DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

TECHNICAL MAGAZINE

TECH SPARK

ACADEMIC YEAR : 2021-22

VOLUME 1 / ISSUE 1
(JAN-JUN)

HALF YEARLY COMPUTER SCIENCE ENGINEERING MAGAZINE

AY: 2021-22   **VOLUME: 1**   **ISSUE: JAN-JUN**

GEETHANJALI INSTITUTE OF SCIENCE AND TECHNOLOGY

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Editorial Message

Well-written technical articles contribute to the total body of knowledge for the engineering community and will potentially help many engineers. Articles do not need to be detailed "academic-level" work. In fact, some of the most popular articles are "down to earth" practical applications of existing or new technology.

Editorial Board

VISION-MISSION

VISION

To evolve as a leading computer science and engineering centre producing competent technocrats to meet the demands of ever-changing industry and society.

MISSION

DM1: Imparting quality education through innovative teaching learning processes

DM2: Motivating students to upgrade their technical expertise by promoting learner centric activities.

DM3: Inculcating ethical values and interpersonal skills in the learners.

DM4: upgrading knowledge in cutting edge technologies keeping pace with industrial standards.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

Graduates of B. Tech in Computer Science and Engineering program shall able to

PEO1: Outperform in professional career or higher learning by upgrading skills in Computer Science and Engineering stream.

PEO2: Competent Provide computing solutions for complex problems to meet industry demands and societal needs.

PEO3: Offer ethical, socially sensitive solutions as professionals and as entrepreneurs in Computer Science and other engineering disciplines.

PEO4: Leverage new computing technologies by engaging themselves in perpetual learning.

HOW DOES THE INTERNET WORK

The INTERNET is a global system of interconnected computer networks. When two or more electronic devices (e.g. computers) are connected so that they can communicate, they become part of a network. The Internet consists of a worldwide interconnection of such networks, belonging to companies, governments, and individuals, allowing all of the devices connected to these networks to communicate with each other.

In order to communicate, computers need to be able to understand each other. On the Internet, communication is possible because all devices use the same "language" or protocol, namely the Internet Protocol (IP), a "single market" with no physical, technical or national barriers. It forms the basis for all other systems of communication on the Internet. Sending any communication over the Internet using the Internet Protocol is quite like sending the pages of a book by post in lots of different envelopes. All of the envelopes use the same sender address and the same destination address Examples of such conventions on top of IP are:

- SMTP for sending emails

- HTTP for accessing websites and

- Bit Torrent for peer-to-peer (P2P) file sharing (a way to exchange data files with large groups of people).

What is an IP Address?

Because the Internet is a global network of computers each computer connected to the Internet must have a unique address. Internet addresses are in the form zzz.zzz.zzz.zzz, where zzz must be a number from $0 - 255$. This address is known as an IP address. So, An IP address is a numerical address that is assigned to every device connected to the Internet. IP addresses may be used to identify an organization or individual that has acquired the services of an Internet Service Provider in order to connect one or more devices to the Internet. On the other hand, a router has only one IP Address irrespective of how many people have connected with this router. So, In this case, we cannot identify the person behind the work.

World Wide Web:

When we type any website address in the browser we use the WWW keyword. Anyone ever thought what this meant for? I think many of us have thought that and many of us knew the answer. But here we are not as intelligent as those who already know the answer. So, let see what it is. WWW or World Wide Web combines text, pictures, and hyperlinks to a hypertext document – a hyperlink points to another document. It Can also contain moving pictures, active programs etc.

Doddi Abishake Reddy(182U1A0520)

