SRI SHAKTHI

INSTITUTE OF ENGINEERING AND TECHNOLOGY

AN AUTONOMOUS INSTITUTE

NAAC

I'm possible

- Department of Information Technology

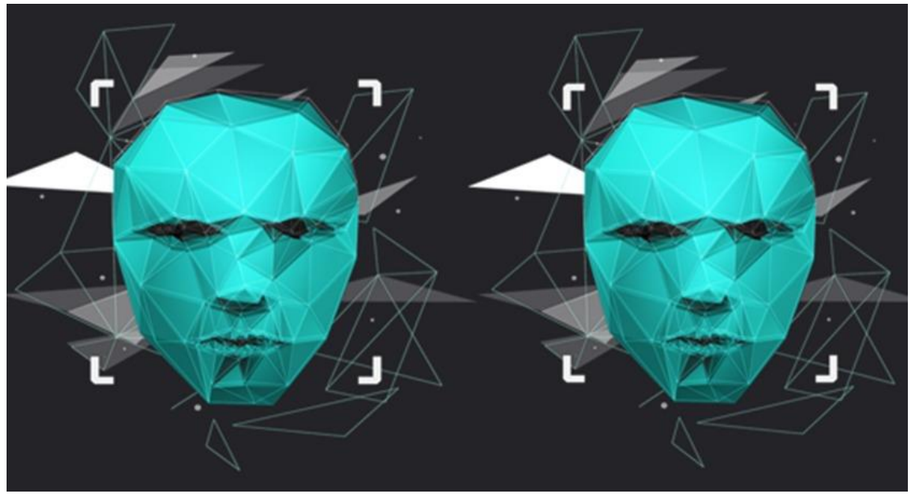
[2018 - 2019]

VISION

To make the institution one of our nation great engineering schools, recognized nationally and internationally for excellence in teaching, research and public service. We seek to be the preferred destination for students, practitioners seeking an engineering education, employers hiring engineering graduates and organizations seeking engineering knowledge.

MISSION

To Provide an encouraging environment to develop the intellectual capacity, critical thinking, creativity and problem solving ability of the students.



ABOUT THE DEPARTMENT

The Department of Information Technology was established in 2006 with the objective of imparting quality education in the field of Information Technology. Since its inception, the department has expanded and grown in terms of dissemination of knowledge within and outside curriculum and skill development activities.

Vision of the Department:

The Information Technology Department will be a recognized center of excellence in creating engineers for ever changing technologies of Information Technology and IT Enabled service industries.
Mission No. Mission Statements

MI Create learning environment for students to gain core knowledge in the field of Information Technology

M2 Provide opportunities to acquire knowledge in various tools and programming languages by the way of self-learning

M3 Solve engineering problems for the betterment of mankind and technology as part of lifelong learning process

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

1. To ensure graduates will be proficient in utilizing the fundamental knowledge of basic sciences. mathematics and Information Technology for the applications relevant to various streams of Engineeringand Technology.

2. To enrich graduates with the core competencies necessary for applying knowledge of computers and telecommunications equipment to store. retrieve. transmit, manipulate and analyze data in the context of business enterprise.

3. To enable graduates to think logically, pursue lifelong learning and will have the capacity to understand technical issues related to computing systems and to design optimal solutions.

4. To enable graduates to develop hardware and software systems by understanding the importance of social, business and environmental needs in the human context.

5. To enable graduates to gain employment in organizations and establish themselves as professionals by applying their technical skills to solve real world problems and meet the diversified needs of industry, academia and research.

PROGRAM OUTCOMES (POs)

Engineering graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science. engineering fundamentals.and an engineering specialization to the solution of complex engineering problems.

2. Problem analysis: Identify. formulate. review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics. natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research-based knowledgeband research methods including design of experiments. analysis and Interpretation of data. and synthesis of the information to provide valid
conclusions.

5. Modern tool usage: select and apply appropriate techeques resources, and modern engineering and IT tools including predios d modelling to complex engineering activities with an understanding of the limitations.

6. The engineer and society: Apply reasoning Informed by the contextual knowledge to assesssocietal health, safety, legal and cultural lesues and the consequent responsibilities relevant to the professional engineering practice

7. Environment and sustainability: Understand the impact of the professional
engineering solutions in societal and environmental contents, and demonstrate the knowledge of, and need for sustainable development

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as member or leader indiverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, maks effective presentations, and give and receive clear instructions.

11. Project management and finances Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team.to manage projects and in multidisciplinary environments.

12. Life-long learning Recognize the need for, and have the preparation and
ability to engage in independent and life-long learning in the broadest context
of technological change

PROGRAM SPECIFIC OBJECTIVES (PSO)

1. Professional Skills: To create, select, and apply appropriate techniques resources. modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

2. Problem Solving Skills: To manage complex IT projects with consideration of the human financial, ethical and environmental factors and as understanding of risk management processes, and operational and policy implications.

3. Career and Entrepreneurship The ability to employ recent technologies.
programming languages and platforms.

I'm Possible

1 *Chairman's Desk*

2 *Principal's Desk*

3 *Academic Dean's Desk*

4 *Future with IT*

- Internet of Things – IOT
- Cyber Security
- Voice morphing
- Genomics
- Blockchain technology-tokens
- Semantic web
- Neural networks
- Mixed reality
- Magnonics
- Cloud computing

5 *Alumni Stories*

1 Chairman's Desk

Dr.S.Thangavelu

"I do not want my institution to be walled off on all sides, I want the culture of all lands to be blown about my institution as freely as possible. But I refuse to be blown off my any one of them. Mine is not a religion of the prison house. It has room for the least among God's creations but it is proof against insolent pride of race, religion or colour. “And this I believe will be the watchword of each and every Shakthi.

We have been witnesses to the realization of such dreams by the achievements of legends like Nelson Mandela, Kofi Annan, Dr A.P.J. Abdul Kalam–the 'People's President' and more recently by the President of the United states, Barrack Hussein Obama.

Dr. A. P. J. Abdul Kalam in his 'Three Visions for India' urges the youth to be aware of India's past greatness—to revive her to greater heights and make her a super power before 2020.

I too have a dream - a dream of a prosperous and healthy India.. I dream of an India, which shall awaken into the comity of nations with her head held high. Centuries before the British Conquest, our motherland was one of the richest nations in the world. As early as 300 years before the Christian era began, India had established trade with the Greeks and the Egyptians. Now, the mandate is with today's youth who can transform and liberate our nation from narrow domestic walls; to regain its lost glory and make our Indian flag

I have always been inspired by Dr.Martin Luther King's statement, 'I have a dream' – a dream I believe will come true – a dream that my children will one day live in a world where they will not be judged by the colour of their skin, but by the content of their character'. This need for tolerance - to create an equal society with no discrimination in Caste, Creed or Colour was best exemplified in the words of Mahatma Gandhi.

A nation is built in its educational Institutions. We have to train and build our youth in them. We have to impart to them the tradition of the future. And this is precisely what I dreamed to create through Sri Shakthi Institute of Engineering and Technology.

