# COMPASS

*~Showing the right Direction...*

# RAJEEV GANDHI MEMORIAL COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

NANDYAL

(ESTD-1995)

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# About RGMCET

Rajeev Gandhi Memorial College of Engineering and Technology was founded in the year 1995. It is located in a 32.04 acre sprawling campus on NH-40 (old NH-18) at Nandyal, Kurnool (Dist), Andhra Pradesh.

It is the dedicated commitment and efforts of our Chairman, the man with vision "Vidyarathna" Dr. M. Santhiramudu, who started the institution with a motto "**EDUCATION FOR PEACE**". RGMCET is a road of elegant educational journey, yet path breaking in different dimensions.

Rajeev Gandhi Memorial College of Engineering & Technology (Autonomous) is Ranked in the band of 251-300 in Engineering category as per National Institutional Ranking Framework (NIRF) - 2020, Ministry of Human Resource Development (MHRD), Govt. of India.

## RGMCET Vision

- To develop this rural based engineering college into an institute of technical education with global standards.
- To become an institute of excellence which contributes to the needs of society.
- To inculcate value based education with noble goal of " Education for peace and progress".

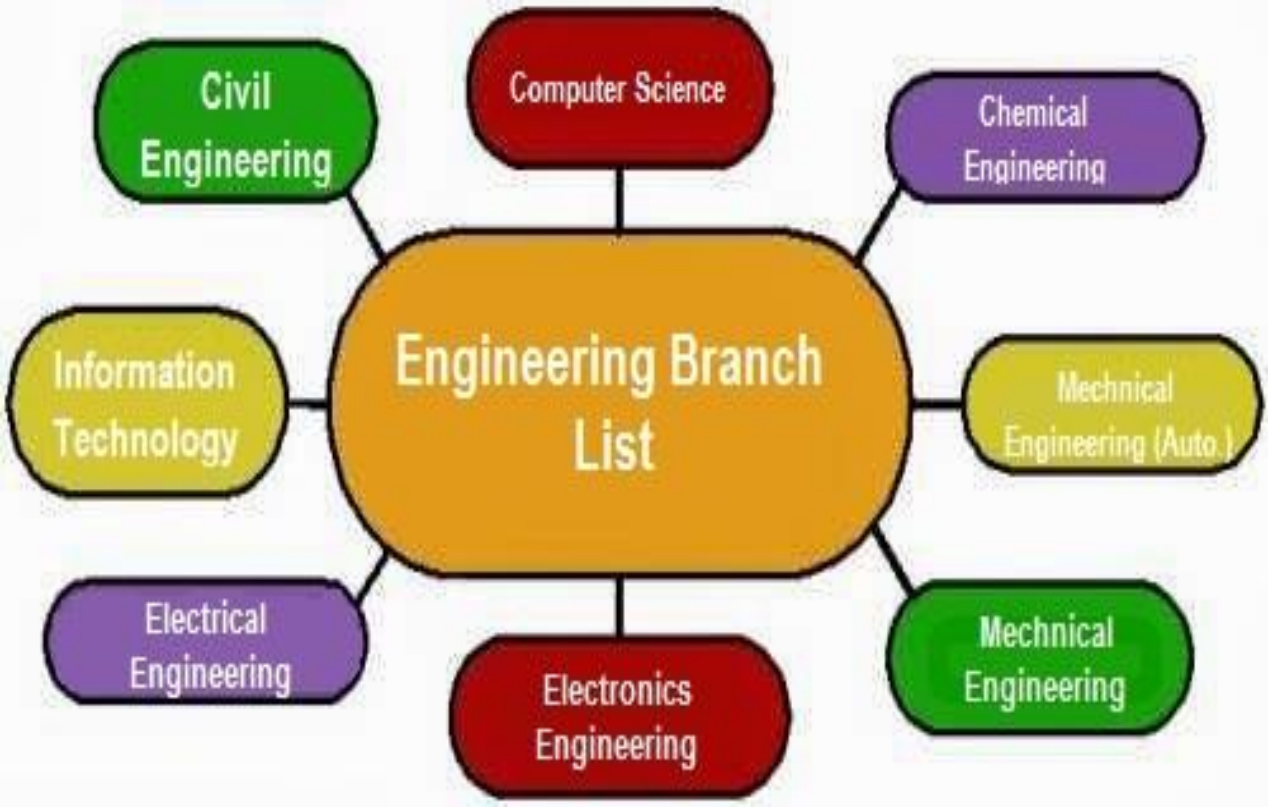
## RGMCET Mission

- To build a world class undergraduate program with all required infrastructure that provides strong theoretical knowledge supplemented by the state of art skills.
- To establish postgraduate programs in basic and cutting edge technologies.
- To create conductive ambiance to induce and nurture research.
- To turn young graduates to success oriented entrepreneurs.
- To develop linkage with industries to have strong industry institute interaction.
- To offer demand driven courses to meet the needs of the industry and society.

- To inculcate human values and ethos into the education system for an all-round development of students.

**RGMCET Quality Policy**

- To improve the teaching and learning.
- To evaluate the performance of students at regular intervals and take necessary steps for betterment.
- To establish and develop centers of excellence for research and consultancy.
- To prepare students to face the competition in the market globally and realize the responsibilities as true citizen to serve the nation and uplift the country's pride.



# About COMPUTER SCIENCE AND ENGINEERING

## CSE Department Vision

- To empower students with cutting edge technologies in computer science and engineering.
- To train the students as entrepreneurs in computer science and engineering to address the needs of the society.
- To develop smart applications to disseminate information to rural people.

## CSE Department Mission

- To become the best computer science and engineering department in the region offering undergraduate, post graduate and research programs in collaboration with industry.
- To incubate, apply and spread innovative ideas by collaborating with relevant industries and R & D labs through focused research groups.
