DIGIT

Department of Computer Science & Enginering

Anantha Lakshmi Institute of Technology & Sciences

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Computer Science and Engineering is at the core of the information age. To prepare our students for the tremendous opportunities in the field, the CSE Department is strongly committed to excellence in both education and research.

Our majors are designed to provide a strong foundation in the core areas of Computer Science and Engineering. Our vibrant graduate programs prepare students for positions in industry and academia. Since its inception, the department has always been recognized for excellence in teaching. The Department provides an outstanding teaching environment complemented by superior teaching for its students to flourish in. Graduates from the department are recruited by both academia and industry.

The Department of Computer Science and Engineering with its cohesive team of faculty members offers a sound program at the UG as well as the PG levels. The curriculum is a blend of the conventional and the radical. It is updated regularly to keep up with the growing demands and the changing trends of the software industry and research laboratories.

DEPARTMENT VISION & MISSION

VISION : To produce technically competent computer science professionals with high quality education in cutting edge technologies and professional ethics.

MISSION :

M1: Impart quality technical education in design and implementation of IT applications through innovative teaching - learning practice.

M2: Provide state-of-art computing infrastructure to enable practical learning experience that foster problem solving and technical communication skills.

M3: Provide quality learning experiences through experiential learning for students and faculty to carry out multidisciplinary research projects with innovative ideas and professional ethics for sustainable development.

PROGRAM EDUCTIONAL OBJECTIVES

PEO 1 : Demonstrate proficiency in fundamental concepts and advanced technologies of computer science in their careers and/or obtain a higher degree.

PEO 2 : Analyze complex computing problems in multidisciplinary area and creatively solve them with analytical decision making and programming skills.

PEO 3 : Recognize ethical dilemma in work environment and apply professional code of ethics to excel as successful software professional, researcher and entrepreneur.

PROGRAM SEPCEFIC OUTCOMES

PSO 1 : Apply the knowledge of programming languages, data structures, algorithms and standard software engineering principles to develop viable solutions for complex computing problems.

PSO 2 : Design and develop efficient Web and Mobile based applications under realistic constraints.

PSO3 : Apply theoretical principles of core and advanced computer science to solve engineering problems.

PROGRAM OUTCOMES

PO 1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO 2	**Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO 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.
PO 4	**Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO 5	**Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
PO 6	**The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO 7	**Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO 8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	**Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO 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, make effective presentations, and give and receive clear instructions.
PO 11	**Project Management and Finance:** 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.
PO 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.

5G TECHNOLOGY

If there is one technology, the knowledge of which is still little, it is 5G. It is a new technology in 2021 for which companies and governments around the world have spent years preparing for the rollout of 5G technology. In several countries, this technology has already been rolled out and achieved a significant amount of success. Since 5G is currently in a nascent stage, it is available only to a limited extent and is also relatively expensive. The number of compatible devices with 5G is also not appreciable, although most new mobile devices being released have 5G compatibility. 5G has a much greater capacity than the current 4G technology, with an average network speed of 100 Mbps and a peak speed of 20 Gbps. If you have multiple mobile devices in your home, 5G will probably connect to these devices and use them concurrently significantly easier. When 5G technology was only in the development stage, 5G jobs were few, and most such jobs were allocated to employees within companies. However, companies have begun to hire network engineers over the past few months, specifically for jobs associated with their 5G networks. As 5G technology has become more prevalent, there has been a scramble among networks to purchase spectrum and roll out the technology first. This has led to the requirement of a larger workforce focussed on the development and release of 5G networks. 5G is already here today, and global operators started launching new 5G networks in early 2019. Also, all major phone manufacturers are commercializing 5G phones. And soon, even more people may be able to access 5G.5G has been deployed in 60+ countries and counting.

Things have changed a lot since the first generation of mobile technology. The 1G era was defined by briefcase-sized phones and short conversations between a relatively small number of professional people. In the lead up to 2G, the demand for mobile services grew and never slowed down. Phones that could fit in your pocket, SMS and mobile internet access were hallmarks of the of the 3D world.

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Quantum Computing

Quantum Computing is the process of using quantum-mechanics for solving complex and massive operations quickly and efficiently. As classical computers are used for performing classical computations, similarly, a Quantum computer is used for performing Quantum computations. Quantum Computations are too complex to solve that it becomes almost impossible to solve them with classical computers. The word 'Quantum' is derived from the concept of Quantum Mechanics in Physics that describes the physical properties of the nature of electrons and photons. Quantum is the fundamental framework for deeply describing and understanding nature. Thus, it is the reason that quantum calculations deal with complexity. Quantum Computing is a subfield of Quantum Information Science. It describes the best way of dealing with a complicated computation. Quantum-mechanics is based on the phenomena of superposition and entanglement, which are used to perform the quantum computations

How it deals:

A Quantum deals with the smallest particles found in nature, i.e., electrons and photons. These three particles are known as **Quantum particles**. In this, superposition defines the ability of a quantum system to be present in multiple states (one or more) at the same time.

