



COMPUTER SOCIETY OF INDIA

TIRUCHIRAPPALLI CHAPTER

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APR - JUN, 2019

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CHAIRMAN'S DESK



Dear Members,

Warm & Best Greetings to all.

Very happy to meet all of you through our CSI Tiruchirappalli E Newsletter.

It is a great pleasure for me to appreciate that the editorial team of CSI - Tiruchirappalli Chapter in bringing out the first issue of the Newsletter "CASCADE" for this financial year 2019-2020 by taking lot of initiatives.

From April 2019, so far we have conducted & covered the following five Lecture programmes. For the first Quarter, we organised events in association with The Institution of Engineers, Tiruchirappalli Local Centre (IEI TLC), MAM College of Engineering (MAMCE), Tiruchirappalli

Lecture programme with IEI evoked very good response from the participants. Speakers from Saranathan College of Engineering & NIT Trichy delivered the lectures.

Mr. Manoharan of BSNL delivered the theme lecture on World Communications day. Thanks to our past Chairman Dr Ravimaran, through MAMCE, we have organised an orientation programme for placement and a workshop on Cloud Computing using Android Applications.

We are planning to cover many emerging CS & IT Topics in the forthcoming months. I request all the members to attend the forth coming technical programmes & get benefitted. Our CSI Tiruchirappalli Chapter is one of the active chapters. I request all the members to participate & disseminate the same to all the relevant institutions & get benefitted. I request all our members to motivate your friends & Colleagues to attend our technical programmes.

I request all our members to motivate new members to join our CSI to increase our strength and to establish student chapters at various colleges.

We solicit your support to make our Chapter to be the best to disseminate the Computer Science and Information Technology to this part of our country.

With Best Wishes,

Er. R. Selvaraj
Chairman CSI Tiruchirappalli



EDITORIAL

Dear Readers,

CSI Tiruchirappalli chapter team has conducted many interesting free lectures jointly with IEI-TLC namely, Machine learning & its applications, World Tele-Communications Information society day on 14th May 2019. World Tele-Communication session is notable, since an efficient tele-communication network is the foundation upon which an information society is built.

Also, For the benefit of student community, lecture programmes on Data Structures, workshop on cloud computing using Android applications were conducted. Notably, MAMCE-Trichy has organized Orientation programme for placement, which has provided great opportunity for students to leverage from their career point of view.

Hope, these programmes have helped students to stay in tune with the current trends.

Way ahead, Wishing CSI Trichy to organize more events in the forthcoming period.

With Regards

**Editorial Team
CSI Tiruchirappalli Chapter**

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VENUE:

- ❖ IEI-TLC-Institute of Engineers Building, Tiruchirappalli Local Centre. (Opposite to Bldg.79, BHEL Tiruchirappalli)
- ❖ MAMCE-MAM College of Engineering, Siruganur, Tiruchirappalli.
- ❖ KRCE-K Ramakrishna College of Engineering, Tiruchirappalli.

LECTURES

Machine Learning and its Applications



On 9th April 2019, the centre organised a free lecture programme on “Machine Learning and its Applications “. Machine learning is a sub domain of artificial intelligence (AI). Machine learning is a field within the computer science domain, it differs from traditional programming approach.

Er R Rengaraj, Asst. Professor Department of IT, Saranathan college of Engineering Tiruchirappalli delivering the Lecture



Er. D Senthil Kumar, Secretary, CSI handing over the Gift to the speaker Er R Rengaraj, Asst. Professor Department of IT, Saranathan college of Engineering Tiruchirappalli

World Telecommunication and Information Society



On 14th May 2019, the centre organised a free lecture programme on “World Telecommunication and Information Society”. The purpose of World Telecommunication and Information Society Day (WTISD) is to help raise awareness of the possibilities that the use of Internet and other information and communication technologies (ICT) can bring to societies and economies.

Er P Manoharan, Deputy General Manager (CFAI) BSNL Tiruchirappalli delivering the Lecture



CSI Trichy Nomination Committee MC Member Er S.Lakshmanan is handing over the Gift Cover to the Speaker Er P.Manoharan

Data Structures



On 11th June 2019, the centre organised a free lecture programme on “Data Structures”. Data structure is an organization, management and storage of data which enables efficient access and modification.

Dr. M. Sridevi, Assistant professor, Dept. of Computer Science and Engineering, NIT, Trichy delivering the Lecture



Er S.Lakshmanan, CSI Trichy Nomination Committee MC Member introduced the speaker to the audience.



