**Title: Most Researched Topics in Computer Science**

**Topic:**

* **Data Mining**
* **Machine Learning**
* **Artificial Intelligence**
* **Internet of Things (IoT)**
* **Big Data**
* **Cloud Computing**
* **Data Warehousing**
* **Semantic Web**
* **MANET**
* **Image Processing**
* **Bioinformatics**
* **Quantum Computing**

**Data Mining:**

Data Mining is the process of identifying and establishing a relationship between large datasets for finding a solution to a problem through analysis of data. There are various tools and techniques in Data Mining which gives enterprises and organizations the ability to predict futuristic trends. [Data Mining](https://www.techsparks.co.in/data-mining-its-process-and-techniques/) finds its application in various areas of research, statistics, genetics, and marketing. Following are the main techniques used in the process of Data Mining:

* Decision Trees
* Genetic Algorithm
* Induction method
* Artificial Neural Network
* Association
* Clustering

Below is the list of few latest and trending research topic in data mining:

* Performance enhancement of DBSCAN density based clustering algorithm in data mining
* The classification scheme for sentiment analysis of twitter data
* To increase accuracy of min-max k-mean clustering in Data mining
* To evaluate and improve apriori algorithm to reduce execution time for association rule generation
* The classification scheme for credit card fraud detection in Data mining
* To propose novel technique for the crime rate prediction in Data Mining
* To evaluate and propose heart disease prediction scheme in Data Mining
* Software defect prediction analysis using machine learning algorithms
* A new data clustering approach for data mining in large databases
* The diabetes prediction technique for Data mining using classification
* Novel Algorithm for the network traffic classification in Data Mining

**Machine Learning**

Machine Learning (ML) is an application of Artificial Intelligence (AI) that provides systems the ability to automatically learn and improve from experience without being explicitly programmed. This course is designed to equip you with knowledge, skills and implementation experience of Machine Learning. It is also a relatively new concept in the field of computer science and is a technique of guiding computers to act in a certain way without programming. It makes use of certain complex algorithms to receive an input and predict an output for the same. There are three types of learning;

* Supervised learning
* Unsupervised learning
* Reinforcement learning

[Machine Learning](https://www.techsparks.co.in/hot-topic-for-project-and-thesis-machine-learning/) is closely related to statistics. If you are good at statistics then you should this topic

**Artificial Intelligence**

Artificial Intelligence is the intelligence shown by machines and it deals with the study and creation of intelligent systems that can think and act like human beings. In [Artificial Intelligence](https://www.techsparks.co.in/artificial-intelligence-as-an-m-tech-thesis-topic-for-cse/), intelligent agents are studied that can perceive its environment and take actions according to its surrounding environment.

**Goals of Artificial Intelligence**

Following are the main goals of Artificial Intelligence:

* Creation of expert systems
* Implementation of human intelligence in machines
* Problem-solving through reasoning

**Application of Artificial Intelligence**

Following are the main applications of Artificial Intelligence:

* Expert Systems
* Natural Language Processing
* Artificial Neural Networks
* Robotics
* Fuzzy Logic Systems

**Strong AI –**It is a type of artificial intelligence system with human thinking capabilities and can find a solution to an unfamiliar task.

**Weak AI –**It is a type of artificial intelligence system specifically designed for a particular task. Apple’s Siri is an example of Weak AI.

Turing Test is used to check whether a system is intelligent or not. Machine Learning is a part of Artificial Intelligence. Following are the types of agents in Artificial Intelligence systems:

* Model-Based Reflex Agents
* Goal-Based Agents
* Utility-Based Agents
* Simple Reflex Agents

**Natural Language Processing –**It is a method to communicate with the intelligent systems using human language. It is required to make intelligent systems work according to your instructions. There are two processes under Natural Language Processing – Natural Language Understanding, Natural Language Generation.

Natural Language Understanding involves creating useful representations from the natural language. Natural Language Generation involves steps like Lexical Analysis, Syntactic Analysis, Semantic Analysis, Integration and Pragmatic Analysis to generate meaningful information.