What is mean by quantum computer:

A Quantum Computer is a device that is used for performing quantum calculations, which are highly complex in nature. It stores data in the form of **Qubits**. Qubits are also known as **quantum bits**. A Quantum Computer can simulate those problems or operations that a classical computer (that we currently use) cannot do. Even a quantum computer is capable of solving computational problems faster than a normal computer.

Currently, researchers are working with Quantum computers in the field of cybersecurity to break codes and encrypt electronic communications to explore better cybersecurity and protected data.

Use Cases of Quantum **Computing:**

Airbus has launched a quantum computing challenge to encourage the development of quantum solutions in aircraft climb and loading optimization, as well as wing box design optimization. Daimler is working with Google on using quantum computing in the fields of materials science and quantum chemical simulation. The US Department of Energy is funding research projects that could lead to the development of very sensitive sensors (with applications in medicine, national security, and science) and provide insights into cosmic phenomena such as dark matter and black holes. Google, IBM, Intel, Microsoft, and other major tech companies are allocating significant resources to quantum computing research, in their efforts to pioneer breakthroughs in areas such as AI and machine learning, medicine, materials, chemistry, supply chains, and logistics, financial services, astrophysics, and others.

Advantages of Quantum Computing:

The main advantage of quantum computing is it can execute any task very faster when compared to the classical computer, generally the atoms changes very faster in case of the traditional computing whereas in quantum computing it changes even more faster. But all the tasks can't be done better by quantum computing when compared to traditional computer

Disadvantages of Quantum Computing:

The main disadvantage of computing is the technology required to implement a quantum computer is not available at present. The reason for this is the consistent electron is damaged as soon as it is affected by its environment and that electron is very much essential for the functioning of quantum computers Quantum Computing used by Industry:

Quantum Computing used by Industry:

- Microsoft
- Amazon

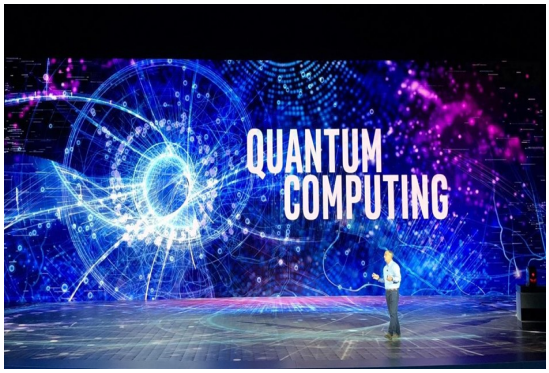
Microsoft:

For decades, Microsoft has been doing basic quantum physics research to speed up the quantum computer revolution. The Microsoft method focuses on topological quantum computing through Majorana fermions (particles that are hypothesized to be their own

antiparticles), which offers fast, stable quantum bits. Theoretical advances have led to experimental physics breakthroughs and a path ahead for scalable quantum computing.

Amazon :

Amazon is building the framework for a quantum computer, advancing attempts to harness technology that can crunch huge amounts of data in seconds that even the most powerful supercomputers take hours or days to analyze. The tech giant is looking for a Quantum Hardware Team to work in their Amazon Web Services Center for Quantum Computing.



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The Metaverse Is Coming And It's A Very Big Deal

Imagine walking down the street. Suddenly, you think of a product you need. Immediately next to you, a vending machine appears, filled with the product and variations you were thinking of. You stop, pick an item from the vending machine, it's shipped to your house, and then continue on your way.

Welcome to the metaverse, alternate digital realities where people work, play, and socialize. You can call it the metaverse, the mirror world, the AR Cloud, the Magic verse, the Spatial internet, or Live Maps, but one thing is for certain, it's coming and it's a big deal.

Metaverse: If the contemporary internet experience is two-dimensional—

Meaning you browse and scroll through it on a screen—the metaverse is 3D.

You'll be "walking" through it via connected headsets or glasses.

To the outsider, it may look like a souped-up version Virtual Reality (VR) - but some people think the metaverse could be the future of the internet.

