



DO YOU KNOW ?

The QWERTY keyboard was designed to slow you down

When typewriters were introduced, typing too quickly would jam the keys. To prevent this from happening, QWERTY was introduced which placed common alphabets at a distance from each other and slowed typists down.

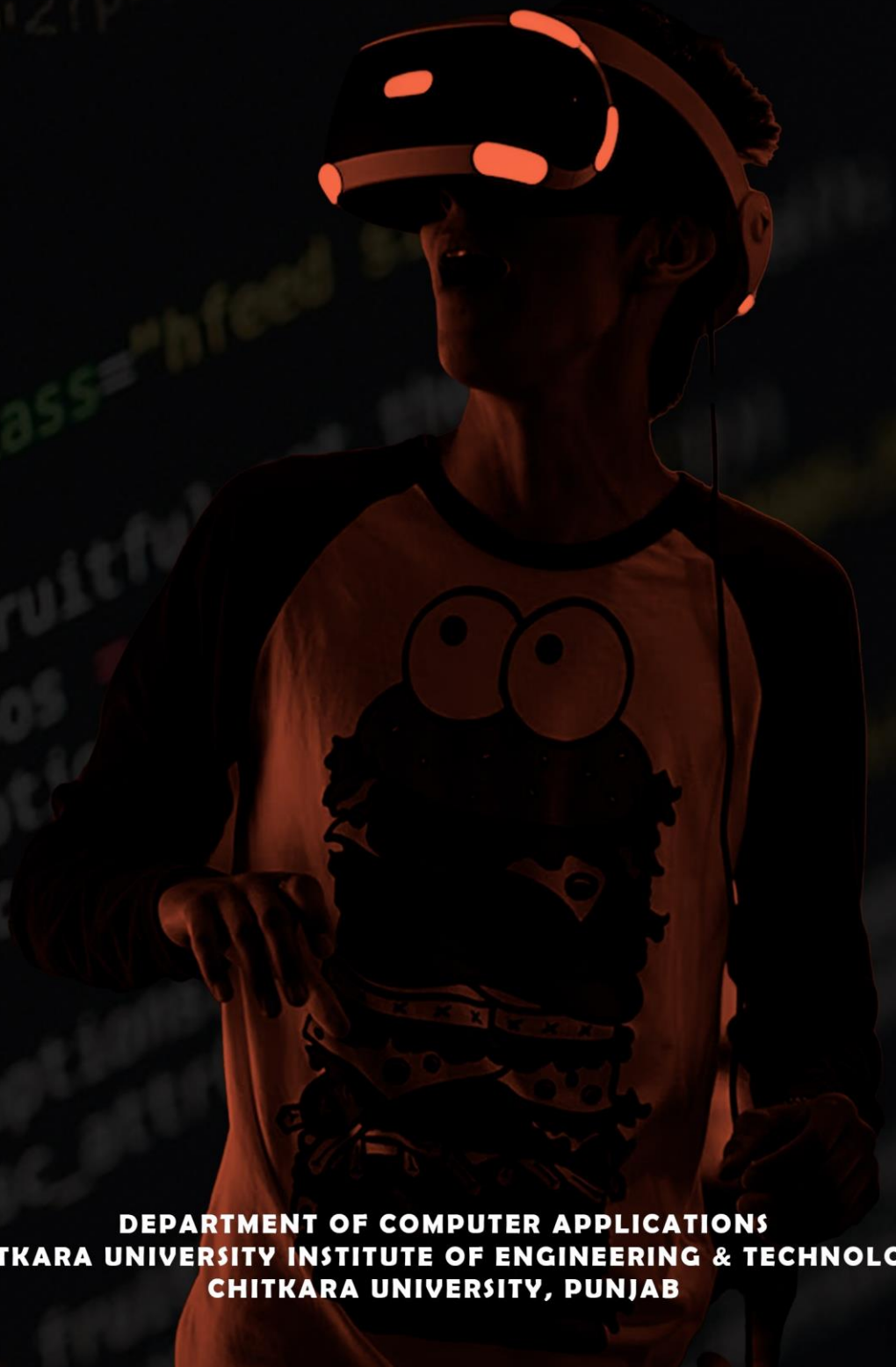
The Firefox logo isn't a fox

It's actually a red panda. It's a common misbelief that the Firefox logo is a fox (I mean... it is in the name), but it is actually a red panda!

Nokia used to sell toilet paper

Before Nokia sold mobile phones, they manufactured a range of other items, such as; toilet paper, tires, computers, and other electronics

WALL FOR ALL



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Dear Readers

The nostalgic feeling that one experiences while sifting through the dusty old pages of the college magazine cannot be expressed in words. However, very few of us have retained those copies, and most of those precious articles that we wrote during those golden days with enthusiasm are lost forever. With the advent of e-books and other online media, the days of paper-bound college magazines are gone, and the digital platform has paved way to allow retention of such publications without much effort.

Wall-for-All, the e-Magazine published by the Department of Computer Applications, is one such effort that was started with an intent to provide a chance to all students and faculty members to share their thoughts and knowledge, and hone their skills in creative writing.

I am happy to see the enthusiasm of eminent members of the department to contribute to *Wall for All*. This shows the positive and creative energy of the contributors. However, it would be really wonderful if we can see the articles contributed by more students in the next editions, for this e-Magazine is intended to be a writing pad for each member of the department.

I proudly present the current edition of *Wall for All*.

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Future of Artificial Intelligence: Deep Learning

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Introduction

Tasks like recognizing spoken words or faces in images are said to be easily performed by humans, or they feel as automatic. Unlike humans, computers do not possess these abilities on their own. But it is possible that they can be made to perform these tasks, with the help of technology. This field of technology is known as Deep Learning. In simple words, just as humans learn from their experiences, when the same is said for machines, then Deep Learning comes into force.

What is Deep Learning?

Deep Learning is a technique which comprises of certain learning algorithms that allows computer systems to improve on its own by acquiring data and gaining experience, and represent the world as nested hierarchy of concepts. The quantity and quality of data acquired by machines are responsible to determine how much the machines can learn. The concept of deep learning is inspired by the structure and function of human brain.