Sri Shakthi, to me, symbolizes 'creative, progressive power' – the dynamic, vibrant power of the youth! To ensure this, my vision for Sri Shakthi as an Institution of Excellence is to recruit the best minds of this region as the Staff for Sri Shakthi, because the kind of education that we at Sri Shakthi provide for our youth is determined by the kind of men and women we secure as Teachers; who, I believe will provide quality education, holistic in nature.

Education is the means by which the youth is trained to serve the cause of drastic social and economic changes. Institutions like nations become back numbers if they do not reckon with the development of the age .To choose 'The Right ‘requires a cultivation of the heart and the head. Any satisfactory system of education should thereby aim at a balanced growth of the individual and insist on both Knowledge and Wisdom. I have always believed that moral qualities and character building is of greater value than intellectual accomplishments alone.

It is my fervent desire that Sri Shakthi will aspire to inculcate in our youth, character and a democratic discipline and a 'change with continuity'- a present that is built on the foundations of the past.

Besides this I dream of a youth being bestowed with the best skills required for nation building- Attitude, Aptitude, Proficiency, Efficiency, Personal effectiveness, Diligence, Reliability, Responsibility, Commitment, Dedication to the common cause of nation building.

2 The Principal

Mr.Ravikumar

Sri ShakthiInstitute of Engineering and Technology (SSIET) was established in the year 2006 with approval of All India Council for Technical Education (AICTE), New Delhi, and is affiliated to Anna University, Chennai. The primary vision of the institute is to impart technical knowledge and skills to the students in accordance with the needs of the industry by producing technologically superior and ethically strong engineers to transform life as a whole.

The College offers 10 UG courses leading to B.E and B.Tech degrees and also 5 PG courses leading to M.E degrees. The College has well qualified, experienced and dedicated faculty and supporting staff, state-of-the art laboratory and workshop facilities, computer facilities, library and information center, outdoor and indoor games, air conditioned seminar hall and round the clock Internet facilities & separate hostels for Boys and Girls on campus.

It is a matter of great pleasure and pride that the college is providing an excellent quality of education and mentoring for the students, aspiring to be competent professionals in engineering and technology. Ever since its establishment, the SSIET conglomerate of students, staff and faculty have endeavored towards creating young and dynamic engineers who will form the crux of the technical workforce of tomorrow.

The college provides facilities to students to take part in co-curricuar and extra curricular activities. There is an active National Service Scheme (NSS) unit which organizes several programmes related to social service. Different societies and and various clubs at the institute is used to inculcate not only the love for social service, discipline, compassion for nature, agility and awareness for one's rights and duties, but also make them good human beings and confident leaders.

The College encourages faculty members through incentives and sops to acquire higher degrees, to publish text books/papers and participate in Seminar / Workshop / Conferences that are held not only within our country but also abroad.

With student strength of more than two thousand at SIET, our efforts are directed to accommodate and address the expectations of every student by the way of enabling them to participate in seminars, workshops in and out of the Institute, apart from educational tours and industrial project works. The College has a full-fledged Placement and Training ((PAT) Centre. This Centre organizes several training programmes related to development of soft skills to our college students. It has enabled our college students to participate in several recruitment programmes of several leading organizat

Department of Information Technology

There are several ways to present the canonical core of Information Technology. Over the years we have developed a distinct style and method that bridges the theory - practice divide while remaining grounded in the core. Technology changes rapidly, especially in the field of computing, whereas the science, if it changes at all, does so much more gradually. Our understanding is that persons who are clear and thorough about the fundamentals can adapt to rapid changes in technology relatively easily. We want the education imparted to our students to be the basis of a life time of learning

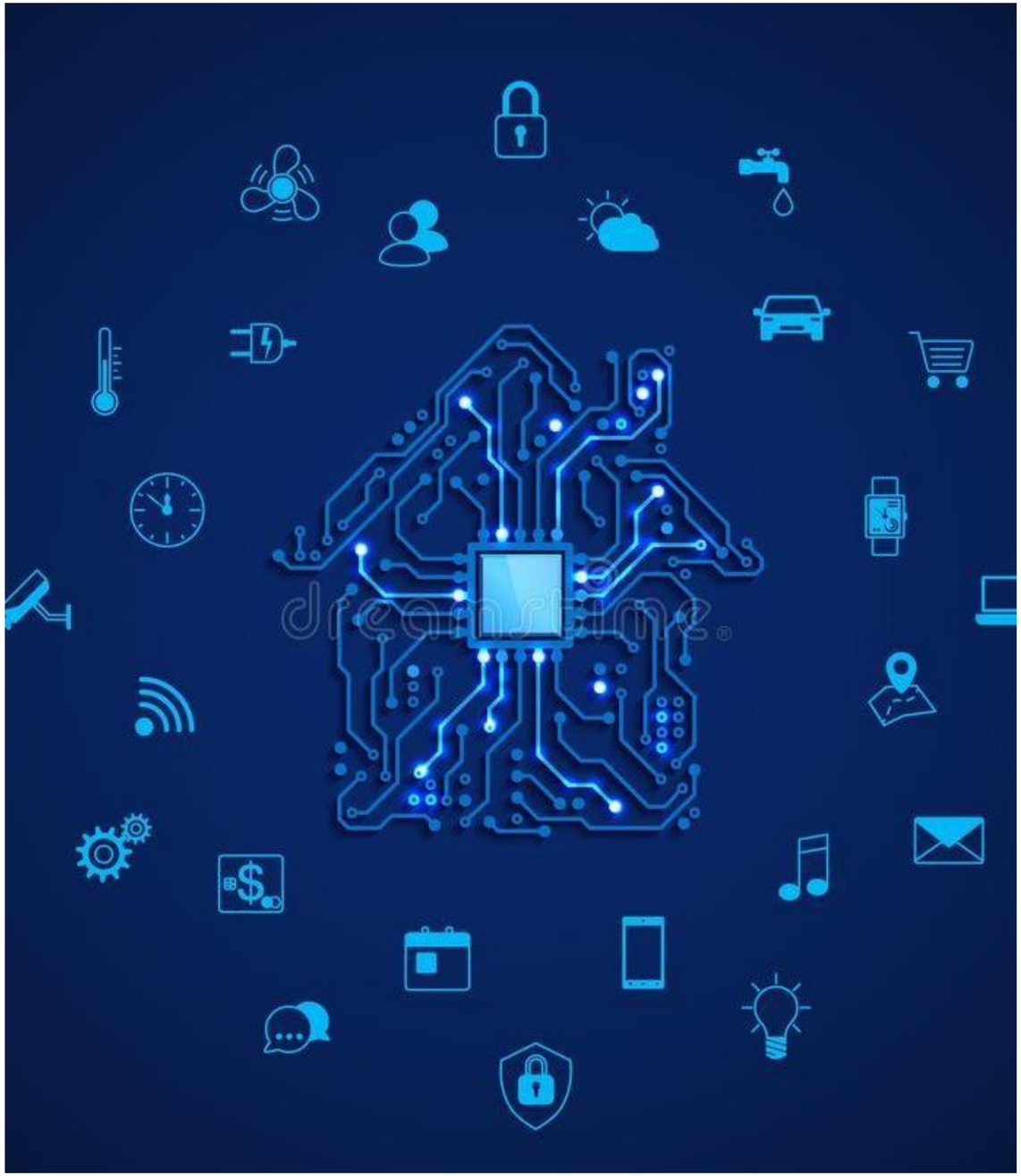
Our Department has produced hundreds of professionals and has established a name for itself in the country and abroad. They have consistently excelled in the highly competitive industrial environment. I attribute this success to the winning combination of a dedicated faculty that works hard at imparting quality education, a well-planned syllabus and last but not least, our students

3 Head of the Department

Dr.S.Prakash

Learning is a continuous process and does not end with the acquisition of a degree, especially because steady and rapid advances in computing technologies shorten the life of tools and techniques prevalent today. Therefore we do not aim to make our students walking manuals of any language or package. Instead, they are given a strong foundation in computer science and problem-solving techniques, and are made adaptable to changes.