- To provide exposure to the students in the latest tools and technologies to develop smart applications for the society.

## Program Specific Outcomes (PSO's)

1. Students will have the ability to understand the principles and working of computer systems to assess the hardware and software aspects of computer systems.

2. Students will have the ability to understand the structure and development methodologies of software system, that possess professional skills and knowledge of software design process.
3. Students will have the ability to use knowledge in various domains to identify research gaps and hence to provide solution to new ideas and innovations.

## Program Educational Outcomes (PEO's):

1. To Pursue a successful career in the field of Computer Science & Engineering or a related field utilizing his/her education and contribute to the profession as an excellent employee, or as an entrepreneur.
2. To be aware of the developments in the field of Computer Science & Engineering; continuously enhance their knowledge informally or by pursuing graduate studies.
3. To Engage in research and inquiry leading to new innovations and products.
4. To be able to work effectively in multidisciplinary and multicultural environments.
5. To be responsible members and leaders of their communities, understand the human, social and environmental context of their profession and contribute positively to the needs of individuals and society at large.

## Program Outcomes (PO's) - Engineering Graduates will be able to:

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

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.
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.
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.
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.
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.
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.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
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.
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.
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.

## Incipience:

A short note for readers... We want to thank all of those who supported us in Compass Magazine. We will always be gratified to the faculty who supported us through this journey.

The essential purpose of Compass Magazine is to inform, engage, inspire and entertain a diverse readership including faculty, staff, students and other friends of RGMCET.

Our magazine glides you through a series of queries you get during the phase of B.Tech and we tried to possibly find answers and solutions for your queries and problems.

You will get to know how the scope of Computer Science and Engineering has in present society and what are the important guidelines you need to follow in order to embellish your success in stream of your choice. So we wish you a happy experience and good luck with your future.