Meet your digital twin

Mirror world: A mirror world is a digitally rendered version of the real world where there are virtual counterparts of real-life people, places, and things. Mirror worlds are often found in sci-fi, including Netflix's Stranger Things, The Matrix film series, the novel and film Ready Player One. The metaverse could be a mirror world designed to precisely reflect the physical world, or could resemble an entirely invented world one might encounter in a video game.

Digital twin: A digital twin is a virtual version of a real-life object or structure. The term was first introduced in the 1991 book Mirror Worlds by David Gelernter, digital twin technology was first used by NASA (PDF) to run simulations of space capsules in 2010. Microsoft, in particular, has emphasized the need for digital twin technology in building the metaverse.

Avatar: An avatar is your persona in a virtual world. This digital rendering of your appearance may look like you, resemble a cartoon (as popularized by Snapchat's Bitmoji and Apple's Memoji), or appear as fantastical as Fortnite's "skins."

Why is it suddenly a big thing?

Hype about digital worlds and augmented reality pops up every few years, but usually dies away.

However, there is a huge amount of excitement about the metaverse among wealthy investors and big tech firms, and no-one wants to be left behind if it turns out to be the future of the internet.

There's also a feeling that for the first time, the technology is nearly there, with advancements in VR gaming and connectivity coming close to what might be needed.

Why is Facebook involved?

Facebook has made building the metaverse one of its big priorities.

It's invested heavily in virtual reality through its Oculus headsets, making them cheaper than rivals - perhaps even at a loss, according to some analysts. It's also building VR apps for social hangouts and for the workplace, including ones that interact with the real world.

Despite its history of buying up rivals, Facebook claims the metaverse "won't be built overnight by a single company" and has promised to collaborate. It has recently invested $50m(£36.3m) in funding non-profit groups to help "build the metaverse responsibly". But it thinks the true metaverse idea will take another 10 to 15 years.

A Huge Opportunity

A new iteration of the internet is being worked on and this will have massive implications for society. Marketing, communications, and branding professionals will face new challenges but also new opportunities. This new era of the metaverse will unleash amazing creativity and open up new frontiers and horizons for brands and businesses.

Many brands today are digital-first. Some built their identity online before building an actual product. They can apply these skill sets to the metaverse. They can continue their digital personas, content, and expand into products that connect with consumers digitally. Those who understand online culture, digital art, and gaming experiences will thrive in the metaverse.

Now is the chance for brands to get ahead by embracing the digital future. Companies can apply how they adopted the internet and social media as not to lag behind competitors in the new digital world. The metaverse may seem like another thing to do as part of digital transformation. Instead, embrace the metaverse as an opportunity to expand your brands, what they do, and how they do it.

Submitted By :
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An introduction to the computer programming languages: A basic information to the humanity

Abstract:
The main aim of this review is to rationalise the programming languages that are effective for directing a machine's behaviour on a computer. Programming languages, like natural languages, define rules for syntax and semantics. There are over a hundred thousand programming languages, and new ones emerge every year. Few languages ever become popular enough to be used by a large number of people, but skilled programmers may use dozens of languages over the course of their careers. In this review, the authors examined the runtime performance, memory usage, applications, and primary benefits and drawbacks of the most popular standized programming languages.

Keywords: Computer, generation, language, program, symbol.

Introduction

A programming language (PL) is a machine and human-readable notational framework for describing computation. A programming language is a tool for creating executable models for a certain set of problems[1]. A programming language (PL) is a set of rules that tell a computer what operations to perform. A set of rules for communicating an algorithm is known as a PL. A linguistic foundation for describing computations is provided by PL[2].

English is a language that comes naturally to people. Words, symbols, and grammatical rules are all present. Words, symbols, and grammar rules are all part of a programming language. Syntax refers to the grammatical rules. Each programming language has its own set of rules for syntax[3].
Programming languages have evolved over time as new methods for designing them have become available. In the 1950s, the first programming languages were created. Thousands more languages have been invented since then, with different programming languages suited for various types of projects[4].

Types of PL

- First Generation Languages
- Second Generation Languages
- Third Generation Languages
- Fourth Generation Languages
- Fifth Generation Languages

First Generation Languages (1GL)
"Machine language" is the name for it. It consists of operation codes (Viz., addition and subtraction) and Operands (Viz., data to be processed). Because it is the only language that the computer understands, machine language is machine-dependent. It's really efficient code, but it's also extremely tough to write[6].

Second generation language (2GL).
It is also known as "Assembly languages". In this symbolic operation codes replaced binary operation codes. 2GL needed to be "assembled" for execution by the computer. Each assembly language instruction is translated into one machine language instruction. 2GL is very efficient code and easier to write. write[7].