Difference between Machine Learning and Deep Learning

Deep Learning and Machine learning differ by the methods in which they learn and the type of data they deal with. Deep Learning is a subset of Machine Learning, which further is an application of Artificial intelligence.

Machine Learning works with a simple structure that includes computers analyzing and learning from data, using algorithms to perform a task without being explicitly programmed, and make decisions based on what it has learned. But at times, if the algorithm returns an inaccurate prediction, then human intervention can still be needed.

Whereas **Deep Learning** works with a complex structure of algorithms in the form of layers modeled on the human brain, to produce an output and create decisions on its own with the help of its neural network.

Even if the prediction is not accurate, almost no human intervention is required.

Need of Deep Learning

Deep Learning is capable of solving many complex problems which were not easily solved by traditional Machine learning algorithms, such as image classification, object detection etc.

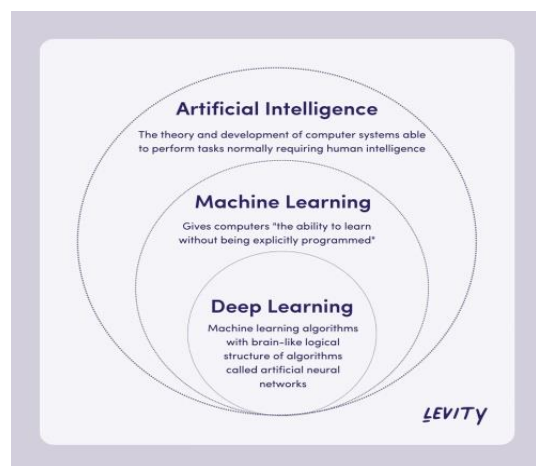


Figure1: AI vs ML vs DL

1. In the graph shown, on the x-axis we have the amount of data and on the y-axis, we have the performance of the algorithm. As the amount of data is increased, the performance of older learning algorithms (any kind of machine learning algorithms) after a specific point of time, started degrading down and remained almost constant thereafter. But in the case of Deep Learning, as there is an increase the amount of data, the performance is also increasing. Due to this exponential growth of data, and in order to acquire accuracy and various performance metrics, some deep learning models were created.
2. In case of machine learning, there are two techniques, Feature Extraction and Classification, which are performed separately. But Deep Learning has a useful feature that it combines both these techniques as a single process. However, with a deep learning algorithm the features are extracted

automatically through the neural network and the algorithm learns from its own errors. This way deep learning algorithms require much less human intervention

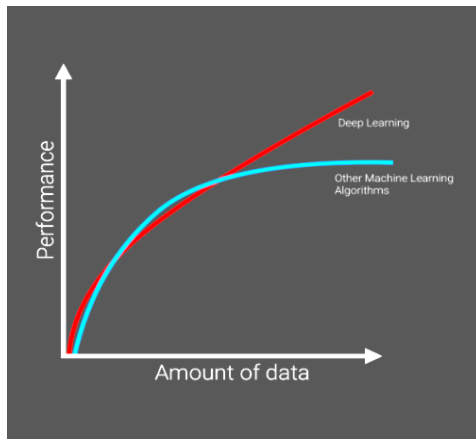


Figure 2: Performance of Algorithms

How does Deep Learning Work?

Deep learning mostly functions with **artificial neural networks**, which is a multi-layered structure of algorithms as shown in fig 3. The motivation behind neural network is the biological neuron (of a human brain). Neurons in the brain pass the signals to perform some actions. Similarly, artificial neurons connect in a neural network to perform tasks like identifying or detecting people, images, texts, patterns, sounds, or objects.

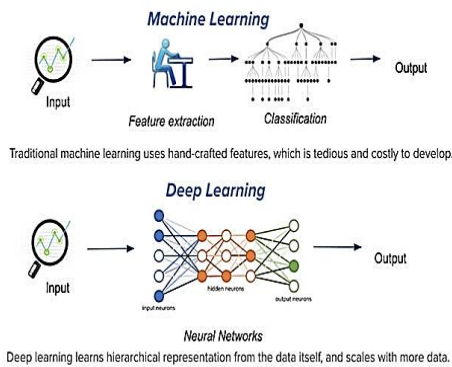


Figure 3: Machine Learning vs Deep Learning

Structure of Neural Network

The neurons are grouped into three different types of layers:

1. Input Layer
2. Hidden Layer(s)

3. Output Layer

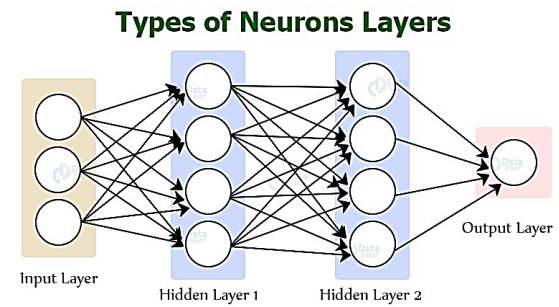


Figure 4: Types of Neurons Layers

1. Input Layer

The first layer or the input layer encounters the input data from the observation. This information is broken down into numbers and the bits of binary data that a computer can understand. Now, the output created by this layer becomes input for the next layer.

2. Hidden Layer

Hidden layers can be one or more than one, depending on the complexity of the input. They are responsible for performing mathematical computations on input data. Each hidden layer converts the input data into a more and more abstract representation and provides it to the following hidden layer. This way, these hidden layers form a hierarchy of concepts by learning. The “deep” in Deep Learning refers to have more than one hidden layer. .

Output Layer

The output layer is where the final prediction is made. It gives out the calculated result.

What happens inside a Neural Network?

A neural network generally consists of a collection of connected units or nodes. We call these nodes as neurons. The input layer of neurons receives the input (for example, in case of image processing, pixel value of image could be the inputs).