Er. D Senthil Kumar, Secretary, CSI delivered Vote of Thanks at the end of session

Orientation Program for Placement

The MAMCE in association with the chapter organised a four day programme on “ORIENTATION ON HOW TO PREPARE FOR PLACEMENT” was conducted. On 19th June 2019, Mr. Siva Kumar, Trichy handled the morning session and on the Second day, final year students attended the “TRAINING DEMO (SPRUCE)” followed by an Online Assessment” programme in the morning Session. 21-06-19 the students attended a programme on “ORIENTATION ON LIVING SKILLS “by Mr. Prasanna Balaji, Physical Director, National College and on the last day a programme on “Orientation on Entrepreneurship” was conducted by Mrs. NAVAJOTHI, Centre Head, Academy, Trichy. On all the days, in the afternoon session events on Aptitude, and Communication along with Technical Events were conducted.

Workshop on Cloud Computing Using Android Application

A One Day Workshop was organised by the Department of computer science & Engineering of MAMCE and CSI Tiruchirappalli chapter on” Cloud computing using android application” at Torvalds Lab. The workshop was organized for the III Year CSE STUDENTS total of around 40 students. The session was headed by Prof. K. Ilango, Assistant Professor (CSE) & Mr. Srinivasan, Technical Head, Gateway Finishing School, Annamalai Nagar, Trichy on 29th June 2019.





K RAMAKRISHNAN COLLEGE OF ENGINEERING, SAMAYAPURAM, TRICHY AUTONOMOUS INSTITUTION

(ISO 9001-2015, Accredited with A grade by NAAC)

CSI STUDENT CHAPTER INAUGURATION

6th March 2019

**K Ramakrishnan College of Engineering, Samayapuram, Trichy
(Region-VII)**

K Ramakrishnan College of Engineering, Samayapuram, Trichy (Region-VII)

CSI student branch was inaugurated on 6th March 2019 at K Ramakrishnan College of Engineering, Samayapuram, Trichy. Starting with the lighting lamp and devotional song. Mr R Selvaraj, Sr Deputy General Manager (Rtd.), BHEL, Tiruchirapalli was the Chief Guest. The guest was welcomed by Dr. D Srinivasan, Principal, K Ramakrishnan College of Engineering. The chief guest presented the cash prize to the winners of various events organized by the student branch followed by the inauguration. The CSI id cards were also distributed to the student members. The event was witnessed by around 400 student members, CSE faculty and students. 306 students were become a member of CSI. Mr. R. Selvaraj gave the inaugural keynote and mentioned the importance of CSI is playing a major role in IT policy framework. He has also encouraged the professionals by way of organizing major events. The vote of thanks was offered by the CSI student coordinator of the department.



TECHNICAL ARTICLES

Machine Learning and its Applications

ER R RENGARAJ

Saranathan College of Engineering

Introduction:

- ❖ Machine learning is a sub domain of artificial intelligence (AI). Machine learning is a field within the computer science domain, it differs from traditional programming approach.
- ❖ In traditional approach the developer must explicitly program instructions used by computers to solve problem.

Machine Learning Methods:

ARTIFICIAL INTELLIGENCE	MACHINE LEARNING
Artificial intelligence, is acquisition of knowledge intelligence and defined as an ability to acquire and apply knowledge.	Machine Learning is defined as the acquisition of knowledge or skill.
The objective is to increase chance of success and not accuracy.	The objective is to increase accuracy, but it does not care about success
Work as a computer program that does smart work	A simple concept machine takes data and learn from data.
The objective is to simulate natural intelligence to solve complex problem	The objective is to learn from data on certain task to maximize the performance of machine on this task.
Artificial Intelligence is decision making.	Machine Learning allows system to learn new things from data.
Develop a system to mimic human to respond behave in a circumstances.	Creating self-learning algorithms.
Artificial Intelligence will go for finding the optimal solution.	Machine Learning will go for only solution for that whether it is optimal or not.

Supervised Learning

- ❖ These algorithms are trained using labelled data, in different scenarios, as an input where the desired outcome is already known.
- ❖ The learning algorithm will receive a set of input instructions along with the corresponding accurate outcomes. The learning algorithm will
- ❖ Then compare the actual outcome with the accurate outcome and flag an error. This method is commonly used in areas where historical data is used to predict events that are likely to occur in the future.

Unsupervised Learning

- ❖ This method of ML finds its application in domains where data has no historical labels. The main aim here is to analyse the data and identify a pattern and structure within the available data set.
- ❖ For instance, this type of learning identifies customer segments with similar attributes and it can also identify attributes that differentiate customer segments from one another.



