

# About gigma

Sigma is the newsletter of Computer Science and engineering department. It was started in the year of 2001. Team sigma was created to provide the students with updates and information about the latest trends and technology in the domain of computer science. Sigma currently consists of 45 members. The basic idea to form this group was to incorporate any upcoming or latest technology at one place and make the students aware of all information and technology which is worth knowing for any student of a computer science background.

Sigma team also conducts fun and interactive events for students for all years and all branches. It conducts a technical article writing contest for the

students each year ,from which three write ups will be selected and published in the edition and will be awarded with cash prizes.





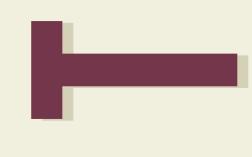
### SPOTLIGHT

## **TECHNICAL ARTICLE**



# TERM BIBMA



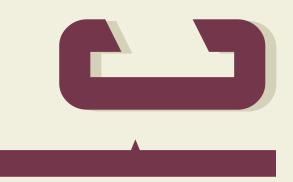












### CROSSWORD

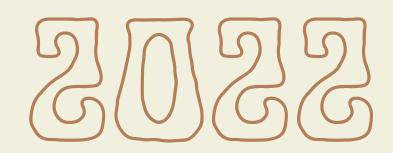
**SCI-FI STORY** 

## TIPS AND TWEAKS

### **OPEN SOURCE**

# TEAM SIGMA







ditorial

### **"The first step towards tolerance is respect and The first step towards respect is knowledge" -Henry Louis Gates**

In the fast-paced world we're living in right now, the only thing we seek is respect and the most important thing we lack is tolerance. The key to gain what we desire is the knowledge we possess. Here, we're not referring to technical knowledge, rather the life lessons which drive our lives.

The knowledge we talked about till now will come through our own conscience and the life experiences we get but we, from Team SIGMA, are here to enhance your technical knowledge with the **"Browse Edition"** of

Editorial Committee

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**Chief Designer :** Siddhant Antil

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Second-year:

our magazine. Here you can find the trending technical topics along with a mind boggling fictional world created for you. We also took care of the brainstorming in our crossword part. There was no way we would be missing the Open source section. Last but not the least we have a special interview of a very kind and smart person lined up for you.

Happy Reading!!!

Abhishek S MARUTHI R Vaishnavi S Aditya Ranjan Harsh Mohit Hemant Kumar Jotik Ningthoukhongjam Karanam Sree Harika Mohammed Zuhair Ahmed Sinchana K M Smita Sen Suchithra N VARSHA G C Vibha V Hathwar Bipin Krishna GA

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**Faculty Coordinator :** Dr. Shobha K

# **SPOTLIGHT**



### Dr. Bhargavi K B.E., M. Tech., Ph.D., Post. Doc(USA) Assistant Professor

### What motivated you to take up the CSE field?

During my 10th and 12th, I was very interested in solving mathematics problems and I would go to my math professor with a lot of doubts. Seeing my performance in mathematics and my curiosity, my professor recommended me for the Computer Science field, which has mathematics as its base and problem solving as a key component. As I kept going deeper in technology after his recommendation, the thirst for the technology kept increasing which led me to my Postdoctoral program in the same field.

## When did you join this institute and tell us about your experience in the college so far?

My history with this institute goes back to 2010 when I joined the institute as a masters student in the CSE department. Soon after completing my masters, I joined this institute as an assistant professor in ISE department. After completing a fabulous year in ISE, I shifted to the CSE department and now it's the 10th year of my happy journey in SIT. I make sure that I take a new subject every year to ensure my as well as my students' learning. Also, I try to relate the theory with my research experience in order to give it a flavor of real-time case studies. I am accomplished with the huge community of students with whom I have shared my knowledge, my research work, learnt many state-of-the-art technologies and spent happy moments.