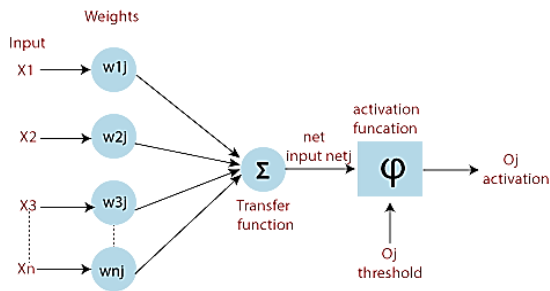


Figure 5: Neural Network

Applications of Deep Learning

- Self - driving cars
- Visual recognition
- Language Translations
- Fraud detections
- Big Data Analytics
- Healthcare

Conclusion

Today, artificial intelligence (AI) is a developing field with many practical applications. Eventually, Deep Learning is a field that can lead to major progress in artificial intelligence. With the use of deep learning's various levels of neural networks, computers can now observe, understand, and react to complex tasks like image classification, action detection, natural language processing, signal process, and linguistic communication process, even better than humans.

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LEADING CEO'S OF THE WORLD



Evolution of Quantum Computing

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Introduction

Moore's law is going to stop soon because now, we need a new era of computing called quantum computing. For the last 100 years, now we have made much advancement after the invention of computers now we are getting smaller and better and powerful at the same time. But still, there are many problems which cannot be solved by our today's classical computers, we need a change.

Transistors which we are using in this generation of classical computing (basic units of memory units of computers) are now getting smaller to the atomic size. As classical computer use simple basic laws to work, but on the other hand quantum computers uses quantum mechanics principle like (superposition and entanglement) to solve the computational problems which are not solved by classical computers. Now, we should understand the systems working which requires in a different area of physics than we are similar which is Quantum mechanics.

On the level of atoms and subatomic particles, quantum mechanics examines matter and energy. When energy initially existed as discrete units Max Planck represented the quantum theory.

Planck named this units as 'Quanta', which gave us the theory. According to him this was the smallest possible unit of energy.

The concepts of classical information theory and quantum physics are combined in quantum computing. They play a significant role in physics. Quantum states are used to enable teleportation, also known as the secure and trustworthy transmission of quantum states. The exploitation of quantum entanglement as a resource is the overarching theme of all these rules and principles.

Weiner Heisenberg created a theory in 1927 that has come to be known as the "Uncertainty Principle."

He asserts that it is impossible to quantify a subatomic particle's locations and momentum exactly. Simply said, the more information you have about a

particle's location, the less information you have about its movement or its location.

It exists in all potential states and can function simultaneously until it is measured. Superposition is the name given to this concept.

Discovery of Quantum Principles

Information processing using quantum computing uses concepts from quantum physics, such as superposition and entanglement. Quantum computers are the tools used in quantum computing. They take use of subatomic particles' peculiar capacity to exist in several states simultaneously.

The all-encompassing quantum turning machine was defined by David Deutsch. Simon then creates the initial algorithms in 1997. This development increased the interest in the subject of quantum computing.

In contrast to conventional computers, which operate on binary bits, quantum computers operate on quantum bits, or Qubits, which conduct effective operations and analyze the state of the computer system for every 'm' bits of the system.

By combining the natural logs from both sides, we may determine that-

$$m < 2n$$

Ralph Hartley created this equation in 1927. This was the first time the quantity of information in a message has been measured. We can infer from this equation that bits can hold m distinct messages.

Shannon's Information theory started with this, and the next step is the Shannon's Entropy.

$$H(X) = - \sum_i p_i \log_2 p_i$$

A bit is the fundamental unit of information in a traditional computer, but a quantum bit, also known as a qubit, is the fundamental unit of QI.

Classical bits only exist in only two states, 0 and 1. But qubit exhibits a unique characteristic of existing in either

of two discrete state $|0\rangle$ and $|1\rangle$ or superposition. This unique feature Quantum computing will allow it to for more storage capability and at the same it time high computational power than the classical computers. For going successful quantum computation, QEC has to be performed repeatedly in the quantum computer which corrects the errors induced by decoherence and gate operations.

Quantum Bits

A qubit (or quantum bit) is a type of memory component that is extremely similar to the idea of a conventional "bit.", $\alpha|0\rangle + \beta|1\rangle$.

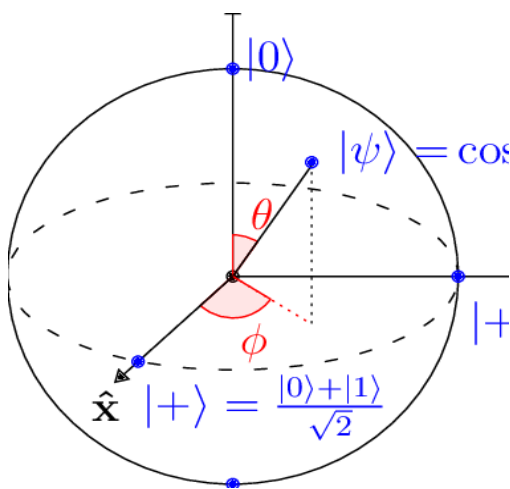


Figure 1: Pure state $|\psi\rangle = \alpha|0\rangle + \beta|1\rangle$ is represented by a point on the sphere surface, with $\alpha = \cos \theta$
 Source: Research Gate

Quantum State

Mathematical concept in quantum research that offers distribution probability for the results. A quantum state is a collection of quantum states that occurs repeatedly. Pure quantum states are those quantum states that cannot be expressed as combinations of other states, whereas all other quantum states are referred to as quantum states. The state of a standalone quantum system is described by this phrase. A quantum state contains the result of every potential measurement made on the system.

Quantum Superposition

A quantum superposition describes an atom it can be in two places at once. Every quantum particle in the universe is subject to the state supercomputers. It is dependent on the quantum principle of superposition,

which is used to run a lot of computations at once on the same physical object.

Quantum Entanglement

The possibility of correlated fates for entities was already predicted by quantum theory. When an entangled photon or an atom is measured.

During the measurement of a coupled photon or atom.

Consider that 2 coins could become entangled to better understand what we mean by "correlated results." Think about throwing a coin. The results are about split between "HEADS" and "TAILS," according to meticulous records, but all of us know that every given outcome is unpredictable. However, interestingly, the records of both the coin tosses reveal a connection after flipping! Tossing another coin yields similar, random outcomes. whenever one-coin shows heads and the other shows tails.

