Department of Computer Science & Engineering

Bhai Gurdas Institute of Engineering and Technology

Sangrur-148001

2021

Technomantra

Message

Dr. Guninderjit Singh Jawandha
Chairman
Bhai Gurdas Group Of Institutions

From Chairman Desk

I am delighted to have the opportunity to release "Technomantra', the annual college magazine. In this era of cut throat competition, apart of study. one needs to have the holistic development of personality & this is our prerogative to chisel your thinking & persona here. The magazine will act as a platform for your creativity & writing aptitude & I intently believe that you would have an all round development of your personality during your sojourn in this temple of learning.

I congratulate the Director, staff & students for publishing "Technomantra'. I hope this issue would be meaningful, enjoyable & memorable in achieving its objectives.

Dr. Gurinderjit Singh Jawandha
Chairman
Bhai Gurdas Group Of Institutions

Message

(Prof) Dr. Tanuja Srivastava
Director
Bhai Gurdas Institute of Engineering & Technology

From Director's Desk

It is a matter of great pleasure for me to learn that Editorial Board is bringing out an issue of the College magazine 'technomantra'. I would like to appreciate those who have contributed articles for the college magazine as this shows the hard work, and the hidden potential of the students.

I hereby congratulate those who contributed for the college magazine and welcome those who want to avail the opportunity next time.

(Prof) Dr. Tanuja Srivastava
Director

Dr. Arun Kumar Singh

(H.O.D)CSE DEPTT.

From Head of Department Desk

I am happy that department of cse is publishing yet another issue of "Technomantra 2021" This magazine is by the student & for the Students. It aims at providing a platform to the students to explore their latent Capabilities & talent, to express their creativity and to develop their technical skills As you scan through the pages of the magazine, It will enlighten you with the important milestone the department has achieved this year. Beside, Our budding talent have expressed their thoughts, ideas, hopes, feelings, aspirations & Convictions in a creative way.

I Congratulate the editorial board for unleashing the hidden potential of the students & appreciate them for their effort in bringing out their issue.

Wishing the magazine a lasting success.

Dr. Arun Kumar Singh (H.O.D)
CSE DEPTT.

Er. Yogesh Kumar
Assistant Prof. CSE DEPTT.

From Editor's Desk

It gives us great pleasure to bring you another issue of Technomantra, the college magazine of Bhai Gurdas Institute of Engineering & Technology. The name and fame of an institute depends on the caliber and achievements of the students and teachers. The role of a teacher is to be a facilitator in nurturing the skills and talents of students. This magazine is a platform to exhibit the literary skills and innovative ideas teachers and students. Technomantra presents the achievements of students and contributions of teachers. We would like to place on record our gratitude and heartfelt thanks to all those who have contributed to make this effort a success. We profusely thank the management for giving support and encouragement and a free hand in this endeavor. Last but not the least we are thankful to all the authors who have sent their articles. We truly hope that the pages that follow will make an interesting read.

Er. Yogesh Kumar
Assistant Prof.
CSE DEPTT.

Vision of the Department:

To be a center of excellence in technical education, research and support services to produce comprehensively trained, innovative Computer Science Engineers of highest quality to contribute to the Nation's development

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Mission of the Department:

1. Create an environment of skill learning through faculty training, online learning, sound academic practices and research endeavors.
2. Provide opportunities to promote organizational and leadership skills in students through various extra- curricular and co-curricular events.
3. To uplift innovative research in Computer Science and Engineering to serve the needs of industry, Government and society.
4. Providing social awareness and responsibility in students to serve the Nation and to protect environment.

PEOs

1 **Technical Expertise**: Implement domain knowledge of core courses for developing effective computing solutions by incorporating creativity and logical reasoning.
2 **Successful Career:** Deliver professional services in the field of Computer Science to respond swiftly to the challenges of 21st century.
3 **Soft Skills:** Develop leadership and interpersonal skills with effective communication & time management in the profession.
4 **Life Long Learning**: Produce globally competent graduates with moral values and ethics for personal and professional development.

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Robotic Process Automation (RPA)

Like AI and Machine Learning, Robotic Process Automation, or RPA, is another technology that is automating jobs. RPA is the use of software to automate business processes such as interpreting applications, processing transactions, dealing with data, and even replying to emails. RPA automates repetitive tasks that people used to do.

Although Forrester Research estimates RPA automation will threaten the livelihood of 230 million or more knowledge workers or approximately 9 percent of the global workforce, RPA is also creating new jobs while altering existing jobs. McKinsey finds that less than 5 percent of occupations can be totally automated, but about 60 percent can be partially automated.