Third generation language (3GL)
It resembles English more closely, but with the addition of basic mathematical notation. Programs written in source code must be translated into machine language programmes known as "object code" in this case. A compiler is a machine language system programme that performs the translation of source code to object code. Interpretation, which is performed by a system software known as an interpreter, is an alternative to compilation[8].
E.g., FORTRAN, COBOL, C and C++, Visual Basic.

Fourth generation language (4GL)
It's a high-level language (4GL) that uses fewer instructions than a 3GL to complete a task. Query languages, report generators, Form designers, and application generators are all used with databases. Any computer programming language that belongs to a class of languages envisioned as a step forward from 3GL is referred to as 4GL. Each generation of programming languages tries to provide a higher level of abstraction of internal computer hardware details, resulting in a more programmer-friendly, powerful, and adaptable language. While the definition of 4GL has evolved over time, it is characterised by its ability to deal with massive amounts of data at once rather than merely bits and bytes. Database management, report production, mathematical optimization, GUI (graphical user interface) development, and online development may all be supported by 4GL languages. According to some academics, 4GLs are a subset of domain-specific languages[9].

Fifth generation language (5GL)
Despite the lack of a precise definition at this time, natural language programmes may generally be translated and performed by a computer without the user having to do anything other than ask a query. It currently has limited functionality[10].
4GL is used to create specialised programmes, while 5GL is used to have the computer handle an issue without the need for a programmer. In this manner, the user just has to worry about what problems need to be solved and what conditions need to be met, rather than how to solve them using a routine or algorithm. Artificial intelligence research primarily employs 5GL.
E.g., OPS5 (Official Production System version 5) and Mercury
5GL was seen as the way of the future in the 1980s, with some predicting that they would eventually replace procedural programming with constraint-based programming for all jobs that could be defined as a set of logical constraints[11].

Principal paradigms

- Imperative Programming C
- Object-Oriented Programming (C++)
- Logic/Declarative
- Programming (Prolog)
- Functional/Applicative Programming (Lisp)

Classification of Program languages
PL are classified into two broad groups, i.e., traditional programming languages and object-oriented languages[12].

Traditional programming languages
These comprises of sequences of instructions and another is First, second and some 3GL [13]

An introduction to the computer programming languages: A basic information to the humanity

FORTRAN

It is named after "**FOR**mula **TRAN**slation" that was developed at IBM (International Business Machines Corporation) in the mid-1950s. Scientists and engineers created it for scientific and mathematical applications.

COBOL

It is based on the **Co**mmon **B**usiness **O**riented **L**anguage, which was created in 1959.It was designed to be common to many different computers. It is most commonly utilised in corporate applications.

BASIC

It is a **B**eginner's **A**ll-purpose **S**ymbolic **I**nstruction **C**ode that was developed at Dartmouth College in the mid-1960s. It was created as a simple programming language for students to use to create programmes that they could interact with via terminals.

C

Bell Laboratories invented it in the early 1970s. It has 3GL features and enables assembly language control and efficiency. It's frequently used in system programmes. UNIX is written in the C programming language.

Object-oriented languages

Objects are created rather than sequences of instructions, and some third-, fourth-, and fifth-generation languages are employed.

Simula

It was the first object-oriented language developed by Ole Johan Dahl in the 1960s.

Smalltalk

Xerox created the first entirely object-oriented language in the mid-1970s. On some PCs, it is still in use.

C++

It's a C-like language with a few extra features. It's a popular tool for creating system and application software. Visual programming tools make it simple to create graphical user interfaces.

JAVA

It's an object-oriented language that's comparable to C++ but without many of C++'s flaws. It enables a web page developer to create applets, which are browser-based programmes for applications. The goal of JAVA developers is for the language to be machine, platform, and operating system agnostic.

Special Programming languages

Scripting Languages

These include JavaScript and VBScript; Php and ASP; Perl and Python

Command Languages

There are three of them: sh, csh, and bash.

Text processing Languages

This includes LaTex, and PostScript.

HTML

It is expanded as the HyperText Markup Language. It is used on the Internet and the World Wide Web (WWW). In order to indicate how the page should be formatted, the web page developer inserts short codes called "tags into the page.

XML

Extensible Markup Language is the name given to it once it was enlarged. It is a language that is used to define other languages.

Criteria for a good language

The criteria for a good computer program language are as follows[18-20].

Writability: The ability for a programmer to represent a computation explicitly, correctly, concisely, and swiftly using a language.