# Can you tell us about your experience and the research projects you worked on during your post doctorate degree?

I got the opportunity to do a postdoctoral degree from the University of Memphis, USA via a fellowship program. My work there mostly revolved around the state-ofthe-art in development in Machine Learning systems as I had prior expertise in AI and ML field. There I met a really knowledgeable professor Dr. Sajjan G. Shiva who gave me an opportunity to work in his project. Also, I had an enormous gain of knowledge while collaborating with my senior professor students for research papers. Which are in the queue to get published. My presentation skill also improved by a lot as my mentor continued to give me positive criticism and helped me become a better version of myself everyday.

## What hardship did you face during your post doctorate program and how did you overcome it?

The environment and sudden weather change in USA during postdoctral was a big problem which I faced. Some days it would be very hot and the other day it would snow. The weather made it very difficult for me to stick to my schedule. While I was struggling with this, I saw students from different countries used to keep all this behind and come to class always on time which inspired me a lot. Also, I used to take a class in ML development for students there. Sometimes, students would ask me doubts which I couldn't answer. This would keep me up at nights and pushed me hard towards success.

### Tell us your significant achievements so far.

I finished my postdoctoral degree from the University of Memphis, USA in Software Engineering of Machine Learning systems. Also, I was awarded for the best paper as well as best presenter during my postdoctoral degree for the paper "Double-State-Temporal Difference Learning for Resource Provisioning in Uncertain Fog Computing Environment", IEEE 12th Annual Information Technology, Electronics and Mobile Communication conference (IEEE IEMCON), 27-30 October 2021, pp.0437-0442, Vancouver, Canada.

### A message for your students

Dear students, never stop being students. We need to keep learning everyday and improve ourselves. Inorder to excel in whatever we're doing we always need to take calculated risks and be dedicated to the domain. In addition to all these we need to be honest to ourselves and good to others. Inorder to achieve all this we need to keep ourselves healthy. So keep exercising, have good food and be healthy.

# DIGITAL TWIN TECHNOLOGY

### -SUHA

Innovations in technology keep our world going. We have come a long way, and we also have a long path ahead. To make our overall experience better, we have many new and promising technologies. One of them is the Digital Twin Technology. Many of us know that identical twins share the same set of DNA; and that they have a lot of similarities between them. Digital Twins are no different, except that they prove to be much more useful to their physical counterparts. A Digital Twin is a digital or virtual copy of a real-world object or asset. This technology surfaced around the year 2002. The term "Digital Twin" was originally coined by Dr. Michael Grieves.

A Digital Twin is a representation of a physical object, process or a service. It can be a digital replica of an object in the physical world, like jet engines and wind farms, or even larger items such as buildings or even whole cities. Digital Twin is like a computer program that uses real-world data to create simulations that can predict how a process will perform. Now let's get to know how it works: The life of a Digital Twin begins with experts in applied Mathematics or Data Science researching the Physics and operational data of a physical system in order to develop a Mathematical model that imitates (simulates) the original. The creators must ensure that the virtual computer model can receive feedback from sensors that gather data from the real world. This lets the digital version mimic what's happening with the original version in real time. Digital Twin can be broken down broadly into 3 types:

Digital Twin Prototype (DTP), Digital Twin Instance (DTI) and Digital Twin Aggregate (DTA).

We can use these at different times depending on the nature of our real model. When it comes to designing a Digital Twin, 3 steps sum it up: Data collection, Modeling and Linking. While data collection is all about gathering the behavior real object, modeling linking (data) of our and consist of processing/computing the collected data and creating an overview (summary/report) to aid Human understanding of the findings. Since it can be used across a wide range of industries, from automotive to healthcare and power generation, this technology has already been used to solve a large number of challenges. NASA was one of the first to use it to create simulations of space capsules and crafts for testing for their space missions. Other applications include testing corrosion resistance of offshore wind turbines, efficiency improvements in racing cars, monitoring and predicting the wellbeing of a patient, and modeling of hospitals to determine work flows & staffing to find procedure improvements. Telemetry sensors also use this technology to provide feedback from vehicles, and factories where processes are simulated by Digital Twin to provide enhancement. With the advancements in Machine Learning and factors such as Big Data, the Digital models have become a staple in modern Engineering to drive innovation and improve performance