## *A Quick Glimpse:*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# ROBOTIC PROCESS AUTOMATION

**The next revolution of Corporate Functions**

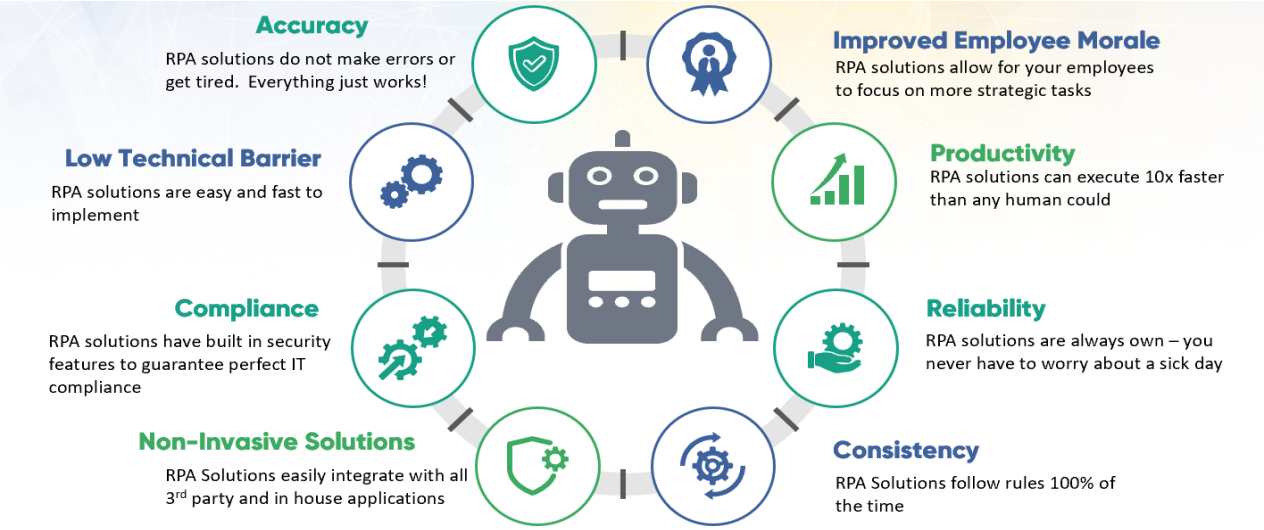
## *Arthur Samuel – Father of RPA*

*Robotic process automation (RPA) is a software technology that makes it easy to build, deploy, and manage software robots that emulate human's actions interacting with digital systems and software.*

