and that could be a serious legal problem.

Unlike some of the other generally used platforms, the use of holoportation provides real-time presence with three-dimensional ability, in which communication can include not just a flat representation, but a rebuilding of the entire physical setting, thereby allowing the conversion of non-verbal communication, including hand gestures, body positioning, and emotional responses. From an audio-visual perspective, this creates an experience similar to physical presence. Very shortly, undoubtedly holoportation will establish, rooting itself in every industry. There is every chance that holoportation can surely overtake humanity. The only way to avoid that is to limit the use of these technologies since excessive use would eventually make human feelings meaningless and people will always live in a pseudo world.

**-SUHAS & NIDHI**

# Google Easter Eggs

Ever heard of easter eggs? It might or might not be a familiar term for you. But believe it or not, everything, from movies to video games has easter eggs hidden somewhere. So, what are easter eggs? These are hidden messages, features, or images which when found make everything even more intriguing.

We all know Google as a seemingly endless source of information. Made a spelling mistake? Google it. Want to know about the current fashion trends? Google it. You can literally find everything on Google.

But, did you know? Google also likes to make things fun. This should be evident from the dinosaur game in chrome browser. Similarly, there are many easter eggs out there for you to explore. Let us look at a few:

- The Decision maker

Ever stuck between two choices? Let Google handle that for you. Just google "flip a coin", and leave it all to fate. If the outcome doesn't satisfy you, you know the other one is the right choice to make. If there are more than 2 decisions involved, try "roll a die"

- Miss Pacman?

Well, you don't have to miss it anymore. Whenever you are in the mood, just google "Pacman". Google will serve you with one of the greatest video games of all time. Fond of the snake game? Try "play snake".

- Did you mean "Recursion"?

Try "Recursion", and the rest will be self-explanatory.

- A trained pet

Yes, machines can be trained too. Google, like your pet dog, will certainly obey you. Just ask it to "do a barrel roll".

- The answer to life, the universe, and everything

Miraculous as it may sound, but Google has it. The answer to everything, even the inevitable bugs you encounter in projects.

Try "The answer to life, the universe, and everything".

- Ye want to talk like a pirate, eh?

Go change your language settings to "Pirate". Now you can search for the trident.

- Understand gravity

You might think that the gravitational force is the weakest force in the universe. But it is strong enough to pull your web results down. Just try "Google Gravity" and press "I'm feeling lucky".

Apart from these, there are lots and lots of cool easter eggs for you to explore. Never stop searching.

**-ROHIT**



# MEET AND RATE

- AKANKSHA & ANUDEEP

The monotonous, annoying alarm I hear every day is beeping right through my ears. As soon as I open my eyes, my alarm goes off and the calendar hologram appears in front of me with the same lady, as usual, announcing "Its 12th November 2121 today. Your ratings are 8.7 and you have a birthday party for your childhood friend Twisha to attend at 9 pm today. Have a great day". I yelp out of happiness and gladly get ready for college.

Times have changed now. A huge company called Tech ID has started a new mechanism to identify people and their basic details just by having a glance at them. Everything about everyone is public. People are involved in an app that syncs with their retinal implants. And now we have a sort of rating system that lets people know how much the person is rated out of 10. So, the minute you see someone, you see their ranking and are free to rate them.

Walking past the college corridors, a girl shouts that she loves my shoes and instantly rates me higher. I try every day to impress people to get higher ratings. Life has turned out to be like that. It's going well and teachers have been made to retire due to their low rating given by students. I keep smiling and keep a bubbly aura to let people like me and rate me higher. People who are outspoken and rude, which are always a part of the corner in the class, get really low ratings around 3 or 4. I can never stand such people and always keep my distance. Everywhere, being with someone who is rated below 5, gives a bad image and your rating goes low. Now, why would I want that? This system keeps everything in check. And I like it.