**Internet of Things (IoT)**

[Internet of Things (IOT)](https://www.techsparks.co.in/thesis-in-internet-of-things/) is a concept of interconnection of various devices, a vehicle to the internet. IOT make use of actuators and sensors for transferring data to and from the devices. This technology is developed for better efficiency and accuracy apart from minimizing human interaction with the devices. The example for this is home heating in some countries when the temperature drops done through motion sensors which automatically detect the weather conditions. Another example for this is the traffic lights which changes its colors depending upon the traffic. Following are the application areas of Internet of Things (IOT):

* Home Automation
* Healthcare
* Agriculture
* Transportation
* Manufacturing
* Environment

Below is the list of few latest and trending research topic in data mining:

* The secure and energy efficient data routing in the IOT based networks
* The secure channel establishment algorithm for the isolation of misdirection attack in the IOT
* The clock synchronization of IOT devices of energy efficient data communication in IOT
* The adaptive learning scheme to increase fault tolerance of IOT
* Mobility aware energy efficient routing protocol for Internet of Things
* To propose energy efficient multicasting routing protocol for Internet of Things
* The novel scheme to maintain quality of service in internet of Things
* Link reliable and trust aware RPL routing protocol for Internet of Things
* The energy efficient cluster based routing in Internet of Things
* Optimizing Multipath Routing With Guaranteed Fault Tolerance in Internet of Things

Many people are not aware of this concept so you can choose for your project work and learn something new.

**Big Data**

Big Data is a term to denote the large volume of data which is complex to handle. The data may be structured or unstructured. Structured data is an organized data while unstructured data is an unorganized data. [Big data](https://www.techsparks.co.in/thesis-topics-in-big-data-and-hadoop/) can be examined for the intuition that can give way to better decisions and schematic business moves. The definition of big data is termed in terms of three Vs. These vs are:

* Volume: Volume defines large volume of data from different sources
* Velocity: It refers to the speed with which the data is generated
* Variety: It refers to the varied amount of data both structured and unstructured.

Application areas:

* Government
* Healthcare
* Education
* Finance
* Manufacturing
* Media
* Sports

**Cloud Computing**

Cloud Computing is a comparatively new technology. It is an internet-based service that creates a shared pool of resources for consumers. There are three service models of [cloud computing](https://www.techsparks.co.in/tools-and-technologies/cloud-computing/) namely:

* Software as a Service(SaaS)
* Platform as a Service(PaaS)
* Infrastructure as a Service(IaaS)
* Characteristics of cloud computing are:
* On-demand self-service
* Broad network access
* Shared pool of resources
* Scalability
* Measured service

Below is the list of few latest and trending research topic in cloud computing:

* To isolate the virtual side channel attack in cloud computing
* Enhancement in homomorphic encryption for key management and key sharing
* To overcome load balancing problem using weight based scheme in cloud computing
* To apply watermarking technique in cloud computing to enhance cloud data security
* To propose improvement green cloud computing to reduce fault in the network
* To apply stenography technique in cloud computing to enhance cloud data security
* To detect and isolate Zombie attack in cloud computing

**Data Warehousing**

Data Warehousing is the process of analyzing data for business purposes. Data warehouse store integrated data from multiple sources at a single place which can later be retrieved for making reports. The data warehouse in simple terms is a type of database different and kept isolated from organization’s run-time database. The data in the warehouse is historical data which is helpful in understanding business goals and make decisions for future prospects. It is a relatively new concept and have high growth in future. Data Warehouse provides Online Analytical Processing (OLAP) tools for the systematic and effective study of data in a multidimensional view. Data Warehouse finds its application in the following areas:

* Financial Sector
* Banking Sector
* Retail Services
* Consumer goods
* Manufacturing

So start working on it if you have knowledge of database and data modeling.

**Semantic Web**

Semantic Web is also referred to as Web 3.0 and is the next big thing in the field of communication. It is standardized by World Wide Web Consortium(W3C) to promote common data formats and exchange protocols over the web. It is machine-readable information based and is built on XML technology. It is an extension to Web 2.0. In the semantic web, the information is well defined to enable better cooperation between the computers and the people. In the semantic web, the data is interlinked for better understanding. It is different from traditional data sharing technologies.