HADOOP TECHNOLOGY

Hadoop is an open source framework by Apache Software Foundation and known for writing and running distributed applications that process large amounts of data. It is well suited for voluminous data processing like searching and indexing in the huge data set. Hadoop was created by Doug Cutting, the creator of Apache Lucene, the widely used text search library. Hadoop has its origins in Apache Notch, an open
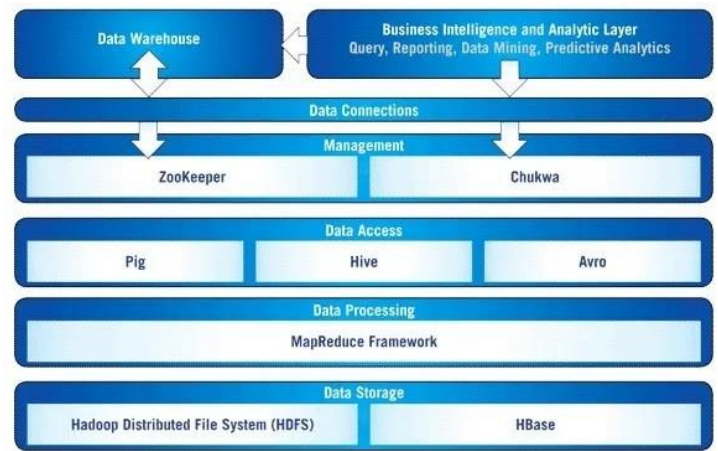
Hadoop Architecture

source web search engine, itself a part of the Lucene project. Hadoop's accessibility and simplicity give it an edge overwriting and running large distributed programs. On the other hand, its robustness and scalability make it suitable for even the most demanding jobs at Amazon and Facebook.

What is Big Data?

We all must agree that we live in the age of data. People go on clicking pictures on their cell phones, text friends, update their Facebook status, leave comments around the web, upload videos, send emails, click on ads, and so forth. It's not easy to measure the total volume of data stored electronically, but an International Data Corporation (IDC) estimate put the size of the "digital universe" at 0.18 zettabytes in 2006 and is forecasting a tenfold growth by 2011 to 1.8 zettabytes. We are not sure about the recent records but we can speculate that there has been another tenfold growth by now. A zettabyte is 10^{21} bytes, or equivalently one million petabytes, or one billion terabytes.

Hadoop includes the Hadoop Distributed File System (HDFS) and MapReduce. It is not possible for storing a large amount of data on a single node, therefore Hadoop uses a new file system called HDFS which split data into many smaller parts and distribute each part redundantly across multiple nodes. MapReduce is a software framework for the analysis and transformation of very large data sets. Hadoop uses MapReduce function for distributed computation.

hen big software vendors like Facebook, IBM, Yahoo were struggling to find a solution to deal with the voluminous data, Hadoop is the only technology which offered a moderate solution. Apache Hadoop has become a necessary tool to tackle big data. As the world is turning digital, we would definitely come across more and more data and need to think of a more simplified solution to handle growing big data.

Gandikota Premkrishna(182U1A0523)

TOP WAYS ARTIFICIAL INTELLIGENCE FUTURE WILL CHANGE THE WORLD

Business Deep Learning

Deep learning is a type of machine learning that is more advanced than traditional machine learning. Machine learning's purpose is to swiftly analyze massive amounts of data. The more data a machine learning system processes, the better it gets. The learning process for AI systems is increasingly sophisticated with deep learning. Neural networks are complicated because they are used to help critical reasoning. As a result, deep learning AI systems can forecast future models rather than merely analyzing current ones. Companies can benefit immensely in the future from this skill since they will be able to fine-tune their business models based on AI forecasts.

Effective Marketing

Companies no longer spend millions of dollars on social media marketing and advertising, partly because they can no longer afford to do so in today's competitive market and, more importantly, because it is no longer necessary. Marketing and advertising are now less expensive than they have ever been because of artificial intelligence. Traditional tactics have become obsolete as the best AI tools for digital marketing have grown increasingly popular. AI-based marketing tools and AI-based automation will eventually take this optimization to another level.

Interaction through Virtual Reality

Virtual reality is without a doubt one of the most divisive parts of artificial intelligence. However, artificial intelligence's future is poised to significantly alter this feature. Virtual reality is already widely regarded as critical for recovering and retaining Alzheimer's patients' memories. Virtual reality's current operation, however, has significant problems that make the concept undesirable to many.

High-Tech Robotics

It has already been seen how far AI has progressed in the development of useful robots. When it comes to building technically complex robotics, however, the possibilities are unlimited. Artificial intelligence-based robots are already widely employed in health, manufacturing, and engineering. Advanced robots, on the other hand, maybe useful for space exploration, deep earth research, and disease control. These robots would need a greater level of intelligence, but with AI progressing at a constant pace, it is achievable.