Semi-Supervised Learning

- ❖ This is used and applied to the same kind of scenarios where supervised learning is applicable.
- ❖ This technique uses both unlabelled and labelled data for training. Ideally, a small set of labelled data, along with a large volume of unlabelled data is used, as it takes less time, money and efforts to acquire unlabelled data.
- ❖ This type of machine learning is often used with methods, such as regression, classification and prediction.

Reinforcement Learning

- ❖ This is used in navigation, robotics and gaming. These algorithms use trial and error methods.
- ❖ There are three major components in reinforcement learning, the agent, the actions and the environment.
- ❖ The agent is the decision maker, the actions are what an agent does, and the environment is anything that an agent interacts with. The main aim in this kind of learning is to select the actions that maximize the reward, within a specified time.

Applications of Machine Learning

Email Spam and Malware Filtering

- ❖ There are a number of spam filtering approaches available, that email clients use to find spam mails. Machine Learning is used to update continuously these spam filters.
- ❖ Methods such as Rule-based spam filtering, Multi-Layer Perceptron, C 4.5 Decision Tree Induction are some of the spam filtering techniques that are powered by ML.

Traffic Predictions

- ❖ This works using GPS navigation services, our current locations and velocities are being saved in central server for managing traffic.
- ❖ This data is used to build a map of current traffic. The objective is to prevent the traffic and perform congestion analysis, the underlying problem is that there are less number of cars equipped with GPS.
- ❖ Machine learning in such scenarios helps to estimate the regions where congestion can be found on the basis of daily experiences.



Online Fraud Detections

- ❖ Machine learning is used for tracking monetary frauds. For example: PayPal is using ML for protection against money laundering.
- ❖ The company uses a set of tools that helps them to compare millions of transactions taking place and distinguish between legitimate or illegitimate transactions taking place between the sellers and buyers.

Online Customer Support in Consultancy

- ❖ Nowadays many websites offer the option to chat with customer. While they navigate within the site. In most of the cases, we talk to a Chabot.
- ❖ These bots tend to extract information from the website and present it to the customers. Meanwhile, the Chabot's advances with time.
- ❖ They tend to understand the user queries better and serve them with better answers, which is possible due to its machine learning algorithms.



Excerpts from the lecture Delivered on

World Telecommunication and Information Society day

Er P MANOHARAN

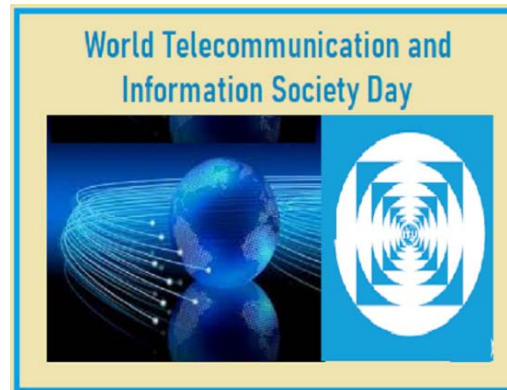
BSNL

- ◆ The purpose of World Telecommunication and Information Society Day (WTISD) is to help raise awareness of the possibilities that the use of Internet and other information and communication technologies (ICT) can bring to societies and economies.
- ◆ The day is celebrated in order to raise awareness of the various advancement in the field of communication technology and how it can be used in the development of society.
- ◆ As all of you know ITU facilitates universal acceptability of international standards and regulations in the field of broadcasting and communications services as well as systems.
- ◆ ITU provides a global forum through which Governments and industry work towards convergence on wide range of issues.



- ◆ ITU is the United Nations specialized agency for information and communication technologies – ICTs. is responsible for issues that concern information and communication technologies.
- ◆ The ITU coordinates the shared global use of the radio spectrum, promotes international cooperation in assigning satellite orbits, works to improve telecommunication infrastructure in the developing world, and assists in the development and coordination of worldwide technical standards.

- ◆ Its membership includes 193 Member States and around 800 public and private sector companies, and academic institutions as well as international and regional telecommunication entities
- ◆ ITU is committed to connecting the entire world's people – wherever they live and whatever their means. Through our work, we protect and support everyone's fundamental right to communicate.



- ◆ This year, ITU marked and celebrated the 50th anniversary of World Telecommunication and Information Society Day which has been celebrated annually since 1969. This year the theme of the celebration was “Bridging Standardization Gap”.