For you as an IT professional looking to the future and trying to understand latest technology trends, RPA offers plenty of career opportunities, including developer, project manager, business analyst, solution architect and consultant. And these jobs pay well. An RPA developer can earn over ₹534K per year - making it the next technology trend you must keep a watch on!

Mastering RPA will help you secure high paying jobs like:

‣ RPA Developer

‣ RPA Analyst

‣ RPA Architect

Edge Computing

Formerly a new technology trend to watch, cloud computing has become mainstream, with major players AWS (Amazon Web Services), Microsoft Azure and Google Cloud Platform dominating the market. The adoption of cloud computing is still growing, as more and more businesses migrate to a cloud solution. But it's no longer the emerging technology trend. Edge is.

As the quantity of data organizations is dealing with continues to increase, they have realized the shortcomings of cloud computing in some situations. Edge computing is designed to help solve some of those problems as a way to bypass the latency caused by cloud computing and getting data to a data center for processing. It can exist "on the edge," if you will, closer to where computing needs to happen. For this reason, edge computing can be used to process time-sensitive data in remote locations with limited or no connectivity to a centralized location. In those situations, edge computing can act like mini datacenters.

Edge computing will increase as use of the Internet of Things (IoT) devices increases. By 2022, the global edge computing market is expected to reach $6.72 billion. And this new technology trend is only meant to grow and nothing less, creating various jobs, primarily for software engineers.
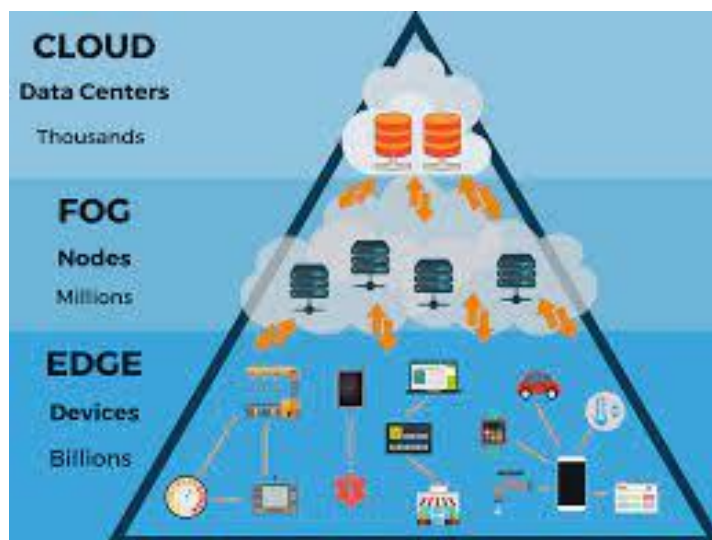
Keeping in line with cloud computing (including new-age edge and quantum computing) will help you grab amazing jobs like:

Cloud Reliability Engineer

Cloud Infrastructure Engineer

Cloud Architect and Security Architect

DevOps Cloud Engineer

Virtual Reality and Augmented Reality

The next exceptional technology trend - Virtual Reality (VR) and Augmented Reality (AR), and Extended Reality (ER). VR immerses the user in an environment while AR enhances their environment. Although this technology trend has primarily been used for gaming thus far, it has also been used for training, as with VirtualShip, a simulation software used to train U.S. Navy, Army and Coast Guard ship captains.

In 2022, we can expect these forms of technologies being further integrated into our lives. Usually working in tandem with some of the other emerging technologies we've mentioned in this list, AR and VR have enormous potential in training, entertainment, education, marketing, and even rehabilitation after an injury. Either could be used to train doctors to do surgery, offer museum goers a deeper experience, enhance theme parks, or even enhance marketing, as with this Pepsi Max bus shelter.

Fun fact: 14 million AR and VR devices were sold in 2019. The global AR and VR market is expected to grow to $209.2 billion by 2022, only creating more opportunities in the trending technology, and welcoming more professionals ready for this game-changing field.

While some employers might look for optics as a skill-set, note that getting started in VR doesn't require a lot of specialized knowledge - basic programming skills and a forward-thinking mindset can land a job; another reason why this new technology trend should make up to your list of lookouts!

Internet of Things (IoT)

Another promising new technology trend is IoT. Many "things" are now being built with WiFi connectivity, meaning they can be connected to the Internet—and to each other. Hence, the Internet of Things, or IoT. The Internet of Things is the future, and has already enabled devices, home appliances, cars and much more to be connected to and exchange data over the Internet.