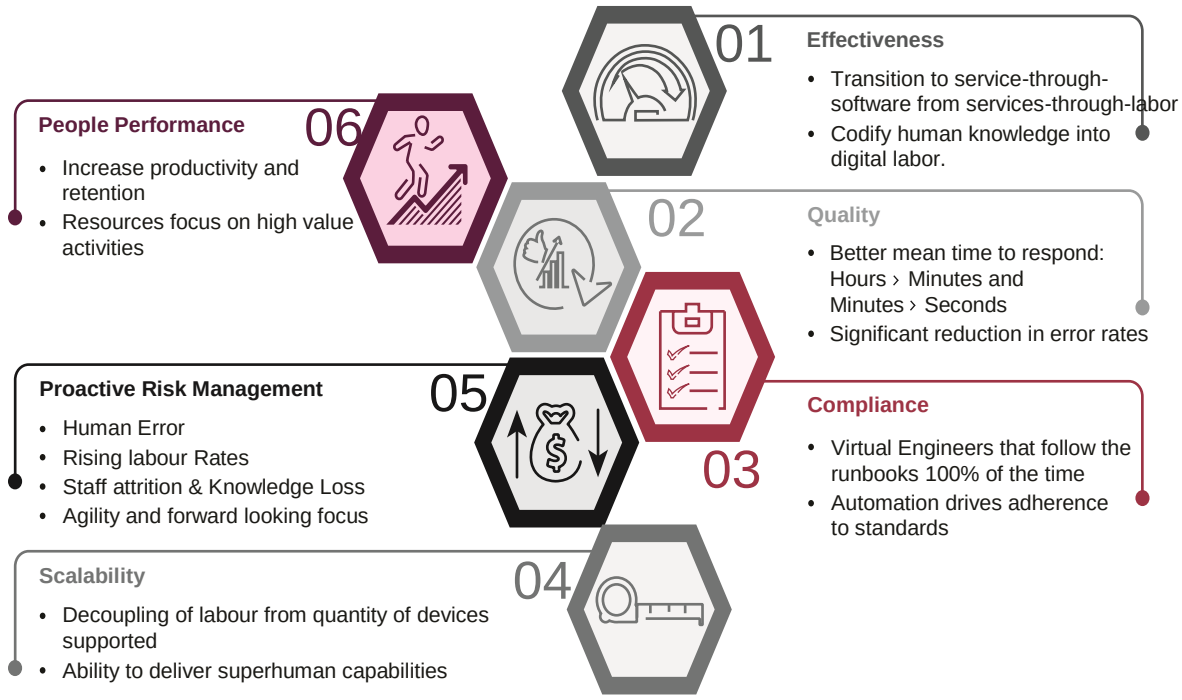
## *Importance of RPA:*

*Similar to robotization of production lines in the 90's, Corporate Functions are initiating today their robotic transformation/ revolution.*

- *It has been estimated that using robotics cuts operational costs by as much as 25-50%. Robots can operate 24/7 and take no vacation when compared to humans, who work 8/5 and have a pre-fixed number of annual leaves each year*
- *As robots are handling the execution here, a larger amount of work can be done in a relatively much shorter period. A faster delivery, coupled with accuracy becomes the norm with automation.*
- *RPA makes the tallying of data and information from multiple systems possible which generates information that helps with the integration of processes.*



*Now a day's most of the companies are working on Robotic Process Automation because of its edge*




*Capgemini feedback on RPA implementation*

***Technology Selection***

*In 2014, Capgemini launched its internal RPA program. Dr. Marcus Esser describes the approach as follows: "We tested 6 leading RPA technologies and compared their capacity to perform simple tasks, such as identifying a company logo, extracting data. Finally, we decided to partner with Ui Path, based on criteria such as the possibility to program remotely and to deploy the robot without developing interfaces with existing applications".*

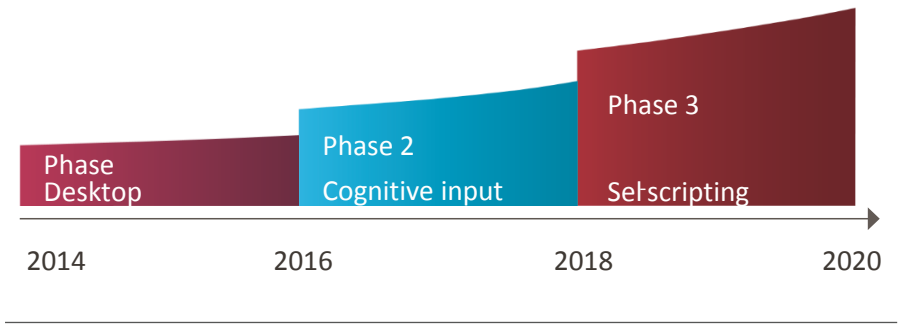
***ROI***

*So far, we have automated 200 processes on 50 robots in our delivery centers worldwide, with a positive return on investment within a few months, dividing*

**Capgemini in-house robots have processed running costs by 7.**

**1,5 Million transactions since 2015, equivalent to 200 employees**

**"Process design is more relevant to the ROI than the technology used"**




**Lessons learnt**

*"One of the main lessons we learnt", says Dr. Esser, "is that results vary widely from one process to another, depending on their design". The best results are obtained with activities which can be run in batch mode, don't require human decision making during the process and already include elements of automation. The cost reduction in these cases can exceed 80%.*