# HUNTING IN C/C++

### -HARIKA & VARSHA

 #include <iostream> using namespace std;

```
int *fun()
{
static int x = 5;
```

```
return &x;
```

```
int main()
{
```

}

}

3)

```
int *p = fun();
fflush(stdin);
cout << *p;
```

```
return 0;
```

```
2) #include <iostream>
    using namespace std;
    class SmartPtr {
        T* ptr;
    Public:
        explicit SmartPtr(T* p = NULL) { ptr = p; }
        ~SmartPtr() { delete (ptr); }
        T& operator*() { return *ptr; }
        T* operator->() { return ptr; }
    };
    int main(){ SmartPtr<int> ptr(new int());
        *ptr = 20;
```

```
int main()
{
    int v[3] = {10, 100, 200};
    int *ptr;
    ptr = v;
    for (int i = 0; i < 1; i++)
    {
        printf("%d\t", *ptr);
        printf("%p", ptr);
        ptr++;
    }
}</pre>
```

#include <bits/stdc++.h>

```
4) #include <stdio.h>
    int main()
    {
        char s[]={'a','b','c','\n','c','\0'};
        char *p,*str,*str1;
        p=&s[3];
        str=p;
        str1=s;
        printf("%d",++*p + ++*str1-32);
        return 0;
    }
```

cout << \*ptr;</pre>

return 0;

}

### ANSWERS

1) 5 2) 20 3) 10 0x7ffcde30c710 4) 77

# DO IT YOURGELF

### -JOTIK & N. SINCHANA

### HOMEMADE WIGGLEBOT (A FIRST "ROBOT")

### **MATERIALS REQUIRED :**

- ~ Electrical tape
- ~ 3 Markers
- ~ 2 "AAA" battery holder (affiliate link)
- ~ 2 "AAA" batteries
- ~ 1.5-3 V DC Motor (affiliate link)
- ~ Clothespin
- ~ Popsicle stick
- ~ Googly eyes (optional, you could always just draw them on)
- ~ Supplies & Tools
- ~ Scissors
- ~ Permanent marker (to draw face, not shown)
- ~ Glue (optional, for attaching googly eyes.

### **PROCEDURE:**

~First tape the markers into the cup,

~Next attach the battery pack to the DC motor by wrapping the wire around the leads on the motor

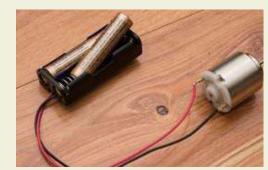
~Now that the battery pack is attached to the motor, tape the battery pack onto the top of the disposable cup slightly off center

~At this point you could turn on the motor by placing the batteries into the

- holder, to see that with the motor not off balance, nothing exciting happens.
- ~Next add on the clothespin to the motor and it should start to wiggle a little bit.
- ~To make the wiggle-bot wiggle more, you need the motor to be more off balance.
- ~Accomplish this by taping a popsicle stick to the clothespin. However, the clothespin would frequently fall off of the motor due to the strong vibrations, so fold the end of a long narrow piece of electrical tape over the motor and then wrap the tape around the motor, so that the sticky side will facing out.
- ~Attach the clothespin and weight to the motor. Make a face on your wigglebot, plug in the batteries,
- ~Place it on a piece of paper and watch it wiggle and spin!











# UEARABLEG- A NEU NICHE

### -Harsh Mohit

From playing hitman 3 on our VR headsets to setting 'fitness goals' on our Fitbits; From flexing our smartwatches to using smart rings that can track our health status, we have done it all with trying, cherishing and having fun with the electronic wearables. But what if, I told you that you can avoid those flatulent farts with electronic noses at public places, you can experience 3D holographic images with smart glasses, you can simulate your brain activity on your computers with Neuralink chipsets installed right up there in your brains, would'nt it be exciting and enthralling to experience those!?

