Computer Society of India

Institute Membership No:100859

Dr. SIVANTHI ADITANAR COLLEGE OF ENGINEERING

TIRUCHENDUR

DEPARTMENT OF COMPUTER SCIENCE *& ENGINEERING*

UG & PG

DEAR READER,

IT'S A GREAT PLEASURE TO PRESENT BEFORE YOU THE NEWSLETTER OF COMPUTER SOCIETY OF INDIA STUDENTS' CHAPTER WHICH HELPS THE ENTIRE CSI FRATERNITY TO KNOW THE CSETIVITIES OF THE STUDENTS' CHAPTER FROM TIME TO TIME.

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Computer Society of India Students' Chapter

PATRON & SBC : Dr.G.Wiselin Jiji, Principal

CSI Coordinators: Dr.R.Jensi, ASP/CSE

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Treasurer : Ms.S.Swetha, IV CSE

S.NO	DATE	EVENT	CHIEF GUEST
1.	15.02.2023	Seminar on Classification Algorithm	Mrs.D.Sindhu,AP/CSE
2.	20.02.2023	Optical Illusion Contest	Dr.R.Jensi, ASP/CSE
3.	27.02.2023	C programming contest	Dr.R.Jensi, ASP/CSE
4.	02.03.2023	Banner Design Contest	Dr.R.Jensi, ASP/CSE
5.	03.03.2023	Technical memory hunt contest	Dr.R.Jensi, ASP/CSE

Events

1. **.Seminar on Classification Algorithm** was conducted for UG Students of CSE on 15.02.2023. The session was handled by Mrs.D.Sindhu,AP/CSE**.**
2. **Optical Illusion Contest** was conducted for UG Students of CSE on 20.02.2023.The session was judged by Dr.R.Jensi, ASP/CSE.
3. **C programming contest** was conducted for UG Students of CSE on 27.02.2023.The session was judged by Dr.R.Jensi, ASP/CSE.
4. **Banner Design Contest** was conducted for UG Students of CSE on 02.03.2023.The session was judged by Dr.R.Jensi, ASP/CSE.
5. **Technical memory hunt contest** was conducted for UG Students of CSE on 03.03.2023.The session was judged by Dr.R.Jensi, ASP/CSE.

Innovation at the edge

Submitted By Sornalatha.A III CSE

Artificial Intelligence Everywhere

Even AI or artificial intelligence has been around for a while, but it is only now starting to become mainstream. It is set to play a more significant role in software development in the future. AI can be used in several ways, such as automating routine tasks, identifying patterns, and providing recommendations.

In the upcoming years, AI is projected to become even more prevalent as businesses see the potential benefits of implementing it into their operations. This means that software developers will be able to rely on AI to help with tasks such as code analysis, automated testing, and debugging. Additionally, AI can be used to create intelligent chatbots that can interact with users naturally.

From automating tasks to improving decision-making, AI can help to improve efficiency and create more personalized experiences for customers. This is evident in the fact that Google, Apple, and Microsoft are already using machine learning to improve their software products. As the use of AI becomes even more widespread, it is expected to drive fresh software development trends in 2022.

Reasoning

To reason is to draw inferences appropriate to the situation. Inferences are classified as either deductive or inductive. An example of the former is, “Fred must be in either the museum or the café. He is not in the café; therefore he is in the museum,” and of the latter, “Previous accidents of this sort were caused by instrument failure; therefore this accident was caused by instrument failure.” The most significant difference between these forms of reasoning is that in the deductive case the truth of the premises guarantees the truth of the conclusion, whereas in the inductive case the truth of the premise lends support to the conclusion without giving absolute assurance. Inductive reasoning is common in science, where data are collected and tentative models are developed to describe and predict future behaviour—until the appearance of anomalous data forces the model to be revised. Deductive reasoning is common in mathematics and logic, where elaborate structures of irrefutable theorems are built up from a small set of basic axioms and rules.

There has been considerable success in programming computers to draw inferences. However, true reasoning involves more than just drawing inferences: it involves drawing inferences *relevant* to the solution of the particular task or situation. This is one of the hardest problems confronting AI.

Problem solving

Problem solving, particularly in artificial intelligence, may be characterized as a systematic search through a range of possible actions in order to reach some predefined goal or solution. Problem-solving methods divide into special purpose and general purpose. A special-purpose method is tailor-made for a particular problem and often exploits very specific features of the situation in which the problem is embedded. In contrast, a general-purpose method is applicable to a wide variety of problems. One general-purpose technique used in AI is means-end analysis—a step-by-step, or incremental, reduction of the difference between the current state and the final goal. The program selects actions from a list of means—in the case of a simple robot this might consist of PICKUP, PUTDOWN, MOVEFORWARD, MOVEBACK, MOVELEFT, and MOVERIGHT—until the goal is reached.

Many diverse problems have been solved by artificial intelligence programs. Some examples are finding the winning move (or sequence of moves) in a board game, devising mathematical proofs, and manipulating "virtual objects" in a computer-generated world.

Perception

In perception the environment is scanned by means of various sensory organs, real or artificial, and the scene is decomposed into separate objects in various spatial relationships. Analysis is complicated by the fact that an object may appear different depending on the angle from which it is viewed, the direction and intensity of illumination in the scene, and how much the object contrasts with the surrounding field.

One of the earliest systems to integrate perception and action was FREDDY, a stationary robot with a moving television eye and a pincer hand, constructed at the University of Edinburgh, Scotland, during the period 1966–73 under the direction of Donald Michie. FREDDY was able to recognize a variety of objects and could be instructed to assemble simple artifacts, such as a toy car, from a random heap of components. At present, artificial perception is sufficiently advanced to enable optical sensors to identify individuals and autonomous vehicles to drive at moderate speeds on the open road.

Quantum Computing on the Rise

Submitted By Mano Venkateshwari.R III CSE

Quantum computing is a type of computing where data is processed using quantum bits instead of classical bits. It has the potential to speed up calculations and solve problems that are difficult or impossible for traditional computers to handle.

As quantum computing becomes more sophisticated, it is likely to play a more significant role in software development. This means that software developers will need to learn how to use quantum computers to take advantage of their capabilities.

Already, several companies are investing in quantum computing, and it is expected to become more prevalent in the years to come. Therefore, you need to start learning about quantum computing and its application in software development to stay ahead of the competition.

Now let's understand what exactly **Quantum Superposition** and **Quantum Entanglement** are!

1. **Quantum Superposition:** Qubits can do something really cool, they can be in two states at the same time! It's like having two helpers working on a task instead of just one. It's like a coin, a coin can be either heads or tails but not both at the same time, but a qubit can be both zero and one at the same time. This means quantum computers can do many things at once and work much faster than regular computers. This special ability is called quantum superposition, and it's what makes quantum computers so powerful!

Let's dive a little deeper!

In the context of quantum computing, this means that a qubit can represent multiple values at the same time, rather than just a single value like a classical bit.

A qubit can be described as a two-dimensional vector in a complex Hilbert space, with the two basis states being $|0\rangle$ and $|1\rangle$. A qubit can be in any state that is a linear combination of these two basis states, also known as a superposition state. This can be written as $|\psi\rangle = \alpha|0\rangle + \beta|1\rangle$, where α and β are complex numbers that represent the probability amplitudes of the qubit being in the $|0\rangle$ and $|1\rangle$ states, respectively. The probabilities of measuring the qubit in the $|0\rangle$ and $|1\rangle$ states are given by the squared moduli of the coefficients, $|\alpha|^2$ and $|\beta|^2$, respectively.

A qubit can exist in an infinite number of superpositions of the $|0\rangle$ and $|1\rangle$ states, each corresponding to a different probability distribution. This allows a qubit to perform multiple calculations simultaneously, greatly increasing its processing power. The ability of qubits to exist in multiple states at once enables the execution of quantum algorithms that can solve certain problems exponentially faster than classical algorithms. Eg: In regular computers, a group of 4 bits can

represent 16 different values, but only one at a time. However, in a quantum computer, a group of 4 qubits can represent all 16 combinations simultaneously.

A simple example of quantum superposition is Grover's algorithm which is a quantum search algorithm that can search an unordered database with N entries in √N steps, whereas a classical algorithm would take N steps. Another example is Shor's algorithm which is a quantum algorithm that can factorize a composite number in polynomial time, a problem that is considered to be hard for classical computers. This algorithm has important implications in the field of cryptography, as many encryption methods rely on the difficulty of factoring large numbers.

2. **Quantum Entanglement:** Let's continue the same story from quantum superposition, the tiny helpers called qubits can be in two states at the same time? Well, sometimes those qubits can become special friends and work together even when they are far apart! This is called quantum entanglement.
Imagine you have two toys, a car, and a boat. If you put the car toy in one room and the boat toy in another room, and you make them special friends so that if you change something about one toy, the other toy will change too. Even if you're not looking at one toy, you'll know what's happening with the other toy just by looking at the other one. This is what quantum entanglement is, it's like a secret connection between qubits.

This is really important for quantum computers because it allows them to perform certain calculations much faster than regular computers and to communicate faster too. It's a very special and powerful feature of quantum computers.

Let's dive a little deeper!

In quantum mechanics where the properties of two or more quantum systems become correlated in such a way that the state of one system cannot be described independently of the others, even when the systems are separated by a large distance. In other words, the state of one system is dependent on the state of the other system, regardless of the distance between them.

In the context of quantum computing, entanglement is used to perform certain calculations much faster than classical computers. In a quantum computer, qubits are used to represent the state of the system, and entanglement is used to correlate the state of multiple qubits, enabling them to perform multiple calculations simultaneously.

An example of quantum entanglement is the Bell states, which are maximally entangled states of two qubits. The Bell states are a set of four quantum states that allow for fast and secure communication between two parties. These states are created by applying a specific operation called the Bell-state measurement,

which allows for a fast and secure transfer of quantum information between two parties. Another example is Grover's algorithm which utilizes the properties of entanglement to perform a search operation exponentially faster than any classical algorithm.