*The most recent improvement was to reduce human input to feed structured data to the robot. Capgemini hybrid RPA solution combines Robotics with Cognitive software, to structure the input and increase robots level of autonomy.*

*Capgemini wants to reduce the implementation cost for new robots, by reducing the time developers need to program the processes. Within 3 years, Capgemini will replace manual scripting by "intelligent sensors", which record tasks on a work station and interpret the patterns to auto-script the robots program. Robotic Automation tools are up to 65% less expensive than offshore-based full time employees.*

**- Y.VIJAY, III - CSE**

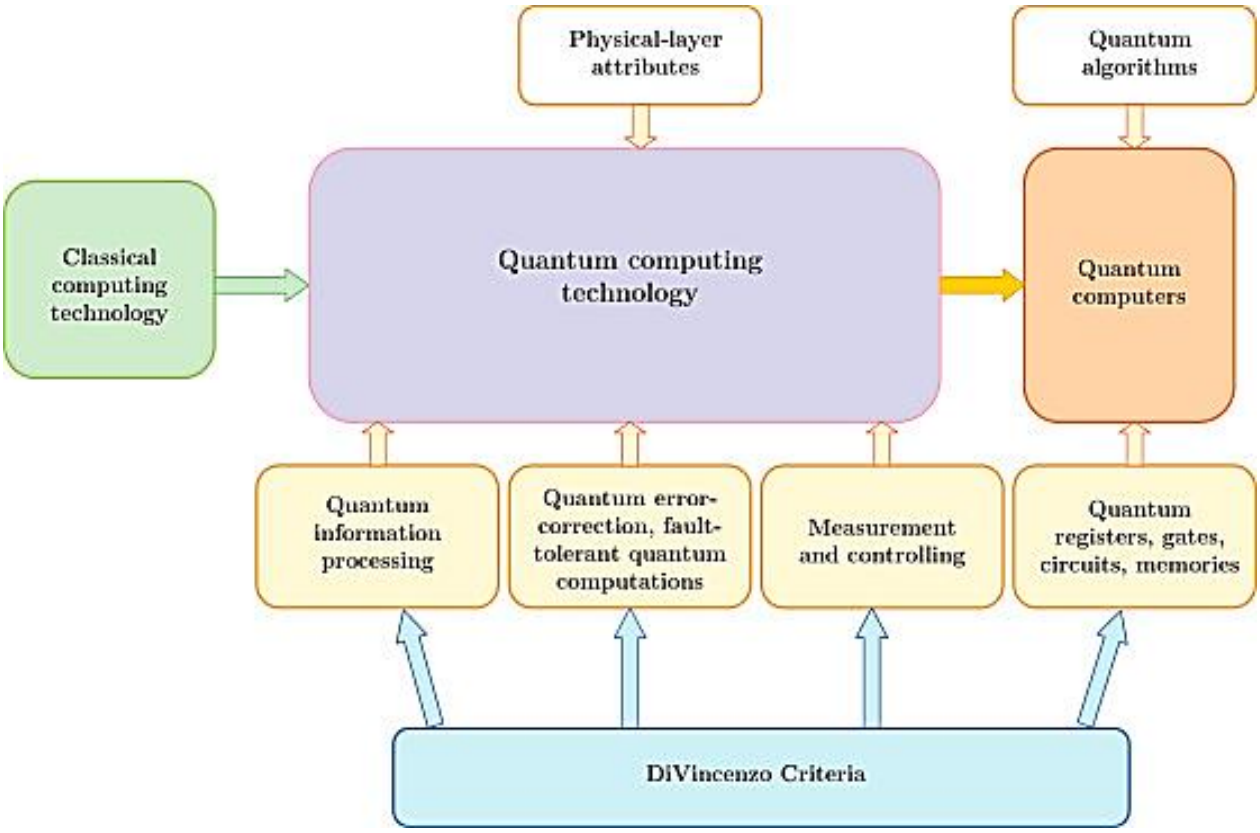
# QUANTUM COMPUTING

*Sharing our insights and experiences*

The subject of quantum computing brings together ideas from classical information theory, computer science, and quantum physics. This review aims to summarize not just quantum computing, but the whole subject of quantum information theory. Information can be identified as the most general thing which must propagate from a cause to an effect. It therefore has a fundamentally important role in the science of physics. However, the mathematical treatment of information, especially information processing, is quite recent, dating from the mid-20th century. This has meant that the full significance of information as a basic concept in physics is only now being discovered. This is especially true in quantum mechanics. The theory of quantum information and computing puts this significance on a firm footing, and has led to some profound and exciting new insights into the natural world. Among these are the use of quantum states to permit the secure transmission of classical information (quantum cryptography), the use of quantum entanglement to permit reliable transmission of quantum states (teleportation), the possibility of preserving quantum coherence in the presence of irreversible noise processes (quantum error correction), and the use of controlled quantum evolution for efficient computation (quantum computation). The common theme of all these insights is the use of quantum entanglement as a computational resource.

It turns out that information theory and quantum mechanics fit together very well. In order to explain their relationship, this review begins with an introduction to classical information theory and computer science, including Shannon's theorem, error correcting codes, Turing machines and computational complexity. The

principles of quantum mechanics are then outlined, and the Einstein, Podolsky and Rosen (EPR) experiment described. The EPR-Bell correlations, and quantum entanglement in general, form the essential new ingredient which distinguishes quantum from classical information theory and, arguably, quantum from classical physics. Basic quantum information ideas are next outlined, including qubits and data compression, quantum gates, the `no cloning' property and teleportation. Quantum cryptography is briefly sketched.