Readability: The ability of a language to allow a programmer to simply and accurately understand and comprehend the nature of a computation.

Orthogonality: The quality of a language is determined by how few limits it has and how easily it can be combined in any meaningful way.

Reliability: A language's ability to ensure that a programme will not behave in unexpected or disastrous ways during execution.

Maintainability: It's possible to find and improve the quality of a language that makes it easier to make mistakes, as well as introduce new features.

Generality: A language's ability to avoid unusual situations in construct availability or use by combining closely related constructs into a single, more general construct.

Uniformity: The property of a language in which similar features should appear and function in the same way.

Extensibility: The ability of a language to offer a user a generic mechanism for adding new constructs to the language.

Standardability: The ability of a language to be transferred from one computer to another without causing substantial changes in the linguistic structure.

Implementability: It is possible to write about the quality of a language that supplies a translation or interpreter. This can address the language definition's complexity

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Robotic Process Automation

Robotic Process Automation isn't just about robots. It is a lot more about the automation of processes than anything else. Before computers, most processes involved some human intervention. Humans ran even manufacturing machines, and large-scale manufacturing employs thousands of people. However, since computers have taken over most processes, manufacturing hasn't been left untouched either. All domains, be it manufacturing or information technology, now involve some automation in their processes. The amount of human intervention in these processes is only reducing, and this trend is likely to continue for the foreseeable future jobs in robotic process automation typically involve a significant amount of coding knowledge. You would typically need to write code that would enable computerised or non-computerised processes to be done automatically without human intervention. These processes could mean anything from automatic email replies to automated data analysis and automatic processing and financial transactions approval. Robotic process automation makes tasks considerably faster for the common consumer by making such approvals automatic based on certain conditions entered by the programmer. In sectors such as financial services, robotic process automation can reduce the lean time to approve financial transactions online. It improves the productivity of the company as a whole, as well as that of its clients.

The robot is a software worker that can do jobs such as retrieving customer profiles, support and order information from multiple enterprise systems and applications. As process automation takes over the repetitive, routine manual work, human error is eliminated, and costly mistakes no longer happen. Consumers today expect more efficient and personalized services than ever before, and only businesses who use digital capabilities like RPA to keep up with more sophisticated and growing customer demands will remain relevant in the long run.An RPA workforce is precise, accurate and immune to boredom. It can also be scaled more easily than your human workforce. RPA can perform just about any rule-based work and can do so through interaction with any software application or website. It's a robotic connection to the human world of the computer user interface. If a human can do it, a robot can do it in virtually the same way.

Submitted By :

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ETHICAL HACKING

What is hacking?

Hacking refers to activities that seek to compromise digital devices, such as computers, smartphones, tablets, and even entire networks. And while hacking might not always be for malicious purposes, nowadays most references to hacking, and hackers, characterize it/them as unlawful activity by cybercriminals motivated by financial gain, protest, information gathering (spying), and even just for the "fun" of the challenge.

Hacking tools: How do hackers hack?

Hacking is typically technical in nature (like creating malvertising that deposits malware in a drive-by attack requiring no user interaction). But hackers can also use psychology to trick the user into clicking on a malicious attachment or providing personal data. These tactics are referred to as "social engineering."

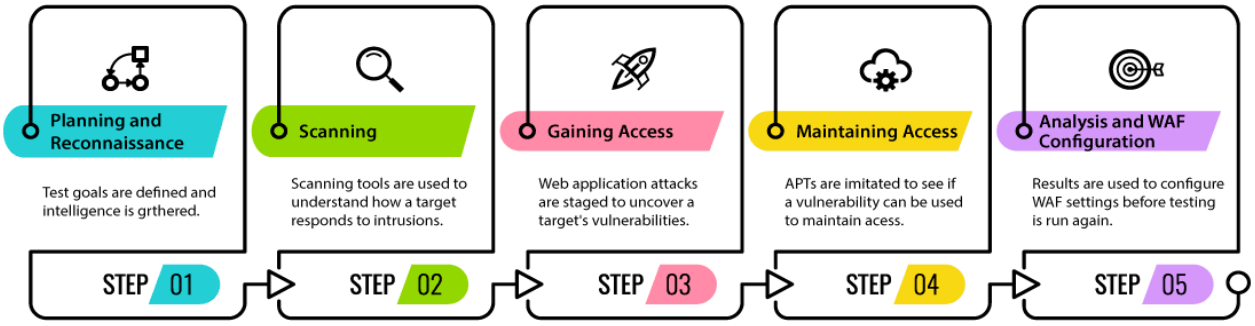
In fact, it's accurate to characterize hacking as an over-arching umbrella term for activity behind most if not all of the malware and malicious cyberattacks on the computing public, businesses, and governments. Besides social engineering and malvertising, common hacking techniques include:

- Botnuts
- Browser hijacks
- Denial of service (DDoS) attacks
- Ransom ware
- Rootkits
- Trojans

Ethical hacking? White, black, and grey hats

Ethical hacking is a process of detecting vulnerabilities in an application, system, or organization's infrastructure that an attacker can use to exploit an individual or organization. They use this process to prevent cyberattacks and security breaches by lawfully hackings

ETHICAL HACKING



Black Hat Hacker

A **BLACK HAT HACKER**(or black-hat hacker) is a hacker who violates computer security for their own personal profit or out of malice

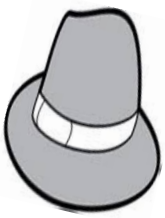
Black hat hackers are the stereotypical illegal hacking groups often portrayed in popular culture and are "the epitome of all that the public fears in a computer criminal".[5] Black hat hackers break into secure networks and systems with the motive of destroying, modifying, or stealing some sensitive data, or to make the networks unusable for authorized network users.

White Hat Hacker

A **white hat** (or a **white hat hacker**) is an ethical security hacker.[1] Ethical hacking is a term meant to imply a broader category than just penetration testing.[2][3] Contrasted with the black hat, a malicious hacker, the name comes from Western films, where heroic and antagonistic cowboys might traditionally wear a white and a black hat, respectively.[4] There is a third kind of hacker known as a grey hat who hacks with good intentions but at times without permission

White hat hackers may also work in teams called "sneakers and/or hacker clubs",[5] red teams, or tiger teams.

Grey Hat Hacker



A **grey hat** (**greyhat** or **gray hat**) is a computer hacker or computer security expert who may sometimes violate laws or typical ethical standards but usually does not have the malicious intent typical of a black hat hacker.

According to one definition of a grey-hat hacker, when they discover a vulneraility, instead of telling the vendor how the exploit works, they may offer to repair it for a small fee.

When one gains illegal access to a system or network, they may suggest to the system administrator that one of their friends be hired to fix the problem; however, this practice has been declining due to the increasing willingness of businesses to prosecute. Another definition of Grey hat maintains that Grey hat hackers only arguably violate the law in an effort to research and improve security: legality being set according to the particular ramifications of any hacks they participate in.

ETHICAL HACKING

Hacking prevention

If your computer, tablet, or phone is at the bull's-eye of the hacker's target, then surround it with concentric rings of precautions.

Advantages of Ethical Hacking :

Following are the advantages of Ethical Hacking as follows.

- This helps to fight against cyber terrorism and to fight against national security breaches.
- This helps to take preventive action against hackers.
- This helps to build a system that prevents any kinds of penetration by hackers.
- This offers security to banking and financial establishments.
- This helps to identify and close the open holes in a computer system or network.

Disadvantages of Ethical Hacking :

Following are the disadvantages of Ethical Hacking as follows.

- This may corrupt the files or data of an organization.
- They might use information gained for malicious use. Subsequently, trustful programmers are expected to have achievement in this framework.
- By hiring such professionals will increase costs to the company.
- This technique can harm someone’s privacy.
- This system is illegal.

Submitted By :

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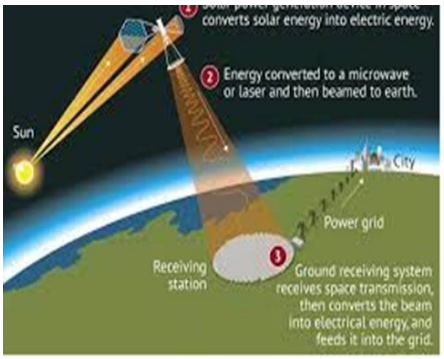
SPACE BASED SOLAR POWER

Introduction:

To satisfy the increasing demand for power and reducing CO2 emission, the future generation system must meet the demand, reliability, efficiency and sustainability. This has increased the generation of power by using solar, wind, tidal, and many more. A wireless power transmission using microwave is a system which comprises satellite based solar power system (SPS), microwave generator, microwave transmitter (magnetron) and microwave receiver (retina). The DC power received on earth is converted into AC for various useful purposes. This paper gives a comprehensive study of various components of satellite based SPS and projects this technology as a vital source

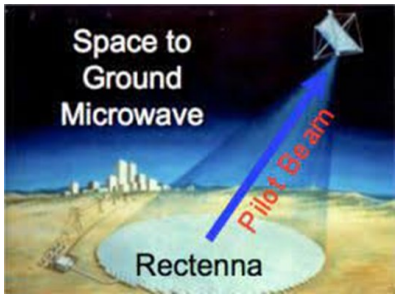


of power generation in future. Wireless power transmission is also be done by mutual induction which provides various charging facility.