Pyda Ramyasree(182U1A0582)

HUMANOID ROBOTS

Humanoid may be defined as something that resembles or looks like a human being and has certain human characteristics. In the present era of Technological development and advancements, Humanoid is being implemented in Robotics and these robots are called as "HUMANOID ROBOTS"
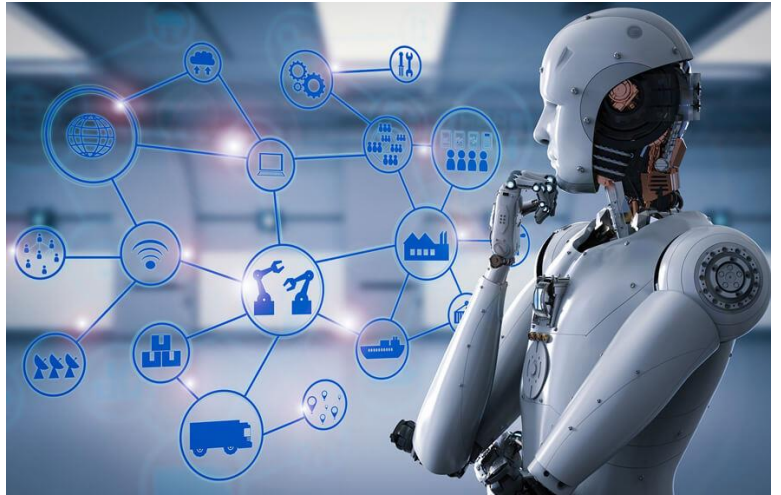
A humanoid robot is a robot which has a similar shape as that of a human body. In general, a humanoid robot has a torso, a head, two arms, and two legs. These robots vary depending upon the material they are made of and the design. Generally, humanoid robots come in three variations small sized humanoids, medium sized humanoids, and large sized Humanoids. Some humanoids may also have a face, eyes, mouth and are categorized as male humanoids and female humanoids. The purpose of such robots may vary depending upon its biomechanics, functional capacity, production cost and complexity involved.

What are Humanoid Robots made of?

Though an extensive research is necessary before building a personal robot with anthropomorphic features that is accessible and appealing to the general user. To make the robot behave like a human being, sensors play a big role. The use of sensors in robotics has taken them to the new heights of creativity. Most importantly, the sensors have increased the performance of robots to a large extent. These sensors allow robots to perform various intellectual functions like a human being does making it unique. The present technology is able to offer many solutions to the different issues that generate regularly in the development of actuators and sensors, which are key factors in the achievement of the final goal in Robotics.

Different types of sensors used in the present day robots are

- Proprioceptive sensors**:** for sensing position, speed, and orientation

- Proximity sensor**:** to detect the presence of nearby objects

- Range sensor**:** to measure distances

- Tilt sensors**:** to measure inclination

- Accelerometers**:** to measure the acceleration

Tanniru Hari Kiranmai(182U1A0599)

SNAKE ROBOT THE FUTURE OF AGILE MOTION

Biological snakes are pervasive across the planet; their diverse locomotion modes and Physiology make them supremely adapted for the wide variety of terrains, environments, and climates that they inhabit. A snake-like device that could slide, glide and slither could open up many applications in exploration, hazardous environments, inspection and medical interventions.
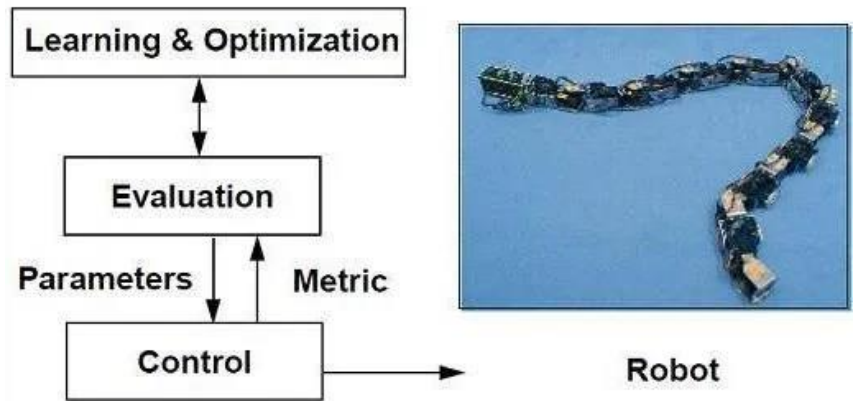
Flowchart for Snake Robot design

One of the fundamental issues is understanding their locomotion. A wheel turns the vehicle moves. A leg pushes the vehicle moves. How a snake moves is not so evident. A worthwhile snake robot has the ability to wriggle into confined areas and traverse terrain that would pose problems for traditional wheeled or legged robots. The design and implementation of a snake robot is the confluence of several technologies: actuation, form and structure, electronics, control, sensing, etcetera.

Advantages of Snake Robots

Stability: Unless a serpentine robot purposefully slithers off a cliff, it can't fall over. In contrast, stability is of great concern to wheeled and legged machines in rough terrain; they can fall over. Terrain contacts in vehicles form a constellation of points on the terrain; if the center of gravity moves beyond the bounds of the convex polygon formed by these points, it tips over. In a serpentine robot, the potential energy remains low in most situations; therefore there are few concerns for stability and no need for the support polygons formed by wheel or leg contact points.

Redundancy: Candidate configurations for serpentine robots may employ many simple motion actuators in sequence. During operation, the loss of short segments would still permit mobility and maneuverability

Disadvantages of Snake Robots

Degrees of Freedom: To subtend the various curves needed for locomotion requires a larger number of actuators than most wheeled or legged vehicles. The number of DOFs in vehicles can range from two up to eighteen and even more for some walkers. A large number of DOFs may introduce reliability problems; numbers of units have a higher chance of having any unit fail.

Chinthala Nandin(192U1A0523)

BENEFITS OF CONTINUOUS TESTING FOR A SOFTWARE DEVELOPMENT

New and emerging technologies like Artificial Intelligence, Block chain, Augmented/Virtual Reality, and IOT are changing the scenario of the software industry in a significant manner. While speed is the key, giving a good user experience is also an utmost important factor for the businesses. Hence, organizations need to check their delivery constantly to ensure giving a seamless experience to the users. Always remember one thing that one small glitch can bring down the reputation and brand image of your organization.
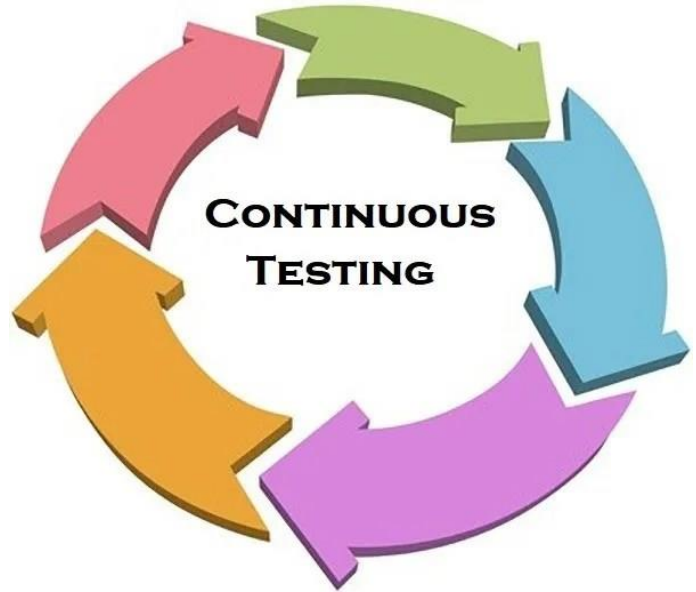
1. Application Bound Risks can be reduced with Continuous Testing:

Faster turnaround time is one of the most important benefits which is expected from the continuous testing, but ensuring a risk-free output is also very important. Whenever a code undergoes changes, it could open the doorway to errors. This can lead to a serious impact on the software and the rectifying process can significantly increase the cost amount and delivery time.

2. Continuous Testing Brings Consistency:

When it comes to keeping the right consistency with the whole testing procedure, the combination of continuous testing with automation could be a very effective measure in this purpose. Continuous testing keeps every system and sub-system on a seamless flow.

3. Fault Isolation can be implemented with Continuous Testing:

Fault Isolation is a dedicated practice of designing a system which ensures a very limited outcome in the occurrence of any type of error. The practice of limiting the scope of problems eliminates the chance for damage and establishes an easy to maintain the system.

4. Faster Mean Time To Resolution (MTTR):

The MTTR measures the maintenance time for repairing a feature. It sets an average time to fix a feature which is broken or malfunctioning. It tracks the amount of time the required amount of time spent to recover from any kind of failure.

5. Faster Releases:

Continuous Testing and Integration ensure faster, smooth and frequent releases. One of the significant advantages of automating a test is that it ensures the code testing is done in a rigorous and constant manner so that the development team can deliver the product at a faster turnaround speed.
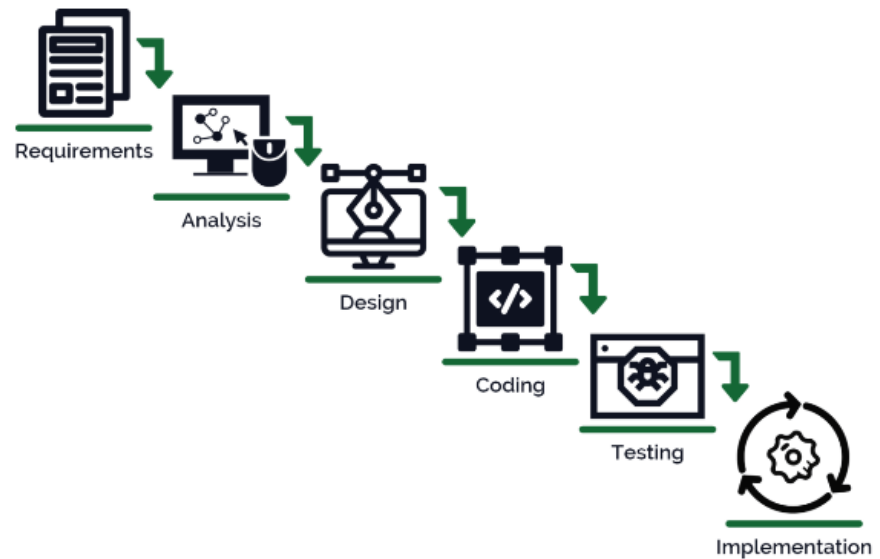
6. Improves the Test Coverage:

What could be a better way to ensure more test coverage than implementing Continuous Testing? The answer is " Nothing." The reason is pretty obvious – the tests are automated and implemented right from the beginning of the development process. Maximum Test Coverage is one of the most effective ways of ensuring product delivery in a seamless manner.

Racharla Harsha Vardhan(192U1A0590)

THREE-LEVEL PASSWORD SYSTEM USING PYTHON

Nowadays, we have known that computer security mostly depends on passwords to verify and authenticate users. There are many authentication schemes proposed and most of them still have weaknesses. Some of them are based on the physical and behavioural properties of the user such as voice recognition, and some others are based on knowledge of the user such as textual and graphical passwords. However, these schemes are still not secure enough and allow attackers to steal the data easily.

Our python-based Three-Level Password System is designed to overcome the problem. It is an authentication system that only allows users to access the system if they have entered the correct password. The project includes three levels of user authentication – Textual, Image and Graphical. That way there would be negligible chances of the bot or anyone else cracking the passwords, even if they crack the first or second level it would be impossible to crack the third.

Our python-based consists of 1 module - User. The user can register by adding and entering a conventional alphanumeric password. For second-level authentication, the user can set a password based on color combinations through RGB button combinations. To set the third-level authentication, the user will need to upload their desired image into the system.

To log in, the user will need to enter their email and password. Then they would need to choose the RGB combination password and at the last, they would need to choose the correct pattern or combination of the image, from the top-left arrangement, from the jumbled puzzle.

In this project, the front end involves Html, CSS and JavaScript and the back end involves Python. The database: used is MySQL Database and Django is used for the framework.

Shaik Meer Khasif(192U1A05A1)

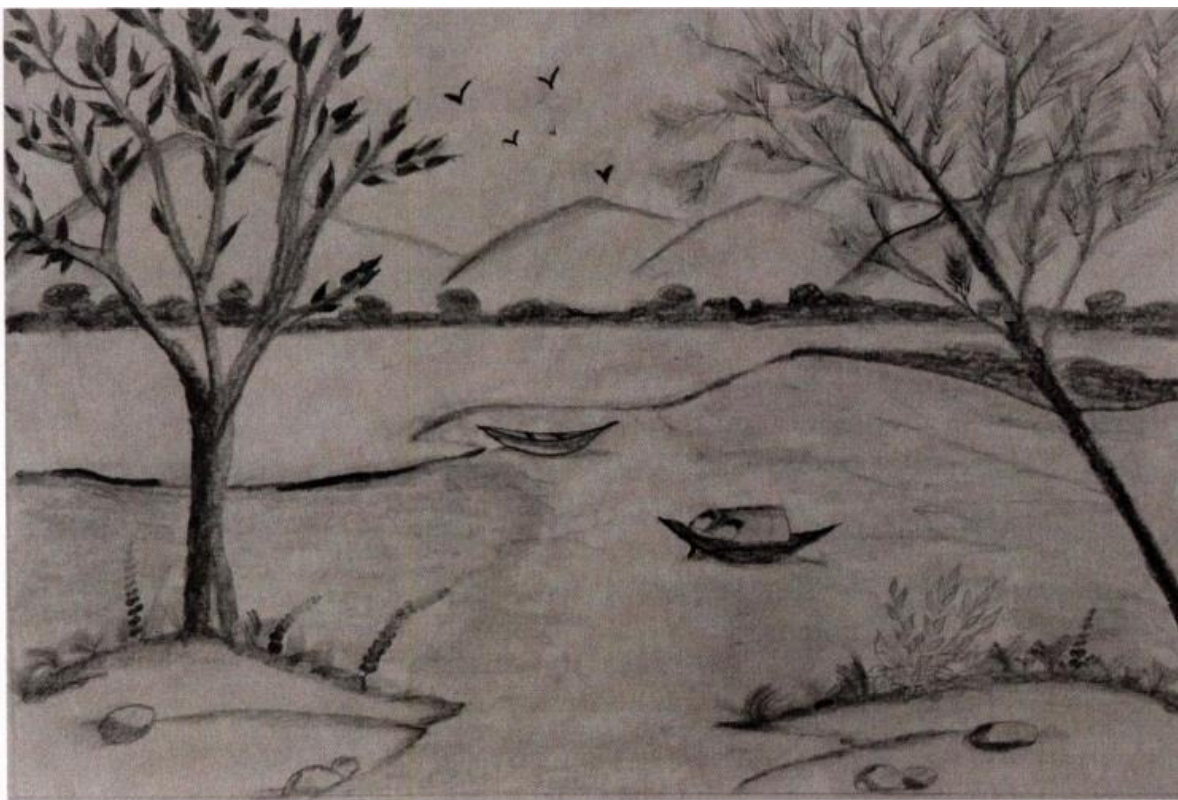# Gratuity Savvy

-"Nirmaan Kala"