We may now claim that the two coins' states are intertwined. In this case, we cannot know in advance what each coin will perform, but the outcomes will be connected.

Quantum Teleportation

Quantum teleportation is a method for moving entangled states and quantum information from one location to another.

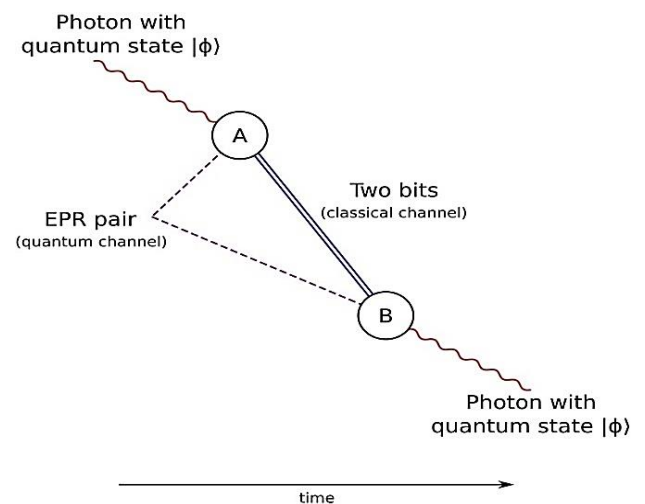


Figure 2: Diagram for quantum teleportation of a photon
 Source: ScienceDirect.com

Entanglement during the Bell condition (EPR pair) is specifically employed in quantum teleportation to convey any arbitrary quantum state $|\psi\rangle$ between two apart observers A and B. (often called Alice and Bob).

The quantum teleportation process utilizes three qubits: qubits 2 and 3 are in the Bell state $|B_{00}\rangle = (|00\rangle + |11\rangle)/\sqrt{2}$, while qubit 1 is an indeterminate state that may be transported. The working theory is shown for a complete $|x\rangle$ with $x=0,1$. may use Shor's algorithm, a quantum algorithm, to determine the initial parameters of a huge number. IBM has successfully developed 5-qubit, 16-qubit, and a 50-qubit quantum system prototype. IBM performed a common one on a quantum computer without entangled qubits, and the result was a failure rate of 5%. The second time they ran it, it had a 2.5% inaccuracy.

Currently, quantum computers really aren't powerful or large enough to really perform tasks superior than a classical computer, but this is about to change. As a result, the pharmaceutical industry spends billions and trillions of dollars trying to guess and investigate body issues.

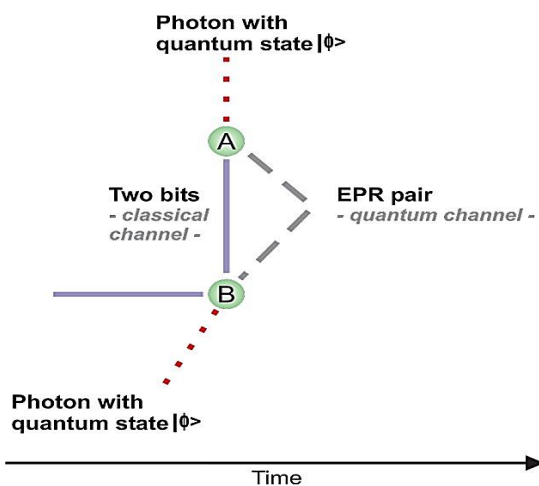


Figure 3: Qubit transmitted from one location to another
Source: scienceDirect.com

Quantum Turing Machines (Qtm)

The impact of a quantum computer is abstracted by a QTM, also known as a universal quantum computer. It offers a very straightforward paradigm that fully utilizes the capabilities of quantum computing. Whatever QA can be explicitly represented as a specific QTM. Such Turing machines were first suggested in a 1985 article by "Oxford University physicist David Deutsch" who suggested quantum gates might operate similarly to conventional binary logic gates in digital computing.

Why Do We Need Quantum Computing?

Prior to the early 2000s, IC clock rates increased significantly quickly. In order to sustain the speeds of ICs, which were attained at levels for which cooled

the Integrated circuits prohibited the clock speed, they boosted the calculation power, shrunk the size of the transistors, and added more cores The status is ON or 1 if it permits current flow; otherwise, the state is OFF or 0. If quantum computing becomes a reality, the entire notion of today's computers will be obsolete, in my opinion.

Current State of Quantum Computers

Advancement of quantum computers right now People unconsciously expect that quantum computers would eventually surpass traditional computers in performance. A quantum computer may use Shor's algorithm, a quantum algorithm, to determine the initial parameters of a huge number. IBM has successfully developed 5-qubit, 16-qubit, and a 50-qubit quantum system prototype. IBM performed a common one on a quantum computer without entangled qubits, and the result was a failure rate of 5%. The second time they ran it, it had a 2.5% inaccuracy.

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Why Stress? Let Go of Stress! Gen-Z

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Introduction

In this modern era of technology and a rat race, everyone is running for a luxurious life, money, white desk fancy job and a beautiful life partner, but very few people are concerned about mental health and a stress-free life. We are not saying stress is bad, but it is one of the useful tools to make someone achieve goals and to test one's real capabilities. Life gives stress but it is human conscience to tackle it with ease and the one who wins to do so is the real hero.

The best way to describe stress is “Too much to do, too little time, and no energy – that’s what the definition of stress is. When you want to do too much and you have neither energy nor time, you get stressed.” Gurudev His Holiness Sri Sri Ravishankar says.

Generation Z (Gen-Z)

Generation Z or called Gen-Z are the newest class of generation which are raised under the influence of technology and far away from their culture. The only thing they respect is themselves, their comfort and their relations with material objects (money, perfect job, perfect girl or a boy to marry etc.). With the enhancement in science and technology the new generation has started questioning the old traditional philosophies. this generation is clever, goal oriented, obsessed with victory and talented.



Figure 1: Generation Z

This generation is always keen to learn new things and the new order of the world, changing trends, changing lifestyle and not to forget globalization around the globe.

Why Stress?