As consumers, we're already using and benefitting from IoT. We can lock our doors remotely if we forget to when we leave for work and preheat our ovens on our way home from work, all while tracking our fitness on our Fitbits. However, businesses also have much to gain now and in the near future. The IoT can enable better safety, efficiency and decision making for businesses as data is collected and analyzed. It can enable predictive maintenance, speed up medical care, improve customer service, and offer benefits we haven't even imagined yet.

And we're only in the beginning stages of this new technology trend: Forecasts suggest that by 2030 around 50 billion of these IoT devices will be in use around the world, creating a massive web of interconnected devices spanning everything from smartphones to kitchen appliances. The global spending on the Internet of Things (IoT) is forecast to reach 1.1 trillion U.S. dollars in 2022. New technologies such as 5G is expected to drive market growth in the coming years.

And if you wish to step foot in this trending technology, you will have to learn about Information security, AI and machine learning fundamentals, networking, hardware interfacing, data analytics, automation, understanding of embedded systems, and must have device and design knowledge.
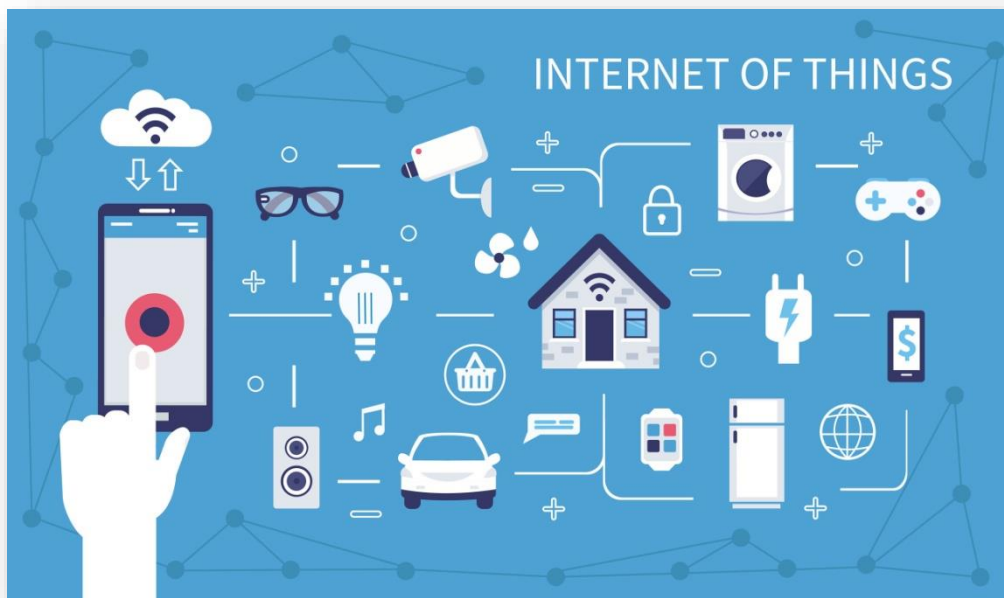
Cyber Security

Cyber security might not seem like an emerging technology, given that it has been around for a while, but it is evolving just as other technologies are. That's in part because threats are constantly new. The malevolent hackers who are trying to illegally access data are not going to give up any time soon, and they will continue to find ways to get through even the toughest security measures. It's also in part because new technology is being adapted to enhance security. As long as we have hackers, cybersecurity will remain a trending technology because it will constantly evolve to defend against those hackers.

As proof of the strong need for cybersecurity professionals, the number of cybersecurity jobs is growing three times faster than other tech jobs. According to Gartner, by 2025, 60% of organizations will use cybersecurity risk as a primary determinant in conducting third-party transactions and business engagements.

You must note that however challenging the field is it also offers lucrative six-figure incomes, and roles can range from

- Ethical Hacker

- Malware Analyst

- Security Engineer

- Chief Security Officer

offering a promising career path for someone who wants to get into and stick with this evergreen trending technology.

5G

The next technology trend that follows the IoT is 5G. Where 3G and 4G technologies have enabled us to browse the internet, use data driven services, increased bandwidths for streaming on Spotify or YouTube and so much more, 5G services are expected to revolutionize our lives. by enabling services that rely on advanced technologies like AR and VR, alongside cloud based gaming services like Google Stadia, NVidia GeForce Now and much more. It is expected to be used in factories, HD cameras that help improve safety and traffic management, smart grid control and smart retail too.