Potential advantages of collecting solar energy in space include a higher collection rate and a longer collection period due to the lack of a diffusing atmosphere, and the possibility of placing a solar collector in an orbiting location where there is no night. A considerable fraction of incoming solar energy (55–60%) is lost on its way through the Earth's atmosphere by the effects of reflection and absorption. Space-based solar power systems convert sunlight to microwave outside the atmosphere, avoiding these losses and the downtime due to the earth's rotation, but at great cost due to the expense of launching material into orbit. SBSP is considered a form of sustainable or green energy, renewable energy, and is occasionally considered among climate engineering proposals. It is attractive to those seeking large-scale solutions to anthropogenic climate change or fossil fuel depletion.

Various SBSP proposals have been researched since the early 1970s,but none are economically viable with present-day space launch infrastructure. Some technologists speculate that this may change in the distant future if an off-world industrial base were to be developed that could manufacture solar power satellites out of asteroids or lunar material, or if radical new space launch technologies other than rocketry should become available in the future.

Besides the cost of implementing such a system, SBSP also introduces several technological hurdles, including the problem of transmitting energy from orbit to Earth's surface for use. Since wires extending



from Earth's surface to an orbiting satellite are neither practical nor feasible with current technology, SBSP designs generally include the use of some manner of wireless power transmission with its concomitant conversion inefficiencies, as well as land use concerns for the necessary antenna stations to receive the energy at Earth's surface.

The collecting satellite would convert solar energy into electrical energy on board, powering a microwave transmitteror l aser emitter, and transmit this energy to a collector (or microwave rectenna) on Earth's surface. Contrary to appearances of SBSP in popular novels and video games, most designs propose beam energy densities that are not harmful if human beings were to be inadvertently exposed, such as if a transmitting satellite's beam were to wander off-course. But the vast size of the receiving antennas that would be necessary would still require large blocks of land near the end users to be procured and dedicated to this purpose. The service life of space-based collectors in the face of challenges from long-term exposure to the space environment, including degradation from radiation and micrometeoroid damage, could also become a concern for SBSP.

SOME COUNTRIES SHOWING INTEREST ON SBSP

In 2008, Japan passed its Basic Space Law which established space solar power as a national goal and JAXA has a roadmap to commercial SBSP.

In 2015, the China Academy for Space Technology (CAST) showcased their roadmap at the International Space Development Conference. In February 2019.

Submitted By :
Subramanyam Aadiveni
202G1A05C1

The Brain's Magical Future

As the days are passing by the new technology's are developing across over the world they are Cloud computing, Artificial intelligence, Cyber security, Big data analytics, NEURALINK, edge computing, black chain etc. Artificial intelligence becoming a smarter than humans if it continue with the same flow our future will be unpredictable.

AI has increased insecurity among humans that it can leave us of no use, and we need to think that to make our future secured among robots. To mix both the intelligences and achieve this we can use NEURALINK Technology.

NEURALINK

It is a device, specifically a Brain machine interface (BMI)

NEURALINK USES C++ python as the main programming languages.

NEUERALINK is the future of Technology humans can possibly use it to operate machines with their brain. It is a gadget that will be surgically inserted into the brain using robotics by neurosurgeons. A chipset called the link is implanted in the skull. Chip gets charged wirelessly through the skin.

The design has been tested on at least 19 different animals with robot with around an 87% success rate according to the venture's presentation last year . We are so well connected with our phones and computers that losing a phone feels like losing a limb.

Of course our future will going to be weird

NEURALINK can also be used as a connection between the human beings and technology. People with paralysis can easily operate their phones and computer directly with their brain.The main purpose of this implantation is to help people , to communicate through text or voice messages it can also be utilised to draw pictures and do other activities.

Impact could solve ailments such as memory loss, hearing loss, depression etc. It controls human emotions , we can also watch brain's function in our mobile phones through the Bluetooth connection.

Looks amazing you can store your memories as a backup and restore the memories.