Laughing and hanging out with my usual bunch of friends, we walk towards the canteen. What I don't notice is another student running at full speed ahead of me. We hit each other hard and I spill the milkshake I was holding all over my white shirt. I don't know what came into me but I blasted off at the 2 rated guy I have no clue existed till now. Everyone around me looks perplexed at my attitude towards the boy. Suddenly my ratings swoop down so low, it's embarrassing. I'm shocked at everyone's attitude and rate everyone I see, a 3. Feeling utterly humiliated, I barge off from the campus and keep running.

The whole moment in the canteen took me off guard and I can't imagine another scenario like that happening to me. I check my ratings and the lady in the hologram announces its just 6.7. I can't believe how could everyone judge me just for a situation I got angry in for one moment. I maintain my calm and reassure myself that there's a party to attend tonight so I hopefully can get higher ratings there. Breathing heavily, I reach a supermarket and wonder if I can buy a nice gift for Twisha. I walk over to the gift section and walk down the aisle towards my usual place. A guard suddenly comes over to me and says "you're below 7 points. You cannot buy from that aisle." I get so infuriated and now the whole rating system seems a little far-fetched. I start arguing with the guard and now he shouts back and rates me a 4. I get so angry that more than one guard had to send me off from the market, along with rating me a 4 of course.

I start heading home crying. I don't even bother checking my rating knowing that it is so bad. A random man comes over towards me. I check his details as a 2-point rated guy and have nothing else. This comes off as strange to me because everybody has to have their details displayed. I walk fast but he still manages to catch up. He grips my hand tightly and says "welcome to the two-point club". Panic surges in me and I try to scream but he quickly covers my mouth and takes me to a sewer hole. Once I fall in, to my surprise, there lives a whole lot of people inside who don't have any details about them nor ratings. The place looks huge and almost seems like a different world altogether. I ask what is this place to which he says "The world above is too advanced and fake. Everyone, including you till now, worked for standards of society and with that retinal implant in your eye, your people have been setting a technologically advanced world where people keep you in 'check'. If you go one point lower, you go to jail and that would make it worse for you. Here, you are free from technology. Here, we are all authentic. Here, we rate people using our old ways. Meet, and greet."

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# HUNTING IN C/C++

-SIRI & AKASH KADIYAN

```
#include <stdio.h>
int main()
{
    int c[]={8,7,6,5,4};
    int i,*p=c, j;
    for(i=0;i<3;i++)
    {
        printf("%d %d %d",
            *c,*p);
        c[j++];
        p++;
    }
    return 0;
}
```

Output : 8 7 6  
5 4

```
#include <iostream>
using namespace std;

int main()
{
    int a=10,*ptr=&a;
    char c='A',&cho=c;
    cho+=a;*ptr +=c;
    cout<<a<<" "<<c;
    return 0;
}
```

Output: 10A

```
#include<stdio.h>
int call(int* a,int* b)
{
    int sum = *a + *b;
    *b = *a;
    return *a = sum - *b;
}
int main()
{
    int i=0,j=1,k=2,m;
    m = i++ &&call(&j,&k)
    || i << j;
    printf("%d %d %d %d",i,j,k,m);
    return 0;
}
```

Output : 1 2 1

```
#include<stdio.h>
#define MAX 32
int main()
{
    char arr[] = "Sigma";
    *(arr + 0) &= ~MAX;
    *(arr + 5) &= ~MAX;
    printf("%s\n",arr);
    return 0;
}
```

Output : Sigma

## BRAINGATE TECHNOLOGY

-BHOOMIKA

Thousands of people around the world suffer from paralysis, which makes them dependent on others to perform even the most basic tasks. But that could change, due to the latest advancements and achievements in the field of Braingate technology, which could help them to regain a portion of their lost independence.