Just about every telecom company like Verizon, Tmobile, Apple, Nokia Corp, QualComm, are now working on creating 5G applications. 5G Networks will cover 40% of the world by 2024, handling 25% of all mobile traffic data making it an emerging technology trend you must watch out for, and also save a spot in.
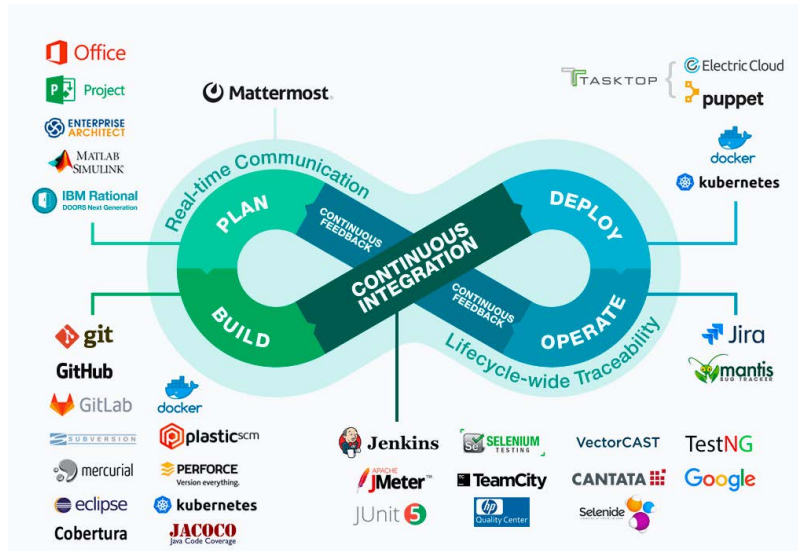
DevOps

DevOps
'DevOps' is an enterprise software development phrase, which has emerged from the terms 'Development' and 'Operations' of the software development life cycle (SDLC) and is a part of the Cloud technology. As the name suggests, DevOps encourages collaboration, communication, automation, and integration among the IT operations team and the developers to improve the quality and speed of delivering software. It is considered the offspring of the agile software development method.

Benefits of DevOps, a trending technology, are mentioned below:

Reliability
Scaling power
Rapid development
Fast delivery
Security
As per Glassdoor, the average salary of a DevOps Engineer in the United States is around US $99,604K per year.

Blockchain

Blockchain

Blockchain is the most advanced and cutting-edge technology when addressing electronic records in the year 2022. In simpler terms, a Blockchain is an electronic record that may be shared among several users. Blockchain aids in the creation of a permanent record of transactions. Each of them is saved in a machine and is connected to the one before it.

Many seem to believe that Blockchain is solely concerned with Cryptocurrency, which isn't the reality. Bitcoin and other Cryptocurrencies are only small segments that use Blockchain technology. It is incorporated in a variety of industries, including healthcare, supply chain and logistics, and advertising, in addition to cryptocurrency.

Various businesses are looking for Blockchain platforms to assist them develop top-level business strategies, which is propelling the Blockchain industry forward. The degree of security and transparency provided by Blockchain is the key reason for its meteoric surge in popularity.

Snapdragon 8 Gen 1 Processor

During the annual Snapdragon Tech Summit 2021, Qualcomm Technologies, Inc. introduced its latest premium 5G mobile platform, Snapdragon® 8 Gen 1. The new Snapdragon 8 leads the way into a new era of premium mobile technology equipped with cutting-edge 5G, AI, gaming, camera, and Wi-Fi and Bluetooth® technologies to transform the next generation of flagship devices. Snapdragon 8 Gen 1 will be adopted by global OEMs and brands including Black Shark, Honor, iQOO, Motorola, Nubia, OnePlus, OPPO, Realme, Redmi, SHARP, Sony Corporation, vivo, Xiaomi, and ZTE, with commercial devices expected by the end of 2021.

"As the world's most advanced mobile platform, Snapdragon is synonymous with premium Android experiences and the new Snapdragon 8 Gen 1 sets the standard for the next generation of flagship mobile devices," said Alex Katouzian, senior vice president and general manager of mobile, compute, and infrastructure, Qualcomm Technologies, Inc. "It delivers connectivity, photography, AI, gaming, sound, and security experiences never before available in a smartphone."

iPhone 13 and iPhone 13 mini

The Apple iPhone 13 and iPhone 13 mini aren't huge updates over their predecessors but we feel that Apple has made enough notable changes to keep things fresh and provide a better usage experience. Both new iPhones get some big improvements under the hood such as a faster SoC, sensor-shift stabilisation for the main camera, and larger batteries. They also get some of the same camera features as the iPhone 13 Pro models such as Cinematic Mode and Photographic Styles. All this adds up to a very good user experience, at the same starting prices as the iPhone 12 and iPhone 12 mini.