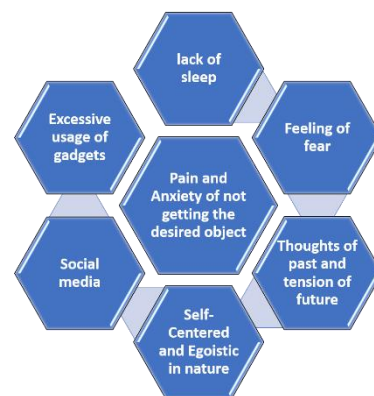


Figure 2: Causes of Stress

- **Excessive usage of Gadgets-** The generation z has got away with advanced gadgets which keep them busy and drain their energy at big levels. Why not use these, post covid 19 these devices have become life savers, but are instead killing one’s conscience.
- **Lack of Sleep** – Due to the abuse of high-tech gadgets the children do not sleep well. In Many cases it was found that children with mobiles and high-tech devices take very less sleep and less sleep makes the person stressed out with symptoms of irritation, anger etc.
- **Feeling of Fear** – It is well known that parents are very concerned about their child’s security. Everyday needs and every difficult situation of the adventurous is handled by the parents. The new generation hasn’t seen what real life is, but a time comes in everyone’s life when they have to face it and they have to see their situation on their own. This sudden fear of facing a

situation is the main reason for stress as it acts as a sword over the head.

- **Social Media** – Social media influences everyone so much that everyone wants to become such a person or wants to do the same thing a thousand times bigger and better. The fast-moving social media makes the eyes sparkle but every glitter is not gold. The children try to make the pace on social media but the only thing they don't know is, when they fail, they will not be able to handle the emotions and they have to face stress and handle the depression carefully. **Pain and Anxiety of Not Getting the Desired Object** - It is seen in recent times that children do not get pacified so easily as they need something interesting every time, every second. This can be the reason that they are so restless and become mentally ill. they get saddened with the thought of negligence. This is a clear case of pain and anxiety as the desired objective is not received and the feeling of less importance strikes the mind.
- **Excitement and Stimulation** - Children become overly obsessed or get excited with new things they hear, if these new things are bad in nature the life of the person becomes hell. For example: if a child is introduced to drugs and alcohol at an early age, in a long time this will affect his/her health both mentally and physically.
- **Thoughts of Past and Stress of Future** - The teenagers are mostly seen either in the trauma of the past or in the tension of the future. The trauma of the past becomes strong for an emotional guy and he/she gets stressed out. The tension of the future occurs to those who are serious about it and are very well-known to their current situation.
- **Self-Centered and Egoistic in Nature**- The new generation wants to be in the good books of everyone. For this, they will do anything that seems to be right but is wrong, and if someone points out a mistake, they can't face the person, they feel humiliated and stressed out. Their ego makes them vulnerable to getting criticized by everyone.

Not only these reasons but there are thousands of them which can be a cause for stress in the new generation. In this realm, everyone is stressed out for some or the other reason. The only person fully happy is either a sadhu or a child in the womb of his mother. But we cannot just leave it to the cause that there must be something to tackle such a situation.

Let go of stress!

Some of the tips from His Holiness Sri Sri Ravishankar, the founder of the art of living are as follows, these are the golden rules of life, and one should really follow them if possible. Everyone's life is disturbing and full of traumas but these points are going to ease those difficulties.

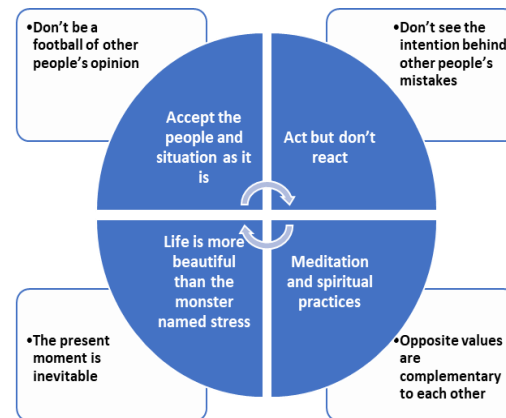


Figure 3: Remedies to Let go off Stress

- **Don't be a Football of Other People's Opinion**- one does not have to follow the guidelines or the commands of a specific person, one should use his or her intellect as per the demand of the situation. but this doesn't mean that we do not follow our elders, teachers, and parents.
- **Don't See the Intention Behind Other People's Mistakes**- We should never see the motive behind one's fault, even never point towards a person, these are bad manners. When we start watching the intentions of others' mistakes, we become vulnerable to getting mistaken and when we face the truth, the stress-named disease enters our mind, also our mind gets corrupted.
- **The Present Moment is Inevitable**- The past has no existence and the future is unknown, so why pick the burden of the non-existing and unknown. What is the use of it? when you live in the present moment you feel blissed and divinity enters you.
- **Opposite values are complementary to each other**- yes this is true. if it is good then there is evil too, there is no existence of both without each other. if someone speaks ill of you it does not mean that we feel agitated as someone dumb does not understand these things, it is all in your acceptance of those ill words being used for you.
- **Accept the people and situation as it is**- one cannot change others nature and also cannot control the situations which occur in life. so the best way is to

- accept the person, make some adjustments and move on. The same applies to the situations one suffers, rather than complaining we should work on improving those situations.
- **Act but don't react**- the common mistake we all do is to react to a situation rather than handling it with patience and using our soft skills. These days the anger is so strong that one is not able to cool down and a blast happens inside the head that devours everything in the path.
- **Life is more beautiful than the monster named stress** - In stressful life one gets depressed very easily and at peak levels, one tries to end own life by committing suicide. but the thing they forget is the essence of living, we forget that from 84 lakh species we have got the chance to live as a human. a human being is above all the species as it has got every power that other animals don't have, exceptions are always there. We can oppose them when we feel they are wrong.
- **Meditation and Spiritual practices** - these days awarded people are more going towards a happy life as they are getting matured, not talking only about the trends but also giving importance to our culture, Indian culture has many many things to explore. Our ancestors lived a very peaceful and good life. They did yoga, pranayama's, meditation, mantra chantings, yagyas, and bhajan kirtans. In India, many spots can be visited to attain eternal peace. One can find those

places on google by searching for peaceful temples. Also, one can go to the art of living ashram to experience real peace.