The mind-to-movement system that allows a paralyzed man to control a computer using only his thoughts is a scientific milestone. The technology consists of a sensor that is surgically implanted, that records the activity of dozens of brain cells simultaneously. The system decodes all these signals in real-time to control a computer or other devices. The braingate technology was designed to take advantage of the fact that many patients with motor impairments have an intact brain that can produce movement commands allowing the brain gate system to create an output signal directly from the brain, passing through the nerves to the muscles that can control a paralyzed person.

The microcomputer chip, which is implanted into the brain, keeps track of brain activity in the patient and converts the intention of the user into computer commands. Chips of hair-thin size electrodes that sense the electromagnetic signals of neurons in specific areas of the brain are implanted. The whole activity in the brain is translated into electrical signals and is then sent and decoded using a program, which can move a robotic arm, a computer cursor, or even a wheelchair. Scientists are looking forward to this technology that can overcome conditions, such as epilepsy and brain trauma. Braingate technology is going to be the first human device that has been created to record, filter, and amplify signals of multiple channels of concurrently recorded neural activity at a very high temporal resolution.

When a person becomes paralyzed, the neural signal from the brain no longer reach their designated site of termination. But still, the brain keeps on sending out these signals although they do not reach their destination. It is these signals that a braingate system picks up and they must be present in order for the system to coordinate its work. It is found that people with severe paralysis can generate signals in the area of the brain responsible for voluntary movement and these signals can be detected. The coordination of chip, connector, converter and computer makes a person possible to achieve his intention.

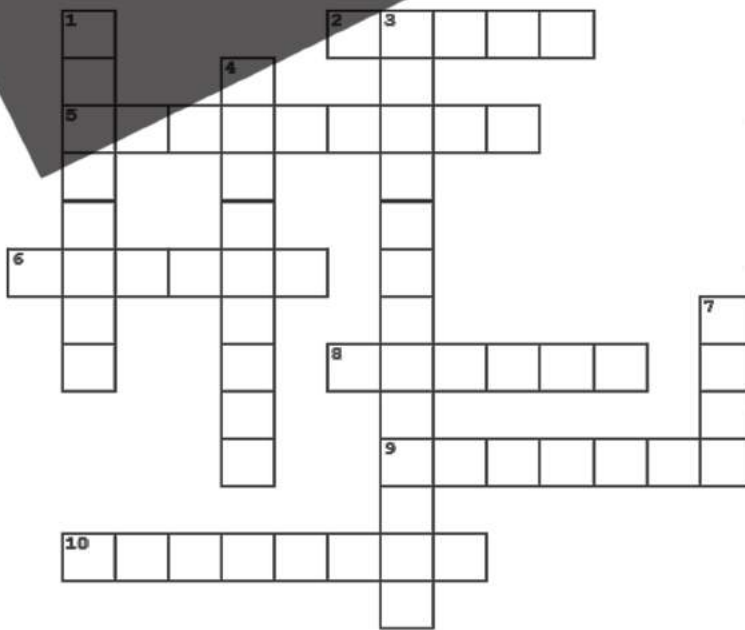
The technology making the way through the brain-machine-interface field has potential applications, including the development of human augmentation for military and commercial purposes. The main goal of this technology like the braingate is to help those who are paralyzed to perform their daily routine activities that are part of normal human living. The brain gate can be used to replace the memory center in patients suffering from strokes, epilepsy, or alzheimers disease. The braingate device can provide paralyzed patients a way of communication through the translation of intension into direct computer control. Normal humans may also be able to utilize braingate technology to enhance their relationship with the digital world, provided if they are willing to receive the implant.

Braingate technology is used for the future implementation of neural networks. It can be used by individuals whose injuries are less severe. The upcoming generation may build up devices for controlling breathing rates, heartbeat rate, and much more.