We believe that this approach to teaching-learning, coupled with practical experience gained during Industrial Training in reputed organizations, equips our students to handle the challenges posed by the software industry. I am confident that you will find our students worthy of your organization. I am proud to see that the students of our department have put in appreciable effort into creating this magazine. It is good to see that today's generation has not lost its literary roots, despite the perpetual efforts of e-Technology to extinguish the flames of the written word.



4 | Internet of Things - IOT

Arun DRC (2016 – 2020)

New technology trend is IoT. Many “things” are now being built with Wifi connectivity, meaning they can be connected to the Internet—and to each other. Hence, the Internet of Things, or IoT. The internet of things is the future, and has already enabled devices, home appliances, cars and much more to be connected to and exchange data over the Internet

As consumers, we’re already using and benefitting from IoT. We can lock our doors remotely if we forget to when we leave for work and preheat our ovens on our way home from work, all while tracking our fitness on our Fitbits. However, bussinesses also have much to gain now and in the near future. The IoT can enable better safety, efficiency and decision making for businesses as data is collected and analysed.

And we’re only in the beginning stages of this new technology trend: Forecasts suggest that by 2030 around 50 billion of these IoT devices will be in use around the world, creating a massive web of interconnected devices spanning everything from smartphones to kitchen appliances. The global spending on the Internet of Things (IoT) is forecast to reach 1.1 trillion U.S. dollars in 2023. New technologies such as 5G is expected to drive market growth in the coming years.

And if you wish to step foot in this trending technology, you will have to learn about Information security, AI and machine learning fundamentals, networking, hardware interfacing data analytics, automation, understanding of embedded systems, and must have device and design knowledge.

5 Cyber Security

Arvind D (2016 – 2020)

Computer security, cybersecurity (cyber security), or information technology security (IT security) is the protection of computer systems and networks from attack by malicious actors that may result in unauthorized information disclosure, theft of, or damage to hardware, software, or data, as well as from the disruption or misdirection of the services they provide.

The field has become of significance due to the expanded reliance on computer systems, the Internet, and wireless network standards such as Bluetooth and Wi-Fi, and due to the growth of smart devices, including smartphones, televisions, and the various devices that constitute the Internet of things (IoT). A vulnerability is a weakness in design, implementation, operation, or internal control. Most of the vulnerabilities that have been discovered are documented in the Common Vulnerabilities and Exposures(CVE) database.

A backdoor in a computer system, a cryptosystem or an algorithm, is any secret method of bypassing normal authentication or security controls. They may exist for many reasons, including original design or poor configuration. They may have been added by an authorized party to allow some legitimate access, or by an attacker for malicious reasons; but regardless of the motives for their existence, they create a vulnerability. Backdoors can be very hard to detect, and backdoors are usually discovered by someone who has access to application source code or intimate knowledge of the operating system of the computer

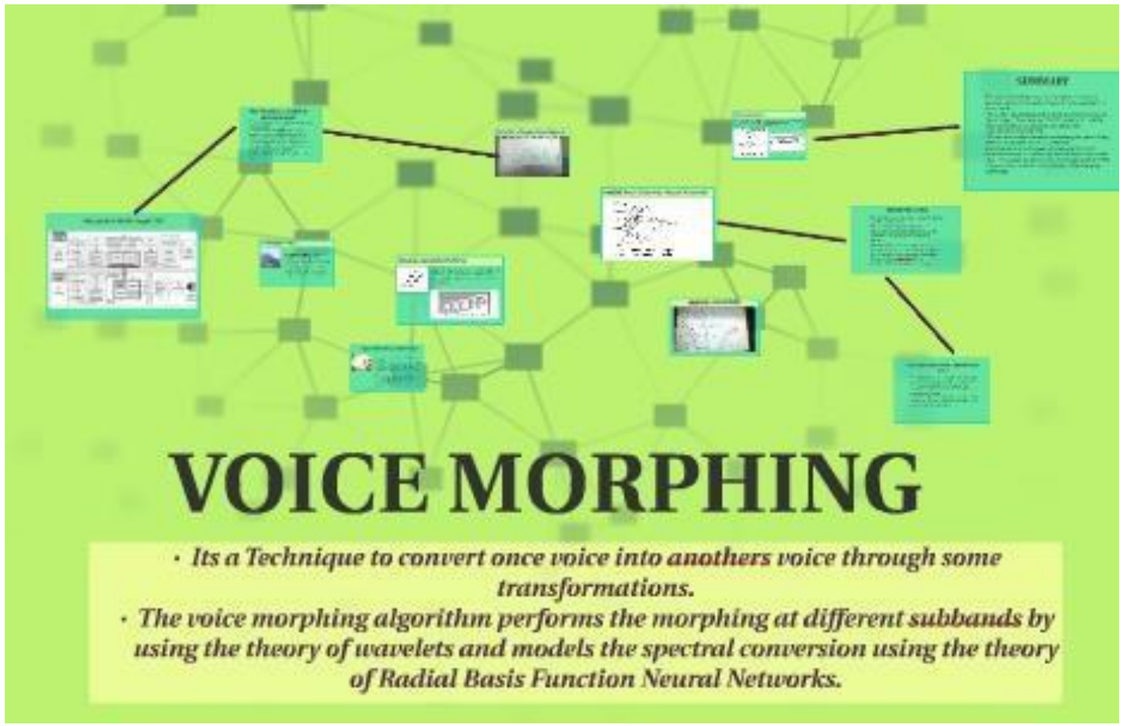
Denial of service attacks (DoS) are designed to make a machine or network resource unavailable to its intended users. Attackers can deny service to individual victims, such as by deliberately entering a wrong password enough consecutive times to cause the victim's account to be locked,or they may overload the capabilities of a machine or network and block all users at once.

Social engineering, in the context of computer security, aims to convince a user to disclose secrets such as passwords, card numbers, etc. or grant physical access by, for example, impersonating a senior executive, bank, a contractor, or a customer. This generally involves exploiting peoples trust, and relying on their cognitive biases. A common scam involves emails sent to accounting and finance department personnel, impersonating their CEO and urgently requesting some action. In early 2016, the FBI reported that such "business email compromise" (BEC) scams had cost US businesses more than $2 billion in about two years.