Wearable technologies, known mostly just as "wearables", are electronic devices that are physically worn by individuals in order to track, analyse and transmit personal data. They use techs such as IoT & AI and are powered by microprocessors to complete the cause. Now, for those who don't have a glimpse of what IoT and AI are, let me explain their small chunk in simple words. Internet of Things, by technical definition might differ, but it actually means connecting the smart devices to a certain platform like internet for the sake of having synergy between them and utilizing them in a better way. On the other hand, Artificial intelligence tech is just like a brain with limited set of instructions or data to process with and produce the desired results! Together these both form a revolutionary duo for techs viz wearable technology. With the upcoming inventions like body-mounted sensors, ECG wearables, etc. associated with such tech's advancement in medical sector, this tech will hugely help the obsolete way of tracking, tracing and treating the patients in a better way. Moreover, with the introduction of smart helmets in one's daily life, might give him iron man vibes but they are, for now, only limited to bike rides and travel stuff. Electronic noses, as aforementioned, with the help of electronic sensors and receptors, provides a fingerprint of exhaled breath (breath print) by detecting volatile organic compounds through multiple sensors and hence, help us to get rid of bad or harmful odours. You might have faced problems maintaining your spiritual well-being; [Ok, let me phrase it with more student-friendly words] you might have faced problems controlling and cooling your depression, anxiety and tension! Well, smart headphones, with their smart and efficient way of selecting that music only, which can help you to sleep and calm often, can come as a great relief for us- "the graduating class". These are the reasons that the electronic wearables market is expanding with a rapid pace with its swift introduction of products in almost every sector, thanks to IoT and AI.

With the sector already goofing up with a report highlighting that the global wearable electronics market size was valued at \$81.40 billion in 2020, and is projected to reach \$459.58 billion by 2030, growing at a CAGR of 19.96% from 2021 to 2030, such tech certainly is going to lure more consumers towards its blissful ambit and will help people scrutinize more about the revolution of AI and IoT in their daily activities.



It is 26th January 2027. "Coffee?" He asked. The lady answered in the affirmative. "I saw you in a Facebook post last Sunday. You were fighting with someone in the bar, with some parts of your body being shakily visible to the people recording you." She said. "Hmmm", he agreed with a disingenuous nod. "But you were there at Connaught place at the same time." She asserted mixing sugar in the coffee on the table with a spoon in her hand. "No", he answered with a smile on his cheeks. "Look, I have told you at times to refrain from using your power in public until there is no other option left, but you don't take it seriously!" She exclaimed in a way to instruct him. "I too have told you that I have come up to this program just for eradicating the evil from the society and see, I am doing it fine, right!?" He said with a sip of the coffee. "You don't understand the gravity of the situation. This program is a secret, non-government-funded project, which has not properly been tested by government agencies. We still are figuring out how it affects your body and whether it can be a legitimate weapon to fight our enemies!" She told convincingly while walking close to him. "Have your sip!" He overlooked her while dragging a chair to sit. "You think it's funny?" She said with her hand on the slab and wrinkles on her head. "No! Do you think it's funny, huh? You think, it's funny to have 147 wires installed throughout your body, a chip installed right up in your head and a shock-like sensation generating every time I use this ring!", he said moving close to her and pointing towards the ring. "Look, I

joined this program to help people, and it will be a shame if I fail to do so, with this power being in my hand. I know, I might be breaking the rules, but I feel my pain inside them when something wrong happens to them and nobody is there to either accept it or help." Emotions were visible on his face. "Sometimes the cause is more important than just yourself." She spoke with a pause on her motion, distress in her eyes and conviction in her words, and then she left. "Neha, Neha!", he hollered to stop her.