# CROSSWORD

-PRERANA AND GAURAV



## Down

- 1.feature or defect of a computer that allows surreptitious unauthorized access to data
- 3.forgery of an email header so that the message appears to have originated from someone or somewhere other than actual source
- 4.green dam is \_\_\_\_\_
- 7.a battery that maintains the time,date and other configuration settings

## Across

2. who invented Graphical User Interface
5. an expert or habitual user of internet
6. a computer connected to internet that has been compromised by a hacker
8. a network of private computers infected with malicious software and controlled as a group without the owner's knowledge
9. world's first industrial robot with 6 electromechanically driven axis
10. form of fraud in which the attacker tries to learn information such as login credentials or account information by masquerading as a reputable entity or person in email, IM or other communication channels.

## ANSWERS

1.BACKDOOR 2.XEROX 3.EMAILSPOOFING 4.WEBFILTER 5.CYBERNAUT 6.ZOMBIE7.CMOS8.BOTNET9.FAMULUS 10.PHISHING

# Tips and Tweaks

-CHARISHMA AND ADITYA

**1. REVERSE SEARCH AN IMAGE IN CHROME:** In Google Chrome, if you press "S" while you right click on an image it will do a reverse Google search. That means you'll be able to see where that photo is and where it potentially originated.

## 2. SOME SHORTCUT KEYS:

Windows Key + A = launches the Action centre

Windows Key + Right - Up = moves the active app to top right quadrant

Windows Key + Ctrl + Left or Right = navigates across your virtual desktop

Windows Key + UP and Down = snaps the active app to top or bottom of screen or maximizes it.

**3. ENABLE VIRTUAL DESKTOPS:** To turn on virtual desktops, Win + Tab to get the Aero view, then click "+New Desktop" down in the lower right. You can have as many as you want, and switch between them by clicking the Desktop icon to the next search box

**4. CREATE A LOG (DIARY) USING NOTEPAD:** This feature of Notepad will automatically add date and time when you'll close the file. The following code:

a. Create a new Notepad file

b. Type .LOG in the first line and then save the file as log.txt

c. Now, open the file again and you will see that there would be an extra line at the end. This line will tell you the time when you last closed this Notepad file

d. Write something and again close the file. Notepad will add another timestamp.

**5. DYNAMIC LOCK:** Windows key + L Dynamic lock is a handy feature that pairs your PC with your phone over Bluetooth, then automatically locks your computer when you wander away from it. To start using it, marry the two devices in Control Panel > Hardware and Sound > Devices and Printers, then activate Dynamic lock at Settings > Account > Sign - in options.

**6. CLOUD CLIPBOARD:** Windows 10's copy and paste functionality has been hit and miss for years, but now you can deploy that bugginess across multiple PCs with cloud clipboard Update. Head to Start > Settings > System > Clipboard and enable Sync across devices to start copying data on one PC and pasting it on another PC. While you are in this menu, enabling Clipboard history lets you save multiple items to the clipboard so you can use them again later, Nifty stuff.

**7. WINDOWS SANDBOX:** A platform that makes it easy to test unknown software and websites in a safe environment. The feature basically creates a virtualized second copy of Windows within Windows where you can run untrusted tasks, firewalled from your main installation. If things go pear-shaped, just nuke the virtual PC and start anew. Easy-peasy! And if a file checks out, you can move it out of quarantine and copy it over to Windows 10.

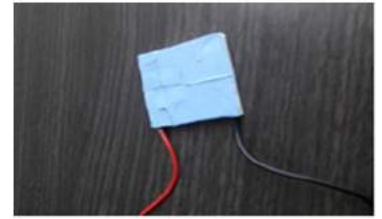
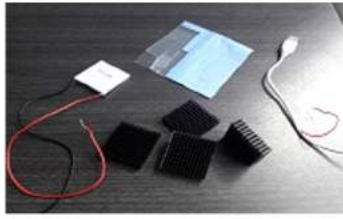
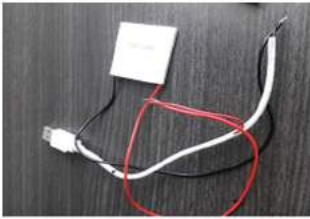
# DO IT YOURSELF