Figure 4: Bhastrika Pranayama

Conclusion:

In harsh situations, the best reply is a smile and in ugly conversations, the best expression is a smile. Be yourself, never strip off your originality. Never let go of your true self to win over others. in long run, you will regret you traded one of your greatest assets, your uniqueness, for momentary validation.

Stress is not our true nature, but happiness is, it comes from within and never let your happiness depend on the outer world.

TRENDING NEWS 2022



Bangalore International Airport delivers Metaverse experience with Metaport built in association with AWS and Polygon



President of India launches Haryana's 1st blockchain-secured graduation certificates at NIT Kurukshetra



"Woman In Metaverse" Becomes The First NFT Collection By Any Digital Magazine - Shruti, the Indian Founder Draws The Curtain



India launched 385 foreign satellites till now, 353 in last Eight years : Space minister Jitendra Singh

Challenges and Opportunities of Digital India Program

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A massive campaign DIGITAL INDIA launched by the government of India in the year 2015 it has changed the whole picture of the country as a new revolution was made. All time-consuming work suddenly seemed simple like applying for any govt form, booking an appointment, shopping and transaction. After demoralization digital India gained speed as the cashless transaction was much more reliable than cash transaction. It is said to be a weapon against corruption as it provided more clarity and the records were monitored by the government. In this research article, we will discuss the impact of digital India, its contribution to development as well as its drawbacks. Rapidly things are changing in India, the campaign digital India has been a major part of it.

The world has changed so far as well as India. The most noticeable change we can observe is in technology like earlier no one thought that the whole world can be accessed through a five-inch rectangle box. Today every kid as well as every adult knows how to utilize their Smartphone according to their requirement. It will be correct if we say that if a person has a good smart-phone he can survive any situation. Not only for

entertainment purposes but also for development as well as marketing purpose digital world has been proved a helpful medium. Before going further, we need to understand what a digital platform is and how it has been proved a boon? A digital platform is an interface that allows for interconnection between business to customer or customer to customer. Any medium which connects people through technology can be said as a digital platform like a popular social application is an Instagram, Facebook, Amazon and so on. There are several advertisements through which these platforms can interact with the seller directly also we can pay them through net banking or UPI which is included in a digital platform. The digital India has established a healthy relationship between formerly disconnected technologies as it is useful for the different varieties of the technologies and different fields such as in the telecommunications, computing, the life sciences, artificial intelligence, nano technology and in the military technology [1]. By this, we can say that digital platform has made our life much more advanced and easier. Let's get a brief view of Digital India. Mr. Narendra Modi taken as an innovative step thought of digital India whose aims are to ensure that all such types of the government services are made available to the citizen of India electronically and reduce paperwork [2].

There are many services available in India that play vital role in the society. Even the life could not be imagined without such type of valuable and importance services. These Services such as Voter Services, Aadhaar Services, Ration Card Services, Driving License Services, LPG Gas Services Digital Services, PAN Card issuing Services, Transport service base on Train, bus and flight Information service and these Services were provided through an online medium that save time as well as efforts of a person especially during the time of COVID-19. Moreover, after 2019 people rely on online mode for dealing with small and large transactions. It revokes to spread corona virus so e-payment was the only option. While learning about how easy it has made our lifestyle, we should not neglect the facts which have been working as obstacles like internet connection the backbone of e-payment is the internet, if the server is down payment will



Figure1: Online Digital Services in India [2]

be put on hold, this is the biggest issue faced in the border area and the other places where there is a low internet connection problem. India no doubt has changed a lot but

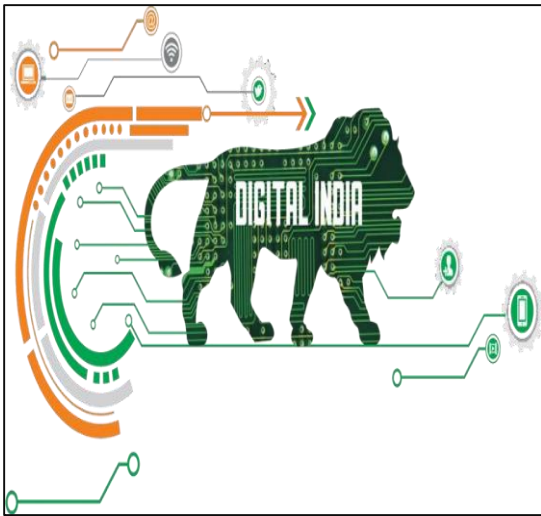


Figure 2: Representation of digital India

still, there are so many things which need to be improved and network connection is for sure on that list. One more thing can be added what if the user lost his/her phone? not only he will not be able to make any payment also a risk arises here as all the information is on phone so the chances of fraud rise. E-commerce assurance as there are legal limits on liability for unauthorized use of credit cards but still there are so many frauds going as the opportunities obtains cards information through e-mail spams and also, they try to hack personal details like phone numbers, birth dates, social security numbers, and so forth which can be very dangerous for any e-commerce user.

There are so many applications which made online transactions so easy but not forgetting the literacy rate of India there are some groups of people who can't access online payment as they don't have any bank accounts if they have then they don't have any smart phones and knowledge to how can they access their e-Seva. Also, the aged people find it quite complicated to use e-Seva as there is a lot of information, they need to fill in by typing

so they use the physical medium as they are more comfortable with it. Also, online studies which have been considered as an alternate had a lot of drawbacks as an insufficient digital infrastructure though the government taken a lot of steps but still high-speed internet and stability is the biggest obstacle. Digital India came along with Digital locker system, MyGov.in (platform) and Swachh Bharat Mission Mobile app these all are the proof that digital India is definitely a boon for India. There are some challenges faced by the e-governance like technical issues (security, privacy, authentication) and economic issues (cost, maintainability, reusability) . Minimum physical interface and transparency with detailed process is the aim of digitalization and it has leads to decrement in corruption.

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In the Search of New Semiconductor!