At BVM institute of technology, it was 22nd September 2026 and at 5 p.m., Dheer was walking down the street to go to his class, watching the falling leaves, seeing the sun hiding behind the clouds, the cold breeze playing with his strands, and a girl cycling who just passed him. Today, he was going to attend a webinar-cumworkshop on 'python's industry presence', organized by a renowned company, HMT Technologies. He threw a look at his wristwatch. It was showing at 5:10 PM. "Oh! I'm 10-minutes late", he whispered and rushed towards the classroom. After entering the classroom, he took the seat next to his best friend, Harsh.

The event had already been started, and a lady was giving a presentation— "Python is one of the easier programming languages. It's portable and easy to read, it uses oops and pops both, how fast the night changes, it'll never change me and...." Dheer's alarm rang and he woke up! It was a dream and it was already 6:45 AM. He took the toothbrush in one hand, with the other finding his jeans. He zoomed to the bathroom, got fresh, ate his breakfast, and rushed toward the classroom. There was a webinar going on the topic "Python's Industry Readiness" and the same girl who appeared in his dream was preparing to deliver a lecture on the topic. He sat next to Harsh. "Hey guys, I am Neha, the CTO of HMT technologies. Today I am here to help you explore the world of python."

Neha was a computer science prodigy. At just the age of 23, she completed her bachelors in AI & ML, master's in IoT, and Ph.D. in Cosmic Energy & Radio Frequency. "I saw the same girl and this whole stuff in my dream", he exclaimed looking towards harsh. "Yeah, Yeah, and then you must have seen the exact scenario, element by element present here, right?", Harsh asked. "Yeah, of course!" Dheer said restlessly. "Dude, I have heard this multiple times, that's not a big deal! Buck up!" Harsh ignored Dheer. There was a screening and an interview in the college for two students to work as an intern for HMT technologies after this webinar, and Dheer was eagerly willing to join it. So, he took the test, passed the interview, and started his new journey as an intern at HMT technologies. It is 13th October 2026. "We did the mapping of your brain activity, and it seems you were not lying", Neha said. "I thought, the internship was for developing apps for certain factions of your company!" Dheer asked with confusion. "Okay, but I thought you would be a better candidate for this program. Aren't you excited?" Neha looked at him with a hope of affirmation. "So, what does my brain mapping says? Why do I see such things?" Dheer was curious. "Hmmm, your hippocampus, which helps us dream, imagine and remember things, is directly connected to your visual cortex, which, in turn, helps us visualize things, and therefore you have a capability of simulating very complex real-life things right up in your head in an absolute manner and imitate the memories of persons into those situations." Neha passionately explained.