The iPhone 13 mini has everything the iPhone 13 has, only with a smaller battery and display. However, that doesn't mean it's a weaker iPhone. In fact, the iPhone 13 mini delivers better battery life compared to the iPhone 12 mini, and as a compact flagship, is a much better deal than something like the Samsung Galaxy Z Flip 3.

Cyber Security

Cyber security might not seem like trending technology, given that it has been around for a while, but it is evolving just as other technologies are. That's in part because threats are constantly new. The malevolent hackers who are trying to illegally access data are not going to give up any time soon, and they will continue to find ways to get through even the toughest security measures. It's also in part because new technology is being adapted to enhance security. As long as we have hackers, cyber security will remain a trending technology because it will constantly evolve to defend against those hackers.

As proof of the strong need for cyber security professionals, the number of cyber security jobs is growing three times faster than other tech jobs. Also, the need for proper cyber security is so high that by 2021, $6 trillion will be spent globally on cyber security.

You must note that however challenging the field is it also offers lucrative six-figure incomes, and roles can range from

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- Malware Analyst

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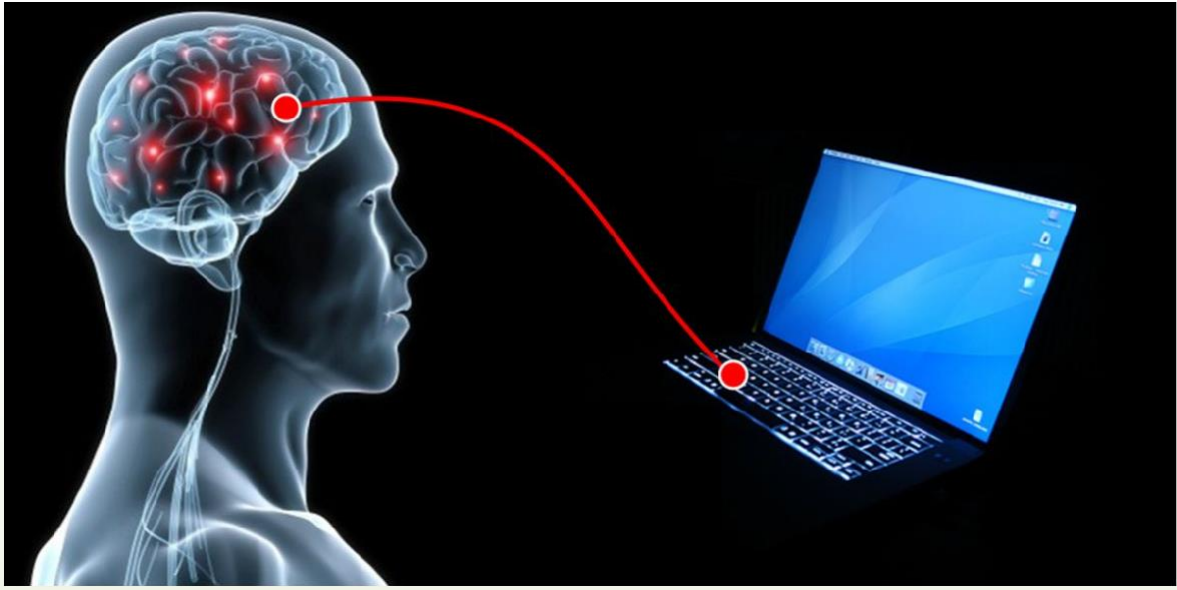
Brain-computer interfaces

The ability to control a computer using only the power of the mind is closer than one might think. Brain-computer interfaces, where computers can read and interpret signals directly from the brain, have already achieved Clinical success in allowing quadriplegics, those suffering "locked-in syndrome" or people who have had a stroke to move their own wheelchairs or even drink coffee from a cup by controlling the action of a robotic arm with their brain waves. In addition, direct brain implants have helped restore partial vision to people who have lost their sight.

Recent research has focused on the possibility of using brain-computer interfaces to connect different brains together directly. Researchers at Duke University last year reported successfully connecting the brains of two mice over the Internet (into what was termed a "brain net") where mice different countries were able to cooperate to perform simple tasks to generate a reward. Also in 2013, scientists at Harvard University reported that they were able to establish a functional link between the brains of a rat and a human with a non-invasive, computer-to-brain interface.

In humans, the ability to directly manipulate memories might have an application in the treatment of post-traumatic stress disorder, while in the longer term, information may be uploaded into human brains in the manner of a computer file. Of course, numerous ethical issues are also dearly raised by this rapidly advancing field.