## HOW TO MAKE A DESKTOP PELTIER COOLER

-AMAN AND BHOOMIKA

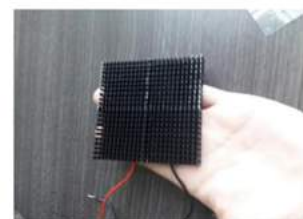
### Materials required:-

- C-sized (Standard Sized) C1-12706 module, 1stage, 6-amp cooler with 127 PN couples
- Thermal pads or paste
- 4 aluminum heat sinks (Dimensions: 40cm×40cm×11mm)
- An OTG cord with the Non-PC/Laptop end stripped off.



### Procedure:-

- Strip the ends of the red and black wires on the OTG cable (Non-PC/Laptop end). Now pass 12V of current.
- Now plug the PC end of the cable to an adapter to make sure it works.
- Once it is plugged in, you have to sense the hot side and cool side.
- Cover the hot side with a thin layer of thermal paste or thermal pads as shown.
- Once the hot side of the module is evenly covered by thermal pads, adhere one of the heat sinks to a corner of the Peltier module, such that the heatsink should cover one-fourth of the entire module.
- Add heatsinks in a similar fashion to the rest of the module as shown in the figure.
- With the hot side's increased surface area, we can rely on passive cooling to absorb heat from our device for about ten minutes.
- To make this device last longer, spray water on the sink for a couple of seconds every ten minutes so that it cools down quickly.





# STUXNET: The world's first cyber Boomerang?

-APRAJITA

Stuxnet, a malicious computer worm, a worm that almost started WWE, was in development in 2005 and was discovered on the 17th of June 2010. The first cyber attack was known to cause physical damage in the real world. The worm travelled on USB sticks and spread through Microsoft windows computer. It blew away a storm in the media since it was discovered because it was the first-ever virus to be capable to cripple hardware. Although neither country has openly admitted to making the virus, but is widely understood to be a cyber-weapon built jointly by the intelligence agencies of the United States and Israel in a collaborative effort known as "Olympic Games" against Iran's nuclear facilities. It began under President George W.Bush and continued under President Obama.

Stuxnet usually targets Programmable logic controllers (PLCs), collecting information on industrial systems and damaging infrastructure. The worm targeted the computers that ran the machines used to turn Uranium into nuclear fuel. In the days to come the virus was made capable to target facilities including the water power plant, power plants, and gas lines. Its purpose was not only to affect the PCs but also to cause real-world physical effects. When it affects a computer, it checks if the computer is connected to specific models of PLCs manufactured by Siemens. It caused almost no harm to the computers that were not involved in Uranium enrichment. PLCs are how computers interact with and control machinery like Uranium centrifuges.

The worm then alters the PLCs programming results in the centrifuges being spun too quickly and for too long, damaging or destroying the delicate equipment in the process. When the Stuxnet worm was destroying the centrifuges it sent false information to the Uranium. The equipment pretended that everything was operating normally.

Even if the victims do discover that they were attacked, they may not be able to determine who attacked them because hackers can mask their identities and cover their digital tracks. When infecting a new computer, Stuxnet saves information about the infected system's name, Windows domain, and IP address. This information is stored in the worm's internal log and is multiplied with new data when the next victim is infected. As a result, information on the path travelled by the worm can be found inside Stuxnet samples and used to establish from which computer the infection began to spread. Stuxnet was a weapon first to be made entirely out of code., which was 20 times more complex than any other virus code. Unlike most viruses, Stuxnet doesn't carry the usually forged security clearance that helps viruses burrow into systems. A 500-kilobyte computer worm, which spreads on its own infected the software of at least 14 industrial sites in Iran.