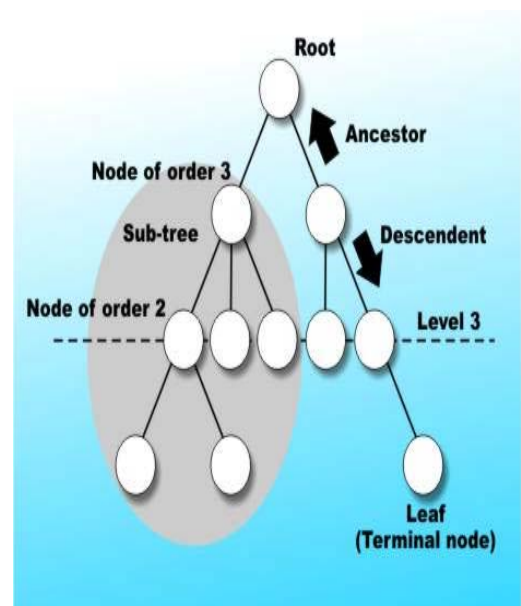
Data Structures

Dr. M. SRIDEVI

NIT Trichy

Data Structures

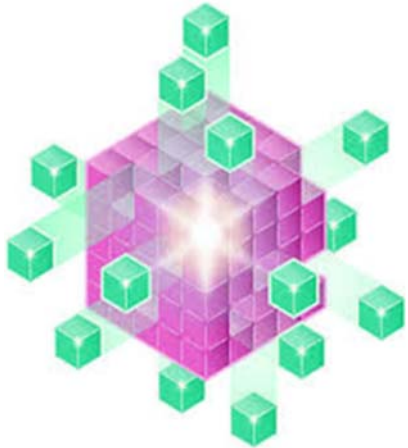
- ✓ Data structure is an organization, management and storage of data which enables efficient access and modification.
- ✓ More precisely, a data structure is a collection of data values, the relationships among them, and the functions or operations that can be applied to the data.
- ✓ The idea is to reduce the space and time complexities of different tasks. General data structure types include the array, the file, the record, the table, the tree, and so on.
- ✓ Any data structure is designed to organize data to suit a specific purpose so that it can be accessed and worked with in appropriate ways.
- ✓ In computer programming, a data structure may be selected or designed to store data for the purpose of working on it with various algorithms.
- ✓ The different types of data structures are suited to different kinds of applications, and some are highly specialized to specific tasks.
- ✓ For example, relational databases commonly use B-tree indexes for data retrieval, while compiler implementations usually use hash tables to look up identifiers, an online dictionary can be structured so that it can retrieve the definition of a word.
- ✓ On the other hand, specialized data structures have been devised to solve complex specific search problems.



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- ✓ On the other hand, specialized data structures have been devised to solve complex specific search problems.
- ✓ Data structure is a specialized format for organizing and storing data. From the data structure point of view, following are some important categories of algorithms
 - Search – Algorithm to search an item in a data structure.
 - Sort – Algorithm to sort items in a certain order.
 - Insert – Algorithm to insert item in a data structure.
 - Update – Algorithm to update an existing item in a data structure.
 - Delete – Algorithm to delete an existing item from a data structure.
- ✓ Data structures are generally based on the ability of a computer to fetch and store data at any place in its memory, specified by a pointer – a bit string, representing a memory address, that can be itself stored in memory and manipulated by the program.
- ✓ Thus, the array and record data structures are based on computing the addresses of data items with arithmetic operations, while the linked data structures are based on storing addresses of data items within the structure itself.
- ✓ A queue is a collection in which the entities in the collection are kept in order and operations are enqueue (addition of entities to the rear position) and dequeue (removal of entities from the front position). The queue is a First-In-First-Out (FIFO) data structure.



- ✓ A linked list (or list) is a linear collection of data elements of any type, called nodes, where each node has itself a value, and points to the next node in the linked list.
- ✓ The principal advantage of a linked list over an array, is that values can always be efficiently inserted and removed without relocating the rest of the list.
- ✓ Certain other operations, such as random access to a certain element, are however slower on lists than on arrays.
- ✓ A record (also called tuple or strut) is an aggregate data structure. A record is a value that contains other values, typically in fixed number and sequence and typically indexed by names. The elements of records are usually called fields or members.
- ✓ A data structure is a container that stores data in a specific layout. This layout allows a data structure to be efficient in some operations and inefficient in others.
- ✓ The goal is to understand data structures so that you can pick the data structure that's most optimal for the problem.



- ✓ A tree is a widely used abstract data type (ADT) that simulates a hierarchical tree structure, with a root value and subtrees of children with a parent node, represented as a set of linked nodes. The tree may be a binary, balanced, complete tree etc.
- ✓ A good algorithm usually comes together with a set of good data structures that allow the algorithm to manipulate the data efficiently.

On behalf of Computer Society of India, Tiruchirappalli Chapter, published by
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