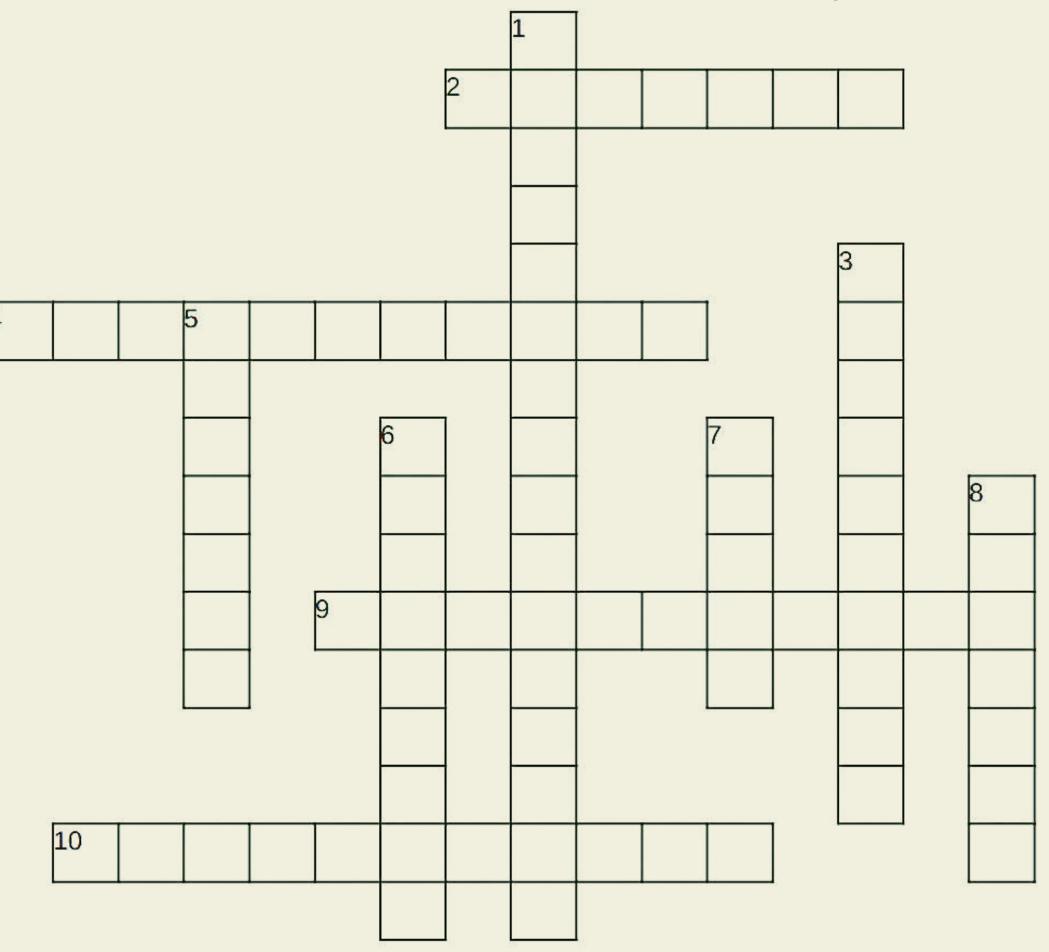
"But what about those whom I haven't ever seen?" Dheer curiously asked. "Well, we are still figuring that out!" Neha shrugs off cluelessly. "And this isn't the only thing you guys are doing, right?" Dheer questioned after a brief pause. "It seems you know much more than what we wanted you to know at this stage!" Neha murmured. "Then lay the story for me." Dheer curiously demanded an explanation. Neha took a pencil & paper and started explaining. "Our soul is a kind of cosmic energy, and it is written in Rigveda that the soul never dies, rather it just changes the bodies. And because of my background, I know it's true! Moreover, everything in the universe vibrates at a particular frequency and if any other object or phenomenon matches its natural frequency with that, both are considered to be in resonance."

Neha took a pause. "I am sure you haven't finished yet." Dheer joked. "I thought of an idea back in 2023 that what if we make use of our soul as a weapon to fight the evil. It's like we have a kind of energy right inside us, then why invent ideas to acquire the energies of natural elements? But since the body can't exist without a soul, I was learning techniques to keep the body safe even when the soul moves out." Neha ardently opines herself. "Since you're so intelligent, I presume, you might have cracked the code till now. Please don't tell me the masters was of no use to you." Dheer's tongue-in-cheek reply made Neha giggle. She continued, "So, what we'll do is we'll take a chip, connected to the internet 24\*7, and will fit it right up there in your cerebrum. This will help you know your surroundings better and with the help of AI, the information shown to you will be filtered and better optimized. Then this chip will be connected to around 150 wires fit throughout your body, and the wires will do their work by trying to adjust their frequency with your soul, which in return would create a massive vibration inside your body.