**MANET**

MANET stands for mobile ad hoc network. It is an infrastructure-less network with mobile devices connected wirelessly and is self-configuring. It can change locations independently and can link to other devices through a wireless connection. Following are the various types of [MANETS](https://www.techsparks.co.in/tools-and-technologies/manet/):

* Vehicular ad hoc network(VANET)
* Smartphone ad-hoc network(SPANET)
* Internet-based mobile ad hoc network (MANET)

You can use various simulation tools to study the functionality and working of MANET like OPNET, [NS2](https://www.techsparks.co.in/tools-and-technologies/ns2/), NETSIM, NS3 etc.

In MANET there is no need of central hub to receive and send messages. Instead, the nodes directly send packets to each other.

MANET finds its applications in the following areas:

* Environment sensors
* Healthcare
* Vehicular ad hoc communication
* Road Safety
* Home

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**Image Processing**

Image Processing is another field in Computer Science and a popular topic for a thesis in Computer Science. There are two types of image processing – Analog and Digital Image Processing. Digital Image Processing is the process of performing operations on digital images using computer-based algorithms to alter its features for enhancement or for other effects. Through Image Processing, essential information can be extracted from digital images. It is an important area of research in computer science. The techniques involved in image processing include transformation, classification, pattern recognition, filtering, image restoration and various other processes and techniques.

**Main purpose of Image Processing**

Following are the main purposes of [image processing](https://www.techsparks.co.in/thesis-topics-in-digital-image-processing/):

* Visualization
* Image Restoration
* Image Retrieval
* Pattern Measurement
* Image Recognition

**Applications of Image Processing**

Following are the main applications of Image Processing:

* UV Imaging, Gamma Ray Imaging and CT scan in medical field
* Transmission and encoding
* Robot Vision
* Color Processing
* Pattern Recognition
* Video Processing

Below is the list of few latest and trending research topic in cloud computing:

* To propose classification technique for plant disease detection in image processing
* The hybrid bio-inspired scheme for edge detection in image processing
* The HMM classification scheme for the cancer detection in image processing
* To propose efficient scheme for digital watermarking of images in image processing
* The propose block wise image compression scheme in image processing
* To propose and evaluate filter based on internal and external features of an image for image de noising
* To improve local mean filtering scheme for de noising of MRI images
* To propose image encryption base d on textural feature analysis and chaos method
* The classification scheme for the face spoof detection in image processing
* The automated scheme for the number plate detection in image processing

**Bioinformatics**

Bioinformatics is a field that uses various computational methods and software tools to analyze the biological data. In simple words, bioinformatics is the field that uses computer programming for biological studies. It is the current topic of research in computer science and is also a good topic of choice for the thesis. This field is a combination of computer science, biology, statistics, and mathematics. It uses image and signal processing techniques to extract useful information from a large amount of data. Following are the main applications of bioinformatics:

* It helps in observing mutations in the field of genetics
* It plays an important role in text mining and organization of biological data
* It helps to study the various aspects of genes like protein expression and regulation
* Genetic data can be compared using bioinformatics which will help in understanding molecular biology
* Simulation and modeling of DNA, RNA, and proteins can be done using bioinformatics tools

**Quantum Computing**

Quantum Computing is a computing technique in which computers known as quantum computers use the laws of quantum mechanics for processing information. Quantum Computers are different from digital electronic computers in the sense that these computers use quantum bits known as qubits for processing. A lot of experiments are being conducted to build a powerful quantum computer. Once developed, these computers will be able to solve complex computational problems which cannot be solved by classical computers. Quantum is the current and the latest topic for research and thesis in computer science.

Quantum Computers work on quantum algorithms like Simon’s algorithm to solve problems. Quantum Computing finds its application in the following areas:

* Medicines
* Logistics
* Finance
* Artificial Intelligence

The list is incomplete as there are a number of topics to choose from. But these are the trending fields these days. Whether you have any presentation, thesis project or a seminar you can choose any topic from these and prepare a good report.