ADVANTAGES:

- We can also communicate with robotics.
- There is no need to study anything we can download any skill easily.
- Suppose if you want to become a doctor or Engineer you will become, without studying.
- It could help people who are paralysed with spinal or brain injuries, by giving the ability to control computerised devices with their minds
- We can remove the chip without risk

DISADVANTAGES:

- It makes people become lazy.
- No differences between talented one's and normal one
- The main concern for NEURALINK is chip's vulnerability to hacks and malicious attacks. This particular problem will be a massive cause of concern for its users and the company because of digital death.
- The main aim of NEURALINK Technology is to make our future secure from artificial intelligence.

Submitted By :

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Tyre Pressure Monitoring System(TPMS)

Average 738 motor vehicle traffic fatalities were caused per in *India*.*

Why?

Due to unsafe levels of tyre pressures.

IOT (internet of things)now eliminating the need for drivers to manually check tyre pressure with TPMS.

What is TPMS?

Tyre Pressure Monitoring System (TPMS)

TPMS uses **IOT**-enabled wireless sensors to constantly track tyre pressure.

The moment the tyre pressure reaches unsafe levels *it alerts the driver through a text message*.

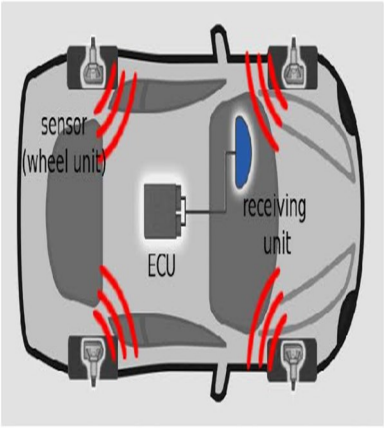
A **tire-pressure monitoring system** (**TPMS**) is an electronic system designed to monitor the air pressure inside the pneumatic tires on various types of vehicle.

A TPMS reports real-time tire-pressure information to the driver of the vehicle, either via a gauge, a pictogram display, or a simple low-pressure warning light.

TPMScan be divided into two different types – direct (dTPMS) and indirect (iTPMS).

TPMS are provided both at an OEM (factory) level as well as an aftermarket solution.

- The goal of a TPMS is avoiding traffic accidents, poor fuel economy, and increased tire wear due to underinflated tires through early recognition of a hazardous state of the tires.
- This functionality first appeared in luxury vehicles in Europe in the 1980s, while mass-market adoption followed the USA passing the 2000 TREAD Act after the Firestone and Ford tire controversy.
- Mandates for TPMS technology in new cars have continued to proliferate in the 21st century in Russia, the EU, Japan, South Korea and many other Asian countries.
- From November 2014 TPMS was mandatory for new vehicles in the European Union.
- In a survey carried out between November 2016 and August 2017, 54% of passenger cars in Sweden, Germany, and Spain were found not to have TPMS, a figure believed to be an underestimate.
- Valve dTPMSes, which require a smartphone and an app, are also available for bicycles.



We mainly use direct TPMS in our vehicles

The direct TPMS utilizes the pressure monitoring sensors with each tire to monitor a certain pressure level. The sensors in direct tire monitors may provide tire temperature readings, and they deliver all the data to the centralized control module to be analyzed and interpreted. In case, the tire pressure is lower than it should be, then data will be directly transmitted to the dashboard where indicator light reacts. The complete information is transmitted wirelessly.

Advantages of Direct TPMS

- Sends exact tire pressure reading from inside the tire
- Simple and easy resynchronization after tire rotations or replacements
- Batteries inside the sensors have a long life that can last for a decade
- Not prone to inaccuracies due to tire rotations or tire replacements
- May be used in the spare tire of your vehicle.

Disadvantages of Direct TPMS

- Can be expensive
- Though easy resynchronization, may need costly tools
- In case the battery is drained, the whole sensor needs to be changed.
- Sensors are susceptible to damage during mounting or demounting

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ABOUT THE DEPARTMENT

Computer Science and Engineering is at the core of the information age. To prepare our students for the tremendous opportunities in the field, the CSE Department is strongly committed to excellence in both education and research. Our majors are designed to provide a strong foundation in the core areas of Computer Science and Engineering.

Our majors are designed to provide a strong foundation in the core areas of Computer Science and Engineering. Our vibrant graduate programs prepare students for positions in industry and academia. Since its inception, the department has always been recognized for excellence in teaching. The Department provides an outstanding teaching environment complemented by superior teaching for its students to flourish in. Graduates from the department are recruited by both academia and industry.

The Department of Computer Science and Engineering with its cohesive team of faculty members offers a sound program at the UG as well as the PG levels. The curriculum is a blend of the conventional and the radical. It is updated regularly to keep up with the growing demands and the changing trends of the software industry and research laboratories.

College Code : ALTS

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