The universal quantum computer (QC) is described, based on the Church-Turing principle and a network model of computation. Algorithms for such a computer are discussed, especially those for finding the period of a function, and searching a random list. Such algorithms prove that a QC of sufficiently precise construction is not only fundamentally different from any computer which can only manipulate classical information, but can compute a small class of functions with greater

efficiency. This implies that some important computational tasks are impossible for any device apart from a QC.

The evolution of the QC is restricted to a carefully chosen subspace of its Hilbert space. Errors are almost certain to cause a departure from this subspace. QEC provides a means to detect and undo such departures without upsetting the quantum computation. This achieves the apparently impossible, since the computation preserves quantum coherence even though during its course all the qubits in the computer will have relaxed spontaneously many times.

**-Subhakar Mydukuru**
**3rd Year CSE**

## JUST A DREAM!!!

*The hill is so high,*

*The valley is so low.*

*The wind is cold,*

*And the mind is bold.*

*Saw a girl with utmost beauty.*

*My heart felt so nice,*

*Can't get enough of her beauty.*

*She is definitely a cutey.*

*I heard the birds singing,*

*But, actually she who was talking.*

*We left to next planned place, but my heart is around her space. Thought I would never seen her around, in the hills surround. I felt somebody is playing some pranks and I seen her in the banks.*

*I smiled, she smiled. I fell, she fell. I fell in love, she fell into my arms.*

*We had a cup of coffee together and she introduced me to her mother. The gap between our minds become narrow, as the waters in which we were boating became shallow. The moon shined like a diamond in space, when we had a camp fire with blaze.*

*It was time to leave Ladakh, and I hope to seen her sooner. I was in hopes, she was in hopes. I returned to home and that's the end of my tour. 3000 kms distance between us, I have to catch the flight. Thursday is the day we would meet. Days passed and it's the time to do what is right without shame.*

*Finally, I had proposed to her by kneeling.*

*"Yes, was the word I was waiting to hear, before which I had the tension to bear.*

***TRING! TRING! TRING!***

*Came a loud sound from my mobile, I woke up to found it was all just a dream.*

**G.Rohith**

**3rd year CSE**

# SKILLS TO DEVELOP

1. Technical Skills.
2. Soft Skills

## TECHNICAL SKILLS

**What is meant by technical skills?**

Technical skills are practical abilities and specialized knowledge needed to perform tasks in technical roles in IT, mechanics, science, engineering, finance, sales etc.