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A massive campaign DIGITAL INDIA launched in 2021, post-covid period, world witnessed the shortage of semiconductor chips. It was not less than a chaos between the rising tech industry and falling other economies while rising demand of others being compensated by tech industries. Big economies like USA, China and Europe as a whole experienced shortage of semiconductor. But between all the tussle in the market, was there a geopolitical aspect to what was going around the world? Unlike Gigafactory and lithium-ion politics, which portrayed direct involvement of countries to Afghanistan, semiconductor market was man-handled by China? Or everything rolling hereby, was just an increase of demand?

Automobile industries were the most affected economies of post-covid era because of semiconductor shortage. With growing cases of coronavirus, the factories shuttered and lots of workers lost their jobs. The demand of automobiles rapidly decreased. Firstly, economies focused on developing medical equipment and mood of people collapsed the automobile market. But as soon as the lockdowns began called off, the automobile industry experienced a vast shortage of its semiconductor needs. Various incentives and programmes launched in India to procure highest amount of it in the country but failed. TATA group tried to initiate the contribution but is unable to show a movement till date.

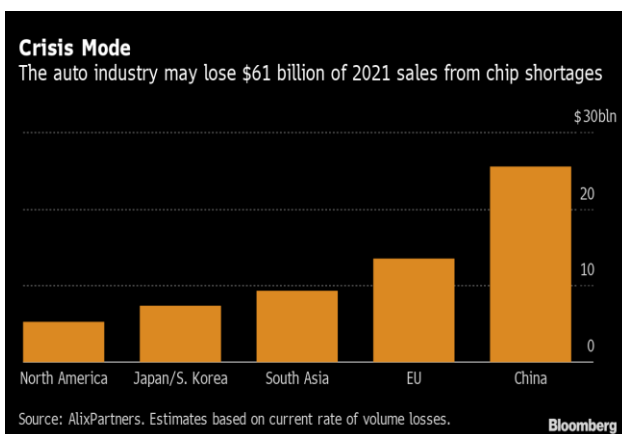


Figure 1: Source: Semiconductor Shortage Is Slowing Down Global Manufacturing - Bloomberg

The automobile industry was newly going through a shift to electric vehicles and tech industries and navigation sector was already using most of the production of semiconductors. The rising demand in post-covid period affected scarily with highest loss of about \$26 Bn in auto sector. But let's shift the light to a series of events between cause and effect. Was the loss worth of deeds of China? Obviously not for spreading virus! But for disturbing Taiwan.

Where has Taiwan come into picture?

China did the biggest mistake of underestimating one of the most powerful countries in terms of semiconductor. In the world of semiconductors, Taiwan is producing the largest amount from its biggest elephant-TSMC. When world was busy curing coronavirus and developing the required number of medical facilities. Taiwan has to counter two edged knives. Certainly, if a country is busy in producing the medical equipment and fulfilling most of the technological needs of the world. You must not certainly mess at the time when it is Undisputedly required. While China planned to attack Taiwan, this semiconductor giant was forced to focus and direct its money toward Military and with medical. Fulfilling the major demands of the world in terms of technological advancement, TSMC has a greater responsibility to provide semiconductor to laptop and mobile manufacturing companies. This led to a fall of production for automobile industry, largely affecting China.

Nevertheless, this is not going to an end with the settlement done either way. We are facing the shortage and it will be prolonged for quite a time. Undoubtedly, the world witnessed new fields of research in every sector resulting to the demand of various kinds of devices to operate and propagate, semiconductor industry need to proceed a bit further. The industry needs and R&D in terms of the new forms of semiconductor. We can't just rely on silicon and say we aren't going to get one other than this. The solution always lies in first principle. We need more production of semiconductor. For production, we need more extraction. But we can't help with the natural presence. But we can make one! We need to invest more on research of newer kind of semiconductor or scientist must run behind a material which is more

efficient than silicon wafers for mounting circuits. All this is expected. What must be the talk of the table is a realistic approach to the problem. How is it going to affect the common people and how common people can approach this problem. Individual must see the growth in the field of semiconductors and grab the opportunities for further research. The adversity of this conclusion is we are not only opportunistic but also will witness depressions. As semiconductor not direct market accessible to common local public, it will create problems and hates for government and service providers who are using semiconductor largely because it might increase the prices of gadgets we are using and we might need to pay more taxes around it.

Now, India must look for the biggest problem coming by 2025. We are turning cellular to 5G and cars to electric. The greater demand may lead to increase the price of basic utilization of semiconductor in the market. India must look into it. But dilemma of the time is that we are not in a position to procure the best solutions. We don't own a semiconductor giant. Nor we have an active production line. Even the world witnesses 4% growth in its capacity. All leading to lack of presence. Lack of presence simply means absence of technology to develop new type of semiconductor. In the process of making semiconductor, we need to be the inventor, producer and processor for semiconductor.

To be accepted or not, we don't have the ample of semiconductor. We need to make some. Either way, most illogical way is the most logical way today. World must look for other material to mount circuits or better face the crisis!

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Call for Articles

At Chitkara University, the endeavor has always been to hone the skills of learners. Keeping in line with this tradition, the Department of Computer Applications, Chitkara University, Punjab had come up with an online magazine titled **Wall for All**.

This magazine was proposed to provide a platform to the budding learners to share their knowledge and general information pertaining to the computing field.

Wall for All is available for free download in PDF format from CA departmental website: **ca.chitkara.edu.in**.

The students and faculty members are invited to be a part of this venture and contribute their articles to the magazine. The students may forward the articles through their respective mentors while faculty members may send the same directly to the editors of **Wall for All**.

Switching ISDN to VOIP/SIP

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An international set of standards called ISDN is used to access modern, entirely digital public telecommunications networks. Because it allows digital services (including digital speech), ISDN's telephone users benefit from Voice-free, Clear-Quality communication. ISDN is a telephonic system that offers digital (not analogue) telephone and data services. Additionally, the ISDN eliminates the need for a modem because it permits the digital transmission of all sorts of data (including voice). Additionally, it causes the call setup time between two ISDN customers to be extremely fast.