The human body can't bear frequencies above 3 kHz, because causes tissue heating, thus damaging the body. So, to avoid this, part of the energy inside your body would be released and that will travel through the internet, where you can use the digital dispersers of light like TVs, torches, and security cameras to project yourself anywhere, and since energy is shapeless and travels with the help of photons, you'll be able to use it in any way you want." Neha explained the whole stuff with the help of a holographic projection to Dheer. "In addition, this all stuff will be controlled by that ring on your finger", Neha added. "And, you think it'll work? You're a good dreamer Neha, I must say that!" Moving close to Neha, Dheer smiled a bit and tried to curtain her thoughts lightly. "And when the hell did this ring come to my hand?" Dheer added with discontent. "Look at your right, Dheer!" Neha said. A blue-colored translucent replica of Dheer was standing right behind him in the mirror. "What is this?" Haunted Dheer calls out to Neha in disbelief taking one step back from his soul. "You were there in a coma for the last 10 days. We thought the experiment failed, but I guess your body has accepted this. Look, how beautiful it is!" Mesmerized Neha tried to push Dheer to adore the beauty of her imagination. "You experimented on me? Are you serious? I was pushed into a coma because of you! And wait for a second, isn't the chip installed in my head, so I can control it, right?" Confused Dheer questioned Neha. "Well, about that!" Pulling a chair to sit and her eyes staring Dheer down, Neha calmly exclaims her expression! And this is how the muffled mystery of the cosmic ring dives into a new dimension of imagination! The mystery continues...

## Croggword

### -ZUHAIR AND BIPIN



### Down:

1.A source code instruction that is replaced by a predefined sequence of source instructions, usually during assembly or compilation.

3.Process of encoding information.

5.A malicious software that intends to gather information about a person or organization and send it to another entity by violating privacy.

6.A standard against which measurements or comparisons can be made.

7.A computer program which exposes an operating system's services to users or other programs.
8.A small set of instructions designed to be scheduled and executed by the CPU.

#### Across:

2.Hardware or software that acts as a bridge between two networks so that data can be transferred between a number of computers.

4.Where one organization provides services to another which could be provided in house.

9.A register that holds the result of previous operation in ALU. It can be also used as an input register to the adder.

10.The central printed circuit board in many modern computers holds many of the crucial components of the system.

ANSWERS

10.MOTHERBOARD 2.GATEWAY 3.ENCRYPTION 4.OUTSOURCING 5.SPYWARE 6.BENCHMARK 7.SHELL 8.THREADS 9.ACCUMULATOR 10.MOTHERBOARD

# TIPS AND TUEAKS

### -SMITA & NIRANJAN

### Linux command:

- 'History' command shows the history of commands executed recently. Run 'HISTCONTROL=ignorespace' first and start your command with a white space if you don't want a command to be included in history.
- 'Apropos' can be used to identify right command. For example if you want to copy files but don't know exact command then you can execute this command: apropos "copy files"

### **Shortcuts**

- Hitting the 'Windows key +V' causes cloud clipboard to appear showing all the previously copied content including text, HTML and images which can be retrieved for later use.
- Hit 'Windows + Left Arrow' or 'Windows + Right Arrow' to snap a window to the left side or right side respectively.
- If you want your application to take up a quarter of the screen, hit 'Windows + Up Arrow' or 'Windows + Down Arrow' after you snap it to left or right.

### **Confidential Mail**

- Go to Gmail then compose, tap on 'confidential mode' symbol at the bottom right of the window. Set a expiration date and passcode. Selecting 'no SMS passcode' allow recipients who are using the Gmail to open it directly and who don't use will get emailed passcode.
- If you select 'SMS passcode', recipients will receive a passcode via SMS to the provided phone number.

### **Google Dorks**

- 'Site: ' Limits the search to a specific site whose domain is given only. E.g. site:microsoft.com
- '\*' This works like a wildcard. e.g. how to \* sites , will show you all the results like "how to..." design/create/hack, etc... "sites"
- 'Intitle:' This will show pages that have the term in their html title.
- 'Inurl: ' Searches for specified term in the URL. E.g. inurl:dork.

### Fix smart database update

- Either fix the command, or disable the command; or upgrade to 6.2
- This is for 6.1.9 (possibly for earlier versions too), fixed in 6.2 betas

### **Disable network offloading**

• Use the Tips and Tweaks plugin, or add the lines below near the top of the config/go file ethtool -K eth0 tso off ethtool -K eth0 gso off

# Open Gource

### ~MARUTHI R and ABHISHEK S

### Noisetorch

NoiseTorch is an easy-to-use open-source application for Linux with PulseAudio or PipeWire. It creates a virtual microphone that suppresses noise, in any application. Use conferencing or VOIP application you like and simply select the NoiseTorch Virtual Microphone as input to torch the sound of your mechanical keyboard, computer fans, trains, and the likes. With growing work from home and lots of remote working opportunities, NoiseTourch can come in handy for all your virtual meets.