**Technical Skills in CSE:**


In CSE technical skills are practical and often relate to mechanical, IT, mathematical or Scientific tasks. Some examples include Knowledge of programming languages, mechanical equipment, or tools.

Technical skills are often most important for jobs related to IT and other fields in the sciences. Required skills will based upon the job for which you are applying, so be sure to be specific when listing hardware, software, programs, applications etc.

**Importance of Technical Skills:**

Technical skills are important because nearly every job relies on different tools, programs and processes, if you have sought after technical Knowledge and skills common in your industry, the person will more competitive candidate.

**Examples of Technical Skills:**

The type of technical skills that you may be required to know or learn will depend on what you are seeking. However, there are several technical skills that are common across different industries:

1. Programming
2. Productivity software Applications
3. Industry-specific skills

**How to improve our Technical Skills?**

We can improve our technical skills by:

1. Enrolling in courses.
2. Use a self-study training program.
3. Learn from a professional.
4. Learn the job.

**How to balance your technical skills?**

Unlike soft skills, technical skills change with time. Once successfully landed a job it can be helpful to keep your technical skills active. In many cases, the tools or programs you commonly used will change over time, so the technical skills you possess now may need to be enhanced with new knowledge. It is better to be get ahead of changes in your field instead of waiting until your skill is outdated.

# SOFT SKILLS

**Soft Skills:**

A soft skill is a personal attitude that supports situational awareness and enhances an individuals and ability to get a job done. The term soft skills are often used as a synonym for people skills or emotional intelligence.

**Examples of soft skills:**

Soft Skills comprise of personal attributes, communication skills and abilities and personality traits which differentiate people with similar hard-skills set from each other.

- Communication skills
- Leadership
- Work Ethic
- Creative Problem Solving
- Time Management
- Conflict Resolution
- Team Player

**Importance of Soft Skills:**

Soft Skills are increasingly becoming the hard skills of today's work force. Team work, Leadership and Communication are underpinned by soft skills development. Since each is an essential element for organizational and personal success developing these skills is very important,

**Soft Skills in Engineering:**

Engineering soft skills are just as critical as technical acumen when carrying out the day to day duties of engineering roles.

**Top Engineering Soft Skills:**

A few of the most important soft skills for engineers include:

- Communication
- Creativity
- Adaptability

- Collaboration
- Leadership

**Ways to develop and enhance our soft skills:**

- Communication
- Problem Solving
- Data Analysis
- Productivity
- Digital Proficiency
- Creativity
- Agility
- Confidence
- Self and Social Awareness

# BOOMING TECHNOLOGIES

**What are Booming technologies to be aware of?**

According to the present job scenario and stack overflow popularity, the below technologies have good growing opportunities:

**1. Artificial Intelligence:**

It covers technologies that are used for prediction purpose. The technology stack of AI constitutes

- Machine Learning
- Deep Learning
- Human Computer Interaction
- Robotics
- Computer Vision

**2. Data Science:**

Data Science is all about cleaning, analyzing, organizing, preparing and visualizing the data. It requires the following things to be included

- Statistics
- Machine Learning
- Data Mining

**3. Big Data and Cloud Computing:**

These are another boom area to be considered as the trending technology in the present sector. It is because of importance of data in life of every individual and consistent improvement in social networks and e-commerce traffic.

**4. Android Development:**

As the internet users are more comfortable with using android apps than websites, the demand of android development becomes very high. The two popular ways of building android apps are through java and kotlin language.

**5. Data Analytics:**

Data analytics is the process of examining data sets in order to draw conclusion about the information. Data analytics technologies and techniques are widely used in commercial industries to enable organizations to make more informed business decisions and by scientist and resources to verify scientific models, theories and hypotheses.

