

CYBER TRINITY

NEWSLETTER

April 2021, VOL 8

Array of Content

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VISION

“To produce value-based quality Engineers with the knowledge of latest trends and research technologies to meet the developing needs of industry and society.”

MISSION

- To impart quality education in linewith quality teaching-learning-process.
- To provide a better environment to encourage and support innovative research and development.
- To strengthen linkage between industry-academia for overall improvement of students.



“SSIPMT is an institute that builds future, future for its students.”

We give a special attention to our campus infrastructure; our campus is built away from the city rush where you can find a green eco-friendly environment that helps our students to imagine and discover innovative ideas every day. This year started with great enthusiasm like, on 15th to 17th January we had the Computer Society of India (CSI) Regional student convention organized by Computer Science and Informational Technology branch. Including successful events like ICT quiz, Code Debugging, Poster Designing, Web designing, Multimedia contest, Android Development. In February, we had the National Assessment and Accreditation Council (NAAC) two-day inspection with singing, dancing, and drama as the commencement events. Now, for the batch of 2022, best wishes to you all for the placement, and hope you all do well. For the batch of 2021, Congratulations on your placement, a new page of your life has just begun, so, enhance and explore your experience and make us all proud.

**Shri Nishant Tripathi
Chairman(B.G), SSIPMT**



“Each new day gives us a new opportunity to be the best version yourself.”

SSIPMT has always focused on giving the best to its students and providing a better environment, knowledge, and experience for their overall development. It gives me an immense sense of pride that CSI Regional Student Convention-2021 Region IV has been organized at SSIPMT, Raipur. Various event has been organized like ICT quiz, Code Debugging, Android Development which helped the student in showcasing their hidden talents. During this pandemic, the NAAC team visited our college for inspection. The team was very impressed with the student’s innovation and the training provided to the students. Lastly, a big Congratulation to all the Students of Batch 2017-2021 for their placements in renowned companies and wishing them a bright future. And wishing the best to the students of Batch 2018-2022 for the upcoming placement.

**Dr. Alok Kumar Jain
Principal, SSIPMT**



CYBER TRINITY

MEMORANDUMS



SSIPMT particularly cornerstones on furnishing an excellent education platform with multiple opportunities. Our institution lays emphasis on empowering young minds by providing pioneering education and research options. In the course of this pandemic, we made sure none of our scholars had to compromise with their studies, projects or events by imparting best online teaching-learning process. Numerous webinars and events in particular code debugging; poster designing, web designing, multimedia contest, and android app development were co-ordinated to boost up students with the ideology of latest trends and technology. All the events which were held during this pandemic time had an enormous ratio of participants making them successful each time.

Hereby, I convey my best wishes to the 2022 batch for their brilliant and successful future ahead, focus on brushing the skillset and coding ability.

Also, I heartily congratulate 2021 batch for their placements in dignified and prestigious companies, I wish them all the very best for their journey in the professional field.

**Dr JP Patra
Head of Department, CSE**



5G, the next generation of mobile broadband will bring the revolution in our network speed by making it 100 times faster than existing data speeds. It will have a wider area in the frequency spectrum and will offer a more stable network connection. It will provide a great platform for the Internet