ISDN is a circuit-switched telephone network system that enables digital voice and data transmission over standard telephone copper wires, producing voice quality that is superior to that of an analogue phone. Bonding of ISDN channels, which can range from 3 to 4 BRIs (6 to 8 64 kbit/s channels), can be used to increase data rates. It is intended to offer simultaneous access to voice and data services

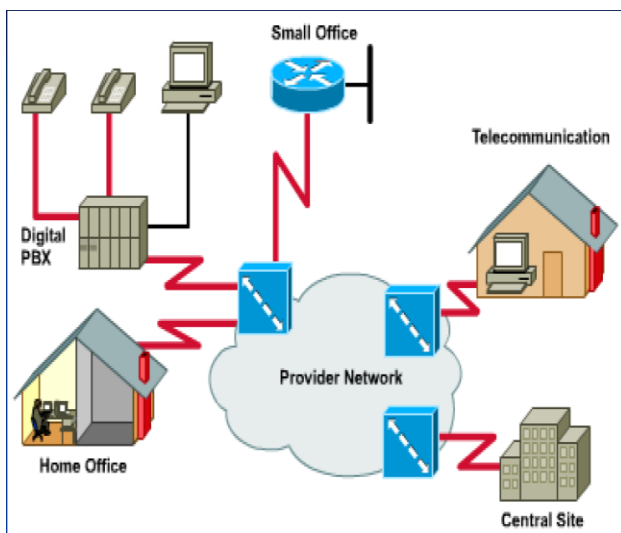


Figure 1: ISDN uses original POTS subscriber lines

It is having two types:

- **Basic Rate Interface (BRI)** - contains 2(two) "B" channels & one "D" channel. The 2 (two) B channels

each have a 64K bandwidth and are only used for speech or data transmission. Signaling and call setup are the only functions carried out on the single D channel, which has a 16 K bandwidth. ISDN BRI has a 144K total bandwidth (64K+64K+16K).

- **Primary Rate Interface (PRI)**: 23 "B" channels and 1 "D" channel are present. The twenty-three B channels, which each have 64K of capacity, are only used for speech or data transmission. Signaling and call setup take place on a single 64K bandwidth channel. The entire ISDN PRI bandwidth is 1.544 Mbs (23x64K+64K).

The ITU-T has defined ISDN standards, a branch of the United Nations' (ITU), in the series I and Q recommendations.

Advantages of ISDN

- ISDN offers 64kbps and 128kbps on-demand introductory pricing (at double call rates). Diginet lines have a set speed and are unable to supply more bandwidth when needed. By doubling line speed and paying a double monthly line fee, 128kbps Diginet can be obtained.
- The ISDN connection can be used for other purposes besides Internet access, such as

videoconferencing (using third-party equipment) and remote network repair (whereby distant support staff connects to your network.)

Disadvantages of ISDN

- If used extensively, ISDN may cost more than Diginet.
- As your site only has dial-up connectivity, you are unable to run your WWW server for external users to visit because you cannot make resources on your network continuously available to other Internet users.
- Email delivery would be a little less consistent than with a constant Diginet connection (e.g. every 15 minutes outside the times when the link is up for other reasons, as opposed to immediate delivery with a Diginet line)

ISDN Switch-VoIP and SIP

Even though ISDN's technology has substantially improved since 1986, the network has remained the same and is now somewhat out of date. Particularly, ISDN can no longer compete with broadband internet connection speeds, which are significantly faster and more advanced. Less flexibility is also provided with ISDN lines. Businesses are only connected to physical locations because of this. Companies nowadays are looking forward to cloud systems that are adaptable and more flexible for expansions for future projects and a culture of remote working. The ideal technology for this is Internet protocol, and about 50% of organizations have already switched to VoIP systems. Future-proof technologies like VoIP and SIP require a stable internet connection to function. These solutions make switching affordable, simple, and quick to set up, and we don't need to install any physical lines. So long as the technology allows it, we can use VOIP/SIP for everyone.

Switch from ISDN to hosted VoIP

Voice over internet protocol makes use of the internet to control call and multimedia services in addition to voice communications. The ideal alternative is a hosted VoIP system if you currently have ISDN lines and don't want to commit to an on-premise phone system. Other than adjustable handsets, we don't require any hardware or physical lines because your provider takes care of everything. VoIP increases the scalability and adaptability of your business phone system to its needs. Additionally, it has cutting-edge call and media functions and lowers maintenance costs as well as call rates.

Switch from ISDN to SIP

One of the potential protocols used in VoIP communications is the Session Initiation Protocol. SIP

and SIP trunks are excellent on-premises phone system solutions because they use virtual phone lines instead of physical ones.

Conclusion

Making the transition from ISDN to IP technology is simple and worry-free. If your company already has an ISDN line, moving to new, more advanced technology will benefit it in the long run. If a new company is launching, choose IP technology because ISDN lines will no longer be available for purchase starting in 2020. Businesses will benefit from VoIP or SIP in terms of communications. The key advantages of switching to IP technology are cost-effectiveness, disaster recovery, and numerous new call and media features, such as the ability to select any number and make and manage calls from any location. You only need to add an extension number; no physical lines need to be added. This is excellent if you run a startup and are always on the go, or if your company employs for remote workers.

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दुआ

नफरतें दिल से मिटाओ तो कोई बात बने,
प्यार की शमयें जलाओ तो कोई बात बने।

तीरगी बढ़ने लगी अपनी हदों से आगे,
मशाले दिन में जलाओ तो कोई बात बने।

धर्म के नाम पे खून कितना बहाओगे मियां,
प्यार के जाम लुढ़ाओ तो कोई बात बने।

हो जो दुनिया के लिए अमनो सुकूं का जामन,
ऐसा पैगाम सुनाओ तो कोई बात बने।

आज इंसान खुदा खुद को समझ बैठा है,
उसको इंसान बनाओ तो कोई बात बने।

हो जहां अदल ए मयस्सर सबको।
इक जहां ऐसा बनाओ तो कोई बात बने।

मसले खून खराबे से निपटते कब है,
प्यार से उनको मनाओ तो कोई बात बने।

जिन होठों से हसीं छीन ली दुनिया ने,
उन को सीने से लगाओ तो कोई बात बने।

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