- Business Intelligence
- Online Analytics Processing

**6. Block Chain:**

Block chain technology is the decentralized computing environment, where distributed computing plays an important role.

Crypto currency is the major element that profound the importance of block chain.

**7. Internet of Things:**

The internet of things or IOT is a system of interrelated computing devices, mechanical and digital machines, object, people that are provided with unique identifiers (VIDS) and the ability to transfer data over a network without requiring human to human or human to computer interaction.

- Micro Services
- Operational Technology
- Information Technology

**8. Programming Languages:**

1. Python
2. R-Programming Language
3. Java

4. C#
5. .Net
6. C

**9. Websites for Programming Languages:**

1. Code Chef
2. Hacker Rank
3. Hacker Earth

# THE NEW CHAPTER

Those were the early days of our Engineering and were so excited about our Engineering life. One of the things we were said before joining Engineering was about the fests that will be conducted in the college. Finally, the day every engineering student would be excited about has arrived!!! **"THE FRESHER'S PARTY".**

It was accompanied with so many colorful events, parties and programs like traditional, fusion, western dances and fun games.

In the morning, we were asked to gather at the class rooms for interaction with our seniors. Then the actors in us came out when we were told to **Cook Maggi, sing a song, Bring out the dancers and poets.** The universal question every student was asked is for "**Self Details** aka **SD".** Then some super yet silly games were conducted for which we were awarded later in the evening party. These games helped us to mingle with seniors and form a splendid coordination. That's how the morning session of the day has ended with joy.

Here comes the **Food Feast** we badly needed after getting tired of enjoying. We were served with delicious food by our seniors. We needed energy for the evening's party so we took a nap after the lunch.

The sun started to set and the lights in the college started to glow. A little music, new faces, smiles all along, glamouring for the party time. Here the actual party has started!! The party started with valuable words from our dearest HOD sir following faculty. Teachers play an imperative role in student lives. They

actively participated and guided the students towards the successful event.

Our seniors turned out as awesomeness filled hosts and boosted our energy. To make the party more interesting our seniors awarded us with some funny awards for the games we played in the morning. We enjoyed the fun evening with our peers and reminiscence the good time spent with each other. The party continued with mesmerizing Dance performances and we screamed out of joy. After all the performances, the party ended with happy faces all over.

Our beloved faculty and seniors gave us such warm welcome that cannot be forgotten throughout our lives and gave us a good start in the college.

**D.Nayum**

**3rd year CSE**

# WORKSHOPS ORGANIZED

Department of Computer Science & Engineering organized **15 Days Certificate Course on Product Oriented Programming using PYTHON**, by Talentio Solutions Pvt Ltd., Hyderabad on **02nd to 10th January 2020 & 20th to 26th January 2020** for final year students to motivate on their project implementation using Python Programming Language.


The workshop delivers the knowledge of python programming on various packages like keras, numpy libraries etc. The second part of python syllabus covered with various concepts like file handling and data structures implementation.


## OBJECTIVES OF COMPASS

- INVOLVE STUDENTS IN DIFFERENT FORMS OF PEER-LEARNING
- ENCOURAGE STUDENT PARTICIPATION IN ACTIVITIES THAT REQUIRE THEM TO ACQUIRE AND DEMONSTRATE RATIONAL THINKING, COMMUNICATION SKILLS AND LOGICAL ABILITY.
- BRING OUT THE LEADERSHIP SKILLS AMONG INDIVIDUALS BY PROVIDING THEM SUFFICIENT EXPOSURE TO UTILIZE THE SKILLS ACQUIRED.
- HELP STUDENTS RECOGNIZE THE IMPORTANCE OF SMART-WORK & THINKING OUTSIDE THE BOX, THUS INCULCATE CREATIVE THINKING.
- CONTRIBUTE TO ALL ROUND DEVELOPMENT OF INDIVIDUALS THROUGH LEARNING OUTSIDE THE CLASSROOM.