6 Voice Morphing

Praveen Kumar D (2018 – 2022)

Voice morphing technology enables a user to transform one personís speech pattern into another personís pattern with distinct characteristics, giving it a new identity while preserving the original content. Many ongoing projects will benefit from the development of a successful voice morphing technology: text-to-speech (TTS) adaptation with new voices being created at a much lower cost than the currently existing systems; broadcasting applications with appropriate voices being reproduced without the original speaker being present; voice editing applications with undesirable utterances being replaced with the desired ones; internet voice applications with e-mail readers and screen readers for the blind as well as computer and video game applications with game heroes speaking with desired voices



Main Features of proposed method Our proposed model uses the theory of wavelets as a means of extracting the speech features followed by Radial Basis Function Neural Networks (RBFNN) for modeling the conversion.

2.1 Wavelet Decomposition Subband decomposition is implemented using the Discrete Wavelet Transform (DWT). Wavelets are a class of functions that possess compact support and form a basis for all finite energy signals. They are able to capture the non-stationary spectral characteristics of a signal by decomposing it over a set of atoms which are localized in both time and frequency. The DWT uses the set of dyadic scales and translates of the mother wavelet to form an orthonormal basis for signal analysis. In wavelet decomposition of a signal, the signal is split using high-pass and low-pass filters into an approximation and a detail. The approximation is then itself split again into an approximation and a detail. This process is repeated until no further splitting is possible or until a specified level is reached. Fig. 1 shows a diagram of a wavelet decomposition tree . The DWT provides a good signal processing tool as it guarantees perfect reconstruction and prevents aliasing when appropriate filter pairs are used.

modeling of the speech signals using formant frequencies, Linear Prediction Coding Cepstrum coefficients , Line Spectral Frequencies and harmonic-plus-noise model parameters . Other methods are based on mixed time- and frequency-domain methods to alter the pitch, duration and spectral features.

The methods suffer from absence of detailed information during the extraction of formant coefficients and the excitation signal which results in the limitation on accurate estimation of parameters as well as distortion caused during synthesis of target speech

7 Genomics

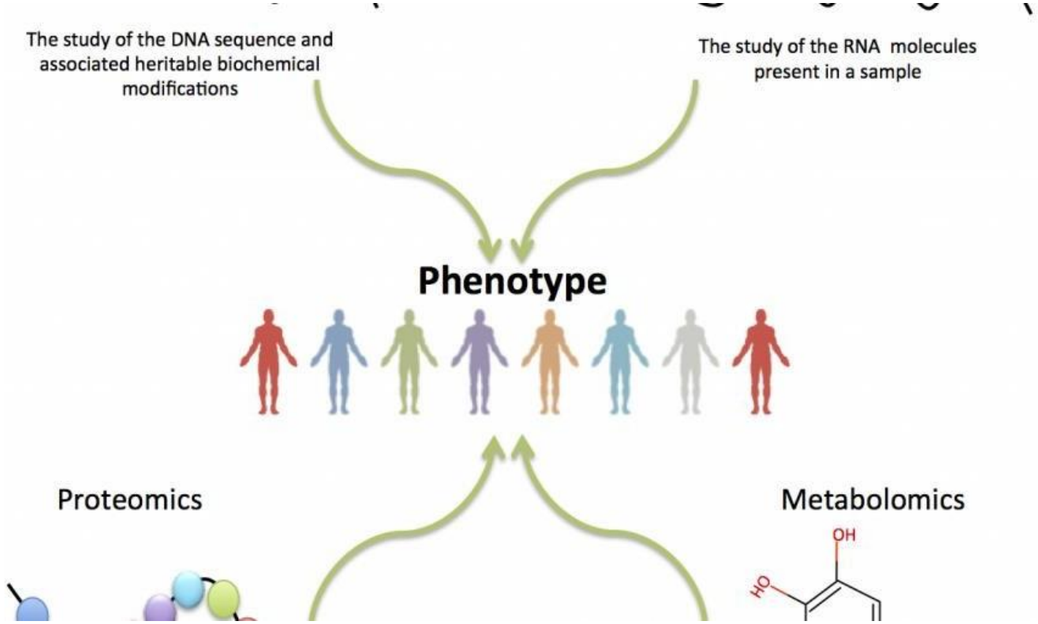
Abarna M (2017 – 2021)

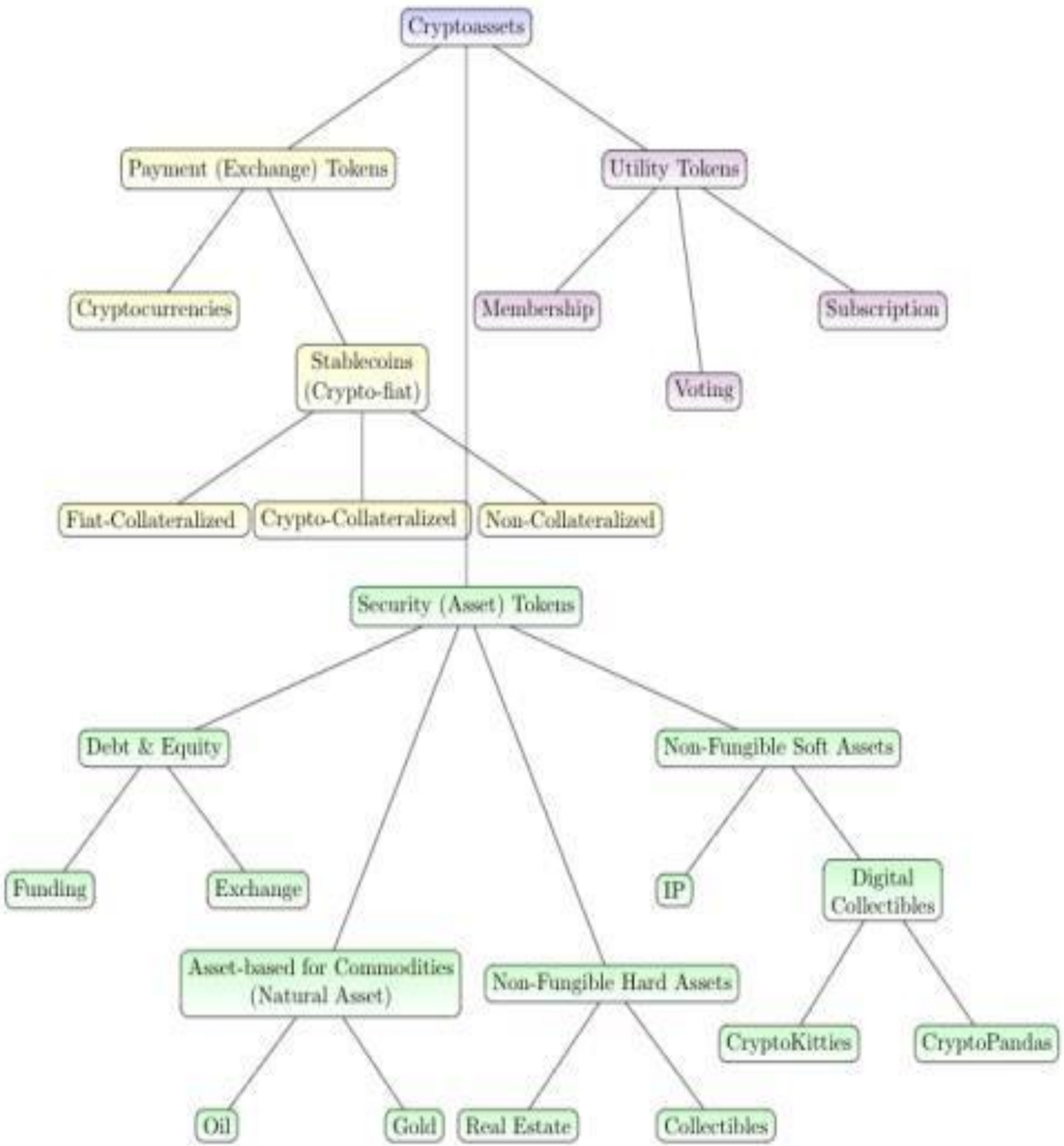
Computational genomics refers to the use of computational and statistical analysis to decipher biology from genome sequences and related data,including both DNA and RNA sequence as well as other "post-genomic" data (i.e., experimental data obtained with technologies that require the genome sequence, such as genomic DNA microarrays). These, in combination with computational and statistical approaches to understanding the function of the genes and statistical association analysis