### **Amberol music player**

If you want some awesome-looking and simple music player where you just want to play music Amberol is the one you're looking for. Amberol is open-source the project is well integrated with gnome which is also an open-source desktop environment for Linux operating system.

The developer tried to make this application as

simple as possible, with basic features this application comes with an eye-catching UI design that just looks so good on your desktop.

### Portmaster

Portmaster is GUI based network monitor tool where you can have control of all the devices connected to your personal network, with a minimalist UI approach and easy-to-navigate design, even IT practitioners found it productive for their daily needs. If you're having a hard time reading logs or setting up a firewall Portmaster is the go-to tool for a one-stop solution. The features include blocking the connection of specific service types to having atomic control over the application level.

(Available for both Windows and Linux Based OS).





# Open Gource



cn\_windows\_10\_enterprise\_x64.iso cn\_windows\_8.1\_enterprise\_6050374.iso cn\_windows\_server\_2012\_r2\_v1\_x64\_dvd\_2979220.iso cn\_windows\_server\_2019\_x64\_dvd\_2d80e042.iso en\_windows\_7\_pro\_x64\_dvd\_x15-65805.iso

### Onlyoffice

Reading Documents that were written using Microsoft word in a text editor that is available on the Linux platform was not an easy task until, LibreOffice writer introduced its compatibility for MS word documents, but still, the user who just moved from Microsoft word didn't find Libre office comfortable to edit, Guess what we have a solution for that also meet Onlyoffice an open-source office suite. Where you get the UI similar to MS Office apps and has more compatibility for MS Office documents.

### Ventoy

Ventoy tool to write image files like .ios, .wim, .img, .vhd and .efi into any storage media to create bootable USB flash drives. One main advantage of this tool is that you can add as many bootable images as possible that can fit in storage media, unlike any other application that allows only one image file to be present in the storage device at any given time. Once you are done with installing Ventoy into your USB flash drive writing an ISO image is as simple as copying it to your storage media, leave the habit of re-burning your flash drive for every image.

CONLYOPPICE	
	Connect to your cloud Store your documents in the cloud and access them any time, from anywhere. Share and collaborate on them. Chat in your doc, add comments or share it for review.
PRESENTATION Recent files	ownelloud Seafile
Open local file	
Connect to cloud	Don't have a cloud account yet? Go online with ONLYOFFICE Cloud Service and try collaborative capabilities for free.
Settings	Create an ONLYOFFICE cloud Already use a cloud? <u>Connect now</u>

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0 😼 🔒 0 🌣 🥱 🦻 🌢	•				
factorial.py ×	Variables				
<pre>def fact(n):     if n == 0:         return 1     else:         return fact(n-1) * n</pre>		0	Name fact	Value <function a<br="" fact="">3</function>	~
	fact(3)	fact(2)			
<pre>print("Its factorial is", fact(3))</pre>	<pre>fact def fact(n):</pre>	fact			
<	if n == 0 retur else: <u>retur</u>	alca	== 0: return 1	-1) * n	
Shell	¢	e		>	
>>> XDebug factorial.py	Local variables	Local var	iables		
Enter 2 matural Sumber: 3	Name Value n 3	Name	gganar.s	^	~

### **Thonny Python IDE**

This application is built for beginners in python programming, it is a plug-and-play application which means you don't need to do the additional effort for installing python. It comes with simple user interfaces and a bunch of features like a built-in debugger to run your program step by step. Other features include highlighting syntax errors and an auto-completion feature. It gives access to the system shell and you can manage pip from GUI.

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