The identity of the individual engineers behind the Stuxnet has not been identified yet. Kaspersky Lab's Roel Schouwenberg estimated that it took a team of ten coders two to three years to create the worm to its final form. Liam O'Murchu, who was the director of the Security Technology and Response group at Symantec and was on the team says that Stuxnet was "by far the most complex piece of code that we've looked at — in a completely different league from anything we had ever seen before. Alex Gibney, the Oscar-nominated documentarian behind films like Enron: The Smartest Guys In The Room and Going Clear, directed Zero Days, which explains the history of Stuxnet and its impact between Iran and the West. The documentary also includes interviews with O'Murchu and some of his colleagues. Later a book named "Countdown to Zero days" by Kim Zetter was also published.

## THE TEAM

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**A S POORNIMA**  
Personality Dedication  
Cover Story  
Tips & tweaks  
Crossword  
C-C++  
Sci-fi  
Open Source  
Do-It-Yourself  
**TEAM WORK**





# The Open Source Section

-AKASH AND APRAJITA

## Drupal

Drupal is a free-end open source web platform distributed under the GNU general public license. It is written in programming language PHP and data base provided by SQL. Apache is a software that handles the requests for pages and delivers them when they are built. Drupal provides a frame work to at least 2.3% of all websites used world-wide.

In comparison to word press, Drupal can act as a better survey because of its multiple properties including site admins, content editors, individualized assessed to private content, multiple page templates or content types and many more. It is built on principles like collaboration, globalism and innovation

## Koders

Koders was a free search engine for open source code launched in the year 2000. It allows the software developers to easily search and browse source code where thousands of project are posted on several open source websites. On April 28, 2008 black duck software announced to acquire the coders assets and technologies. It is a source code that enables developers to find, understand and use open source code. Koders is a syntax specific which contained only 33 languages but soon it reached out to 43. Koders let us see and reuse our course code like never before.

## Open KM

Open KM is a free document management system which are available on open source community under the GNU general public license version 2. It is written in java and was developed using open technology. Cross platform is used as an operating system by the open KM.

It was introduced in the year 2005 but expanded in market in the year 2011 and 2012 translating the application to over 35 languages. Open KM is based on high level technologies to build the document management system repository, lucene indexing and JBPM work form are introduced in open KM.

## NextCloud

NextCloud is an opensource, self hosted file sharing platform with support for communicating and collaborating with teams. Its functionality is similar to Dropbox and OwnCloud, and you can use it to sync your files, calendars, and other data formats.

## UniCenta

UniCenta is an opensource commercial-grade point of sale dedicated to providing bussiness owners with innovative POS applications. It features include module for system control, sales, inventory, suppliers, employees, customers, and reports.

## The Elastic Stack

The Elastic Stack is made up of various open-source applications designed to enable users to collect data from any source irrespective of its format and type. It also enables users to search, analyze, and visualize data in real-time and it can be distributed as Software as a Service(SaaS) or installed on-premise.

## IPFire

IPFire is a versatile open-source Linux-based firewall that is easy to use and offers high performance in any scenario. IPFire originally started as an IPCop fork but was rewritten from scratch in version 2.

## ssh-Chat

ssh-Chat is a custom SSH server through which you can hold secure chats with a limited number of users over an ssh connection. It is specially designed to convert your SSH server into a chat service after which you get a chat prompt rather than a typical shell.

## LINUX COMMANDS

1.alias sudo to "please" for a much more wholesome unix experience  
~\$ alias please="SUDO"  
~\$ please mv filename.extension directory/  
~\$ please find directory/ -iname \*filename1.extension  
directory/filename.extension  
~\$ please shutdown

2.sl (SteamLocomotive)  
~\$ sudo apt-get install sl  
(for downloading and installing sl)  
~\$ sl  
The command works also for LS (not ls).

3.Cowsay  
An ASCII cow in the terminal that will say whatever you want.  
~\$ sudo apt-get install cowsay  
(for downloading and installing cowsay)  
~\$ cowsay Hello  
Then see the fun..

Pipeline fortune with cowsay:  
~\$ sudo apt-get install fortune  
(for downloading and installing fortune)  
~\$ fortune | cowsay