As such, computational genomics may be regarded as a subset of bioinformatics and computational biology, but with a focus on using whole genomes (rather than individual genes) to understand the principles of how the DNA of a species controls its biology at the molecular level and beyond. With the current abundance of massive biological datasets, computational studies have become one of the most important means to biological discovery.

The roots of computational genomics are shared with those of bioinformatics. During the 1960s, Margaret Dayhoff and others at the National Biomedical Research Foundation assembled databases of homologous protein sequences for evolutionary study.[3] Their research developed a phylogenetic tree that determined the evolutionary changes that were required for a particular protein to change into another protein based on the underlying amino acid sequences. This led them to create a scoring matrix that assessed the likelihood of one protein being related to another

Beginning in the 1980s, databases of genome sequences began to be recorded, but this presented new challenges in the form of searching and comparing the databases of gene information. Unlike text-searching algorithms that are used on websites such as Google or Wikipedia, searching for sections of genetic similarity requires one to find strings that are not simply identical, but similar. This led to the development of the Needleman-Wunsch algorithm, which is a dynamic programming algorithm for comparing sets of amino acid sequences with each other by using scoring matrices derived from the earlier research by Dayhoff. Later, the BLAST algorithm was developed for performing fast, optimized searches of gene sequence databases. BLAST and its derivatives are probably the most widely used algorithms for this purpose.





Classification of blockchain tokens

8 | Blockchain Technology - Tokens

Abinath B (2017 – 2020)

One of the leading technologies nowadays, which is extremely helpful for the tokenization process is Blockchain. Combining Blockchain technology with the tokenization process creates a digital economy based on values rather than speculative demand. Therefore, we can say that tokenization leads us to a new era of global investment with minimal risks and high volatility.

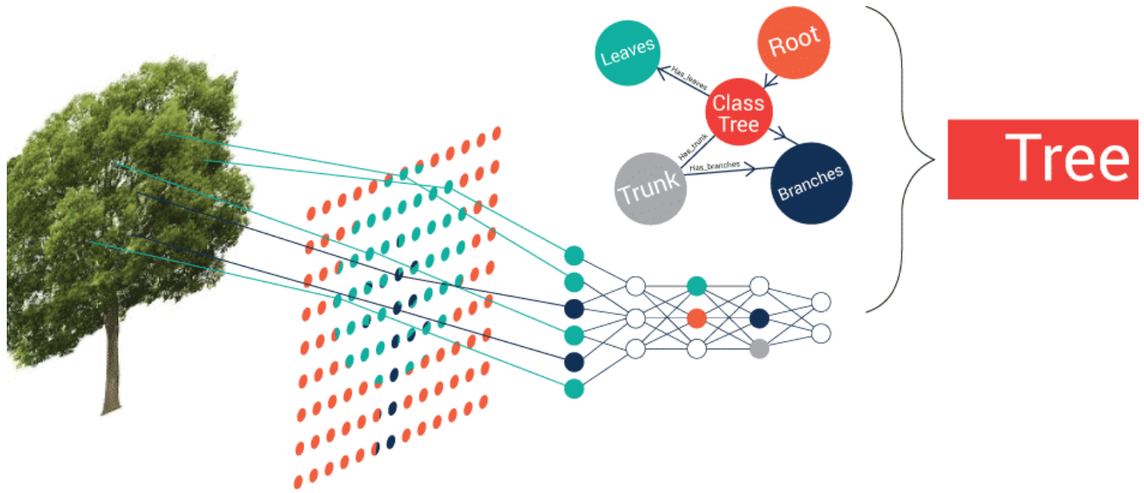
Tokens, which are specific objects that reflect the real values (such as money, stocks, credit card numbers, medical records, etc.), provide new investment opportunities and open up new areas for investment and trading. However, no single token classification system has yet been introduced that would help to clearly differentiate the functionality of each type of token for further use in different areas.

Today's digital economy is based on tokenization, which is used by billions of people every day. Tokenization can be defined as the process of replacing real values (such as money, stocks, credit card numbers, medical records, etc.) with tokens that reflect these values, making it easier and safer to trade them. This may seem unreachable, but tokenization has a profound effect on our lives and can transform entire industries. Tokenization is also extremely important for the safety

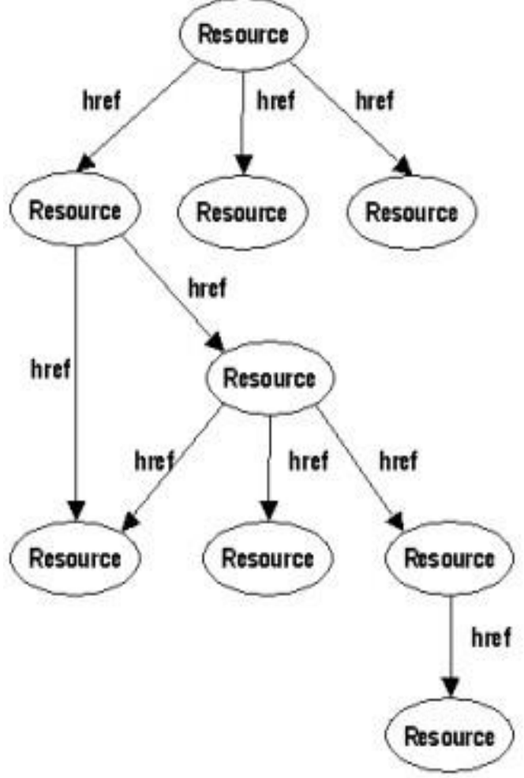
The appearance of the blockchain not only made it possible to combine the security properties of the token, but also to attach a number of new properties to it, allowing to safely and efficiently tokenize a wide range of real assets and businesses, providing new benefits and applications for a wide variety of industries such as the arts or healthcare. Such blockchain capabilities lead to a huge number of tokens with different functionality and technical features.