-M.V.Pardhasaradhi(II CSE-A)
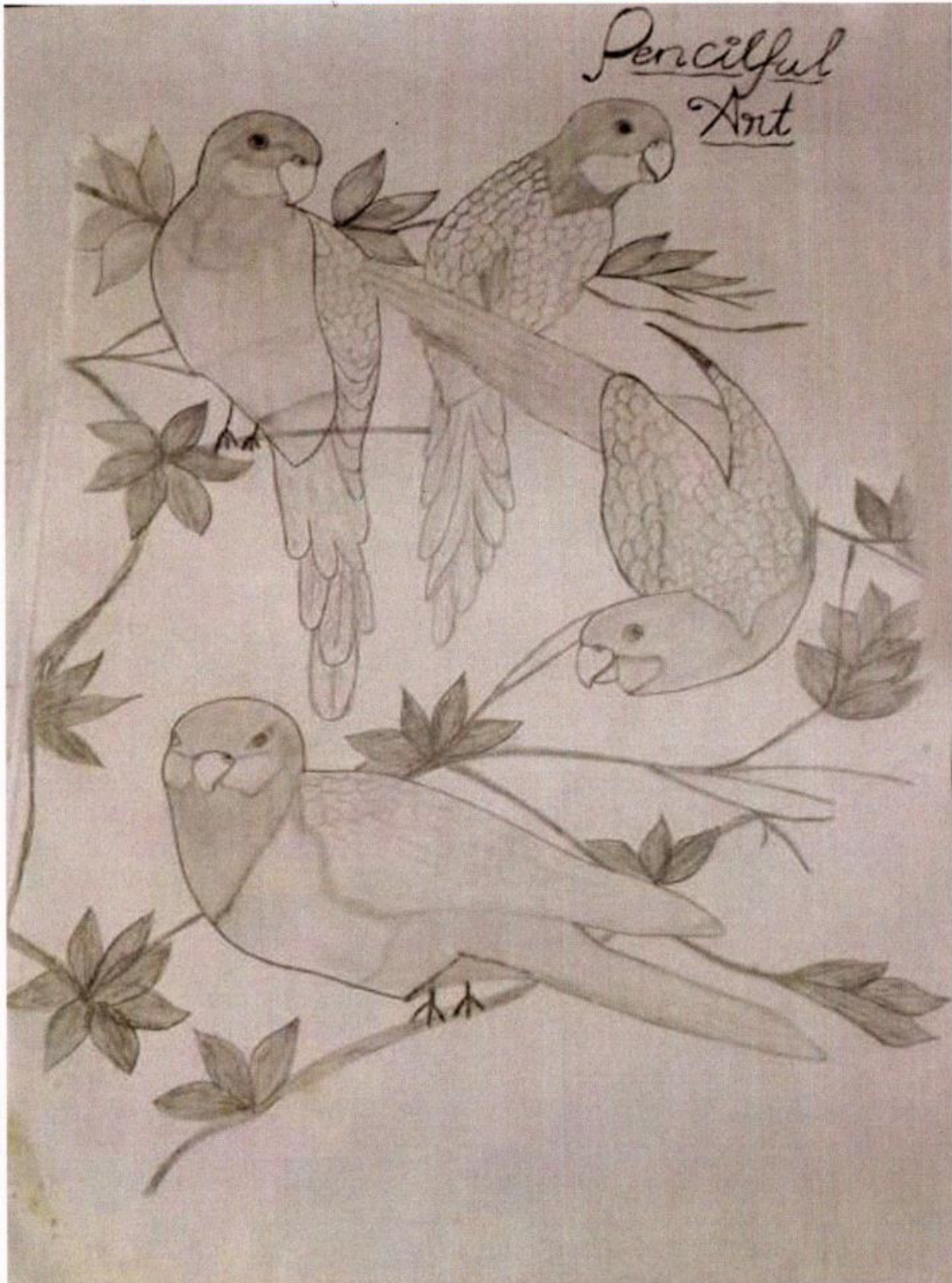
-N.Sravani(III CSE-B)
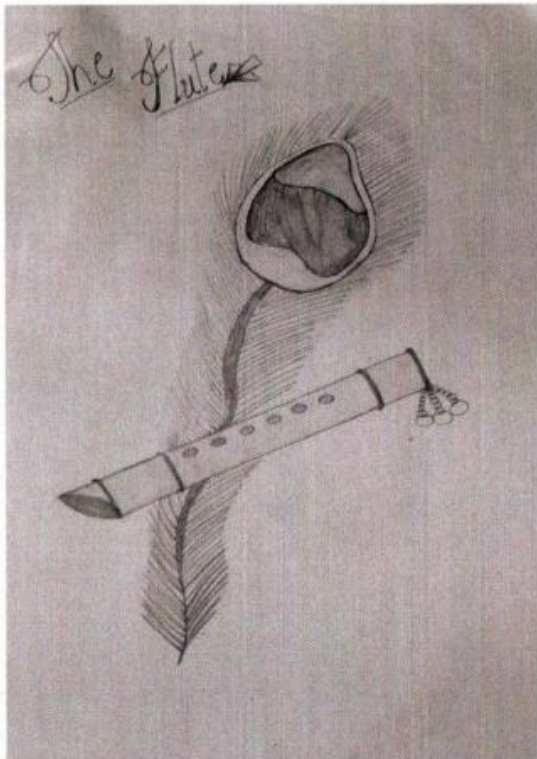
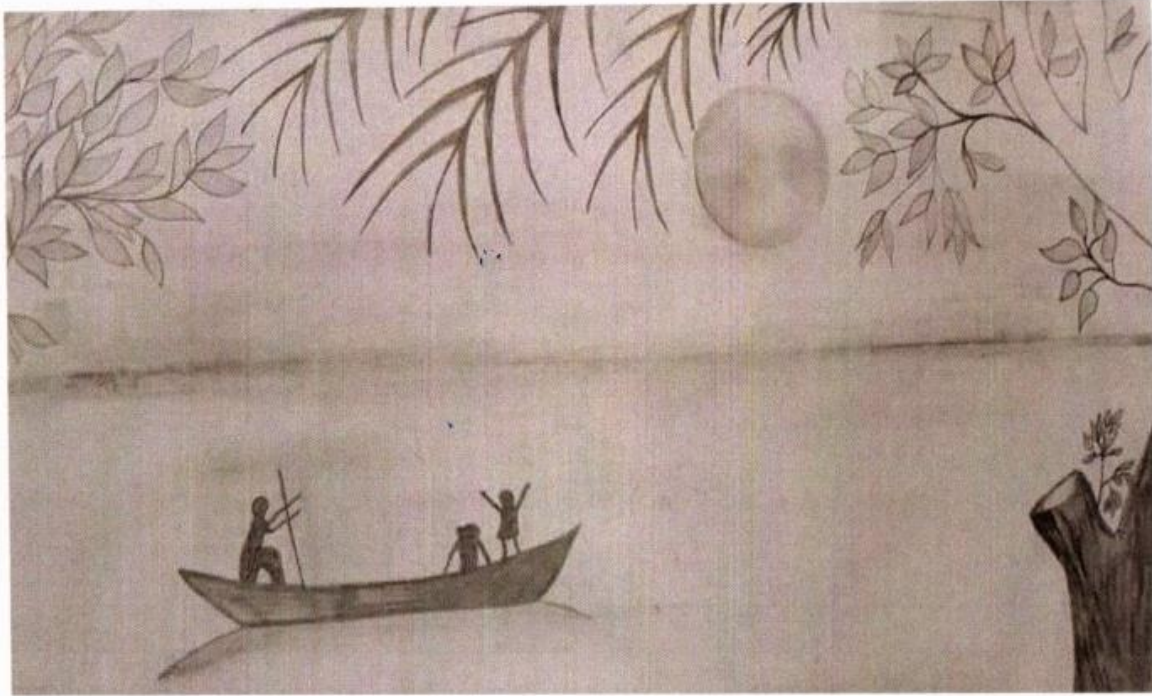-M.V.Pardhasaradhi(II CSE-A)

-P.Harsha(IV CSE-B)

Pencilfull Art

-G.PARDHU VIHASITH(II CSE-A)

-K.Vaishnavi(II CSE-A)

PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

PO1. **Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **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.

PO3. **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.

PO4. **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.

PO5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with anunderstanding of the limitations.

PO6. **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.

PO7. **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.

PO8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and normsof the engineering practice.

PO9. **Individual and team work:** Function effectively as an individual, and as a member or leaderin diverse teams, and in multidisciplinary settings.

PO10. **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 clearinstructions

PO11. **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.

PO12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES

PSO1: Apply the expertise in adaptive algorithms to develop quality software applications..

PSO2: Get employed or become an entrepreneur through their capabilities in basic and advanced technologies