9 | Semantic Web

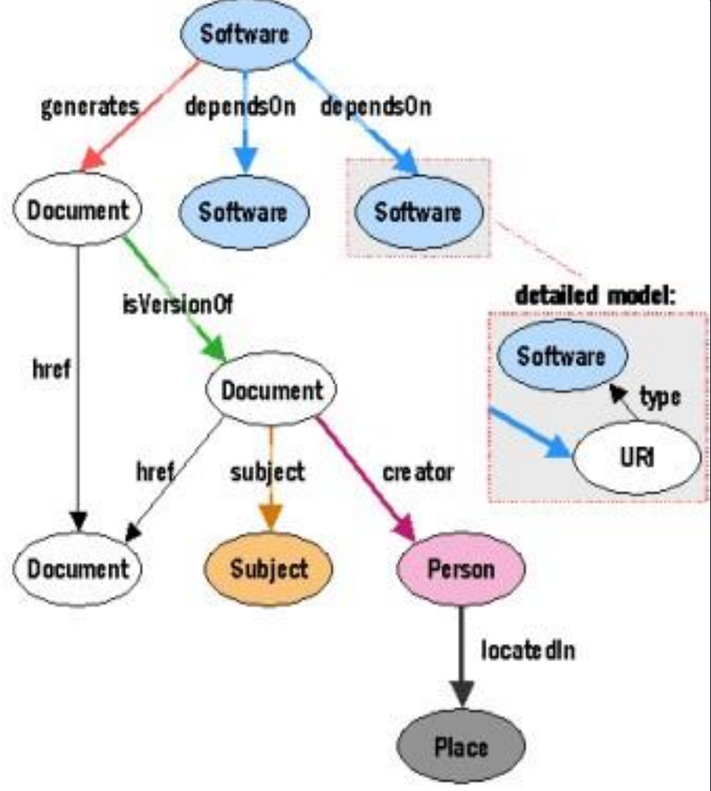
Vishnu G (2017 – 2021)



achine-processable navigable space



a) Current Web



b) Semantic Web

The semantic web is divined by the today's World Wide Web which was bought to the world in 1940s by Vannevar Bush from the idea of 'memex' machine. The idea originated while designing library catalogue search for the universal library.
WWW was envisioned by Tim Berners-Lee which had related document and connection between them in order to provide efficient, unpretentious and vigorous working environment.

This is really what the semantic web is all about it helps computers understand the meaning behind the webpage the web of today's about documents whereas a semantic web is about things when we say things it mean anything people, places, events, music, movies, organizations and just about any concept that you can think of, The semantic web is not only about pointing these things out to a computer but also about letting computers know how these things are related to each other there are several promising technologies that are in use today that can embed.

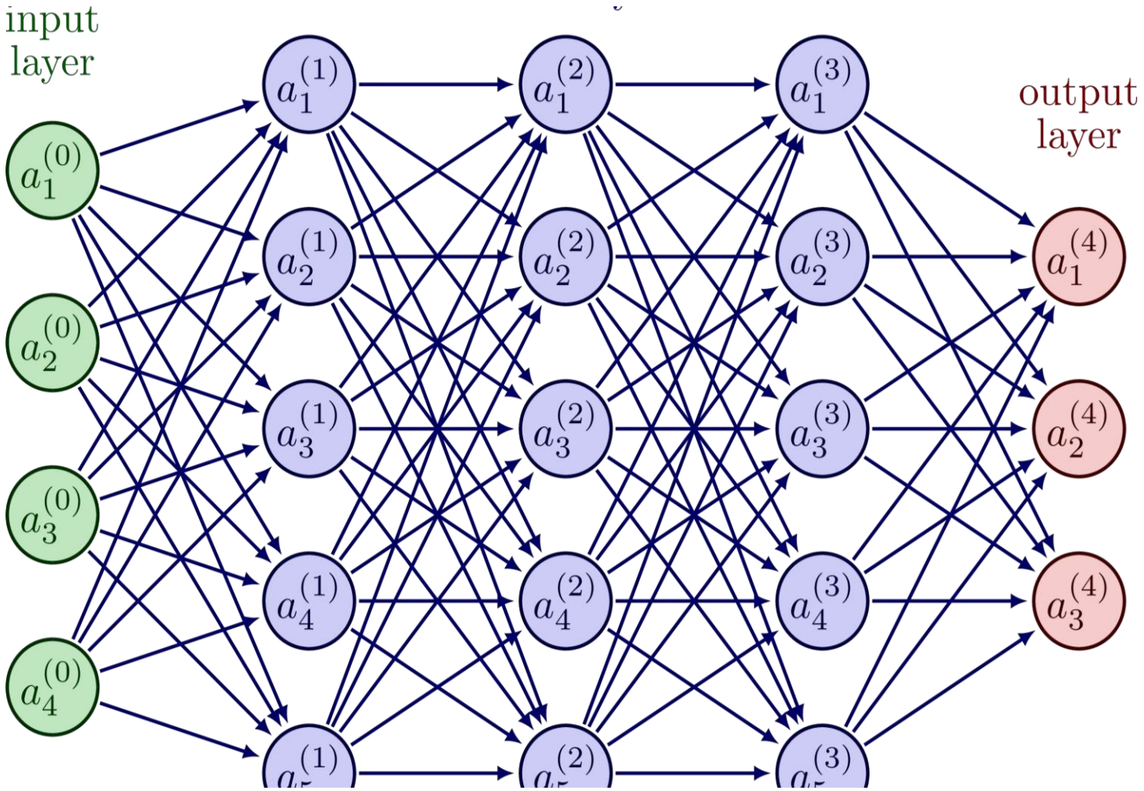
The semantic web re-engineered the web RDF core working group[59] and web which is pages and data in to a ontology working group are the two majorprogramme. In 1998, its initiative begins working groups of W3C have proposed as semantic web became a framework with allows data andAdvancement Development programme resource to be shared and used across[64] which comities. The semantic web over past few beginning of the new standard in the years has extended the real-time
World Wide Web as World Wide Web application in many areas and RDF Consortium (W3C) , the standard made by working group is developing programinginternational org to motivate the World language for fetching and processing theWide Web. It's a join effort from many semantic footnote on the web. organization people and research people
which was let by W3C.

10 | Neural Networks

Yogesh Kumar B (2017 – 2021)

A neural network is a network or circuit of biological neurons, or, in a modern sense, an artificial neural network, composed of artificial neurons or nodes.

Thus, a neural network is either a biological neural network, made up of biological neurons, or an artificial neural network, used for solving artificial intelligence (AI) problems. The connections of the biological neuron are modeled in artificial neural networks as weights between nodes. A positive weight reflects an excitatory connection, while negative values mean inhibitory connections. All inputs are modified by a weight and summed. This activity is referred to as a linear combination. Finally, an activation function controls the amplitude of the output. For example, an acceptable range of output is usually between 0 and 1, or it could be −1 and 1.



Theoretical and computational neuroscience is the field concerned with the analysis and computational modeling of biological neural systems. Since neural systems are intimately related to cognitive processes and behaviour, the field is closely related to cognitive and behavioural modeling.

Many models are used; defined at different levels of abstraction, and modeling different aspects of neural systems. They range from models of the short-term behaviour of individual neurons, through models of the dynamics of neural circuitry arising frominteractions between individual neurons, to models of behaviourarising from abstract neural modules that represent complete subsystems. These include models of the longterm and short- term plasticity of neural systems and its relation to learning and memory, from the individual neuron to the system level.

These artificial networks may be used for predictive modeling, adaptive control and applications where they can be trained viaa dataset.

A biological neural network is composed of a group of chemically connected or functionally associated neurons. A single neuron may be connected to many other neurons and the total number of neurons and connections in a network may be extensive Synapses and other connections are possible. Apart from electrical signalling, there are other forms of signalling that arise from neurotransmitter diffusion

Neural networks can be used in different fields. The tasks to which artificial neural networks are applied tend to fall within the following broad categories: Function approximation, or regression analysis, including time series prediction and modeling. Classification, including pattern and sequence recognition, novelty detection and sequential decision making. Data processing, including filtering, clustering, blind signal separation and compression.

11

Mixed Reality

Divya PG (2016 – 2020)

Mixed reality is the next wave in computing followed by mainframes, PCs, and smartphones. Mixed reality is going mainstream for consumers and businesses. It liberates us from screen-bound experiences by offering instinctual interactions with data in our living spaces and with our friends. Online explorers, in hundreds of millions around the world, have experienced mixed reality through their handheld devices. Mobile AR offers the most mainstream mixed reality solutions today on social media. People may not even realize that the AR filters they use on Instagram are mixed reality experiences.

Mixed reality is a blend of physical and digital worlds, unlocking natural and intuitive 3D human, computer, and environmental interactions. This new reality is based on advancements in computer vision, graphical processing, display technologies, inputsystems, and cloud computing.

MR brings together real world and digital elements. In mixed reality, you interact with and manipulate both physical and virtual items and environments, using nextgeneration sensing and imaging technologies. Mixed Reality allows you to see and immerse yourself in the world around you even as you interact with a virtual environment using your own hands— all without ever removing your headset. It provides the ability to have one foot (or hand) in the real world, and the other in an imaginary place, breaking down basic concepts between real and imaginary, offering an experience that can change the wayyou game and work today

Mixed reality is a recent innovation that has marked an inevitable change across business facets. Used in conjunction with augmented reality visualization software, it can craft head-turning product visuals through mobile or wearable devices.

To create a mixed reality experience, you don't have to worry about physical constraints or obstacles, but need cloud computing and artificial intelligence.

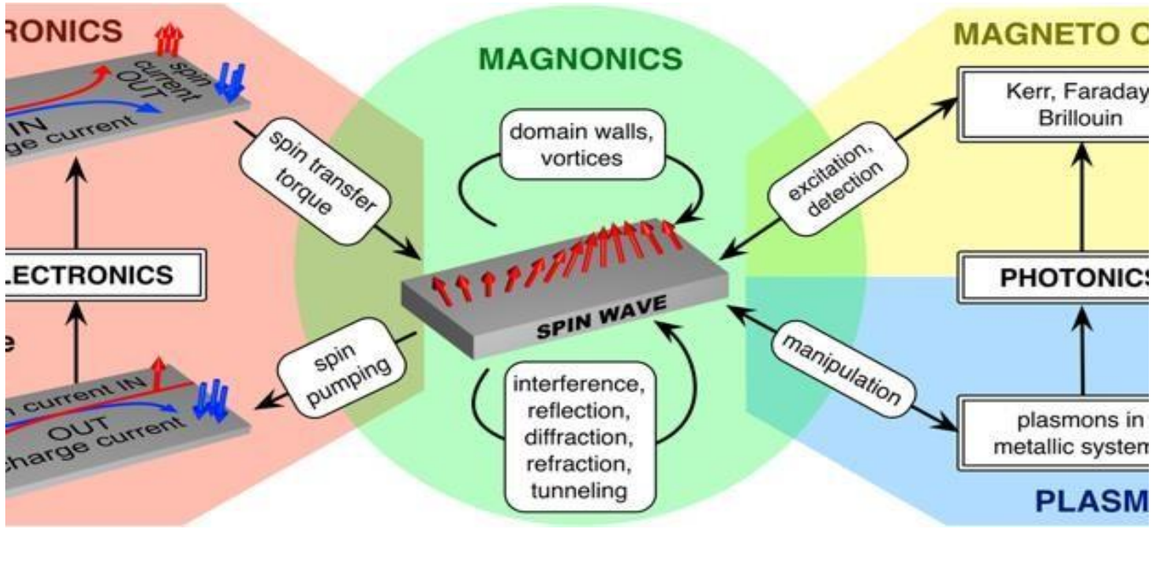
An MR device is powered by advanced AI sensors, cameras, graphical computational power (GPU), and processors, like graphic cards and core chips, to process and store data in three dimensions. The more equipped a device is, the better the mixed reality experience. Examples can be smart glasses, gloves, body suits, or your good-old smartphone.

MR devices can connect users to a wired or wireless computer, console, or PC to access software. The software can add, clone, or move virtual objects around you to createimmersions.

12

Magnonics

Greeshma R (2016 – 2020)

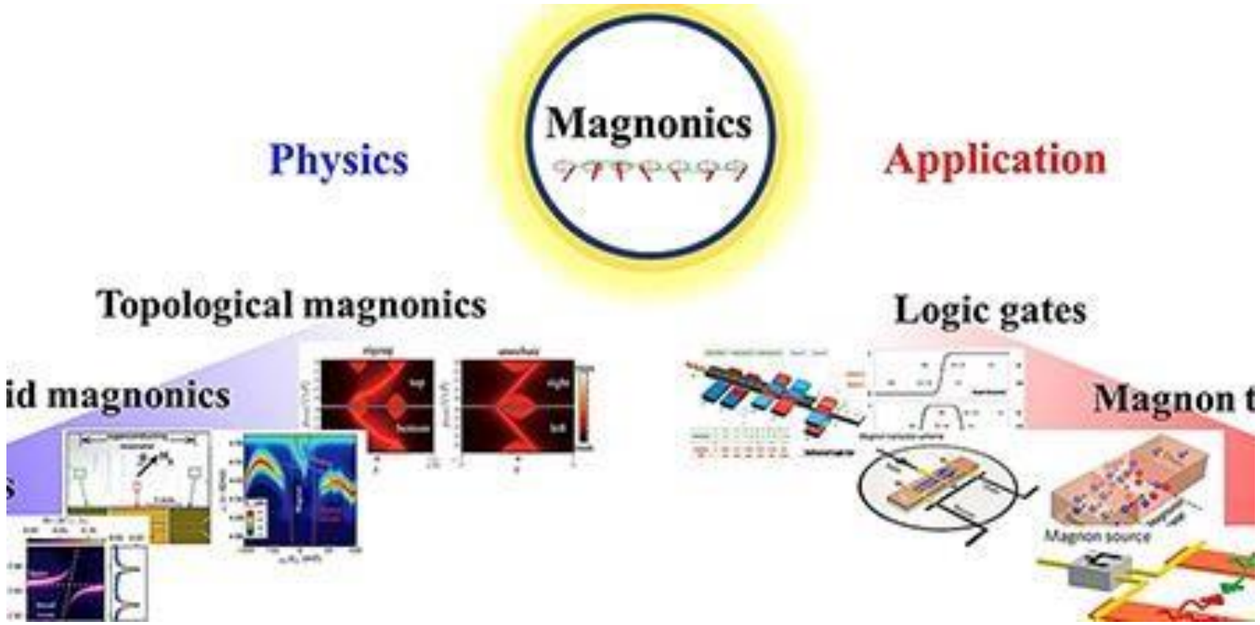


Magnonic devices have the potential to revolutionize the electronics industry. Qi Wang, Andrii Chumak from University of Vienna and Philipp Pirro from TU Kaiserslautern have largely accelerated the design of more versatile magnonic devices via a feedback- based computational algorithm. Their "inverse-design" of magnonic devices has no w been published in Nature Communications.

The field of magnonics offers a new type of low-power information processing, in which magnons, the quanta of spin waves, carry and process data instead of electrons. The end goal of this field is to create magnonic circuits, which would be smaller and more energy-efficient than current electronic Until recently, the development of a functional magnonic device could take years of trial-and-error. Researchers from the University of Vienna and the TU Kaiserslautern have developed a new computational method to design new devices in a considerably shorter time. Moreover, the efficiency added through this novel inverse design method helps overcome a traditional problem with such devices: they were just suitable for one function only.

Qi Wang, the first author of the study published in Nature Communications, suggested adopting a photonics method for the field of magnonics. Three basic principles help to explain the process, as is shown in the figure. First, the researchers decide on the functionalities of the device they want to design, e.g., a Y-circulator, one of the most common components for separating signal directions in systems engineering. This device guides spin waves from one port into another port according to the circulation condition: wave from port 1 should go into port 2, wave from port 2 into port 3 and from port 3 into port 1. Second, this "task" is translated into a computer language. Finally, the computer generates random structures and optimizes them step-by-step to reach the required functionality

The proposed approach overcomes the hurdle of designing through experimentation and, instead, emphasizes the importance of researchers' imagination, who fix the parameters and objectives for the computer-designed devices. An example of this creative process comes from Philipp Pirro, scientist at the TU Kaiserslautern: "With inverse-design one could develop neurons like the ones in the brain, but made out of magnonic elements instead."

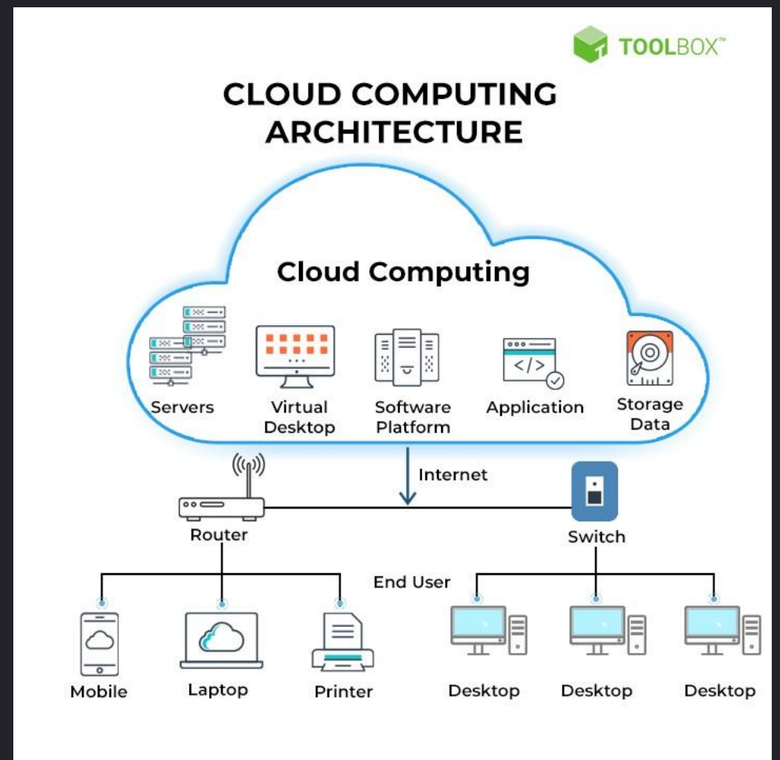


13 Cloud Computing

Arvind D (2016 – 2020)

Cloud computing is a general term for anything that involves delivering hosted services over the Internet These services are broadly divided into three categories: Infrastructure-as-a-Service (laaS), Platform-as-a-Service (PaaS) and Software-as-a-Service (SaaS). When a service provider uses public cloud resources to create their private cloud, the result is called a virtual private cloud. Private or public, the goal of cloud computing is to provide easy, scalable access to computing resources and IT services. to start, stop, access, and configure their virtual servers and storage. In the enterprise, cloud computing allows a company to pay for only as much capacity as is needed, and bring more online as soon as required

Platform-as-a-service in the cloud is defined as a set of software and product development tools hosted on the providers infrastructure. Developers create applications on the providers platform over the Internet. Paas providers may use APIs, website portals or gateway software installed on the customers computer.



Developers need to know that currently, there are not standards for interoperability or data portability in the cloud. Some providers will not allow software created by their customers to be moved off the providers platform.

In the software-as-a-service cloud model, the vendor supplies the hardware infrastructure, the software product and interacts with the user through a front-end portal. SaaS is a very broad market. Services can be anything from Web-based email to inventory control and database processing. Because the service provider hosts both the application and the data, the end user is free to use the service from anywhere. Cloud computing is a general term for anything that involves delivering hosted services over the Internet. These services are broadly divided into three categories: Infrastructure-as-a-Service (IaaS) Platform-as-a-Service (PaaS) and Software-as-aService (SaaS). The name cloud computing was inspired by the cloud symbol that is often used to represent the Internet in flowcharts and diagrams.

Once an internet protocol connection is established among several computers, it is possible to share services within anyone of the following layers. A cloud client consists of computer hardware and/or computer software that relies on cloud computing for application delivery and that is in essence useless without it. Examples include some computers (example: Chromebook), phones (example: Google Nexus series) and other devices, operating systems (example: Google Chrome OS), and browsers

5 | Alumni Stories

Koushika

Harsh Chetan

Kousika, B.Tech IT graduate from Sri Shakthi Institute of Engineering Technology (2015 passed out). I always had an aspiration to become a successful IT professional from my childhood. SIET is the place where I got the exposure of the industrial expectations. Apart from academics we had so many opportunities to outgrow and develop skills. The pre-placement talks, Tech Bash, Xenira and Leadership Summit had given me the opportunities to interact with the industrial experts and it had given the exposure on the industrial expectations. I also had an opportunity to get to know many inspirational stories. The value-added courses were very helpful. I have attended Cloud computing VAC. Certified in Cloud Infrastructure and Services by EMC 2 (EMC-CIS) with 100% in 2014. I had also completed my Radix Training Program Conducted by IIT Bangalore during 2014-2015. Currently am working as Dev Lead in Skava – An Infosys Company. Full Stack developer with 6+ years of experience in ecommerce web development. Awarded “Star Performer” in 2017 to 2018. Also received “Women of Steel” quarterly award in 2017.

- Koushika

When I reflect back on my four years at Sri Shakthi, I conclude that it has helped me prepare myself to get into the workforce. I must say that the faculty invests a lot in students and to look after them. The extended courses and training offered hands-on experience about the Industry in addition to theoretical courses. I hail from the Northern part of the country but felt like being at home away from home. The experience has broadened my horizon and really changed my view about many things during my journey. I strongly recommend Sri Shakthi to all who aspire for a remarkable career.

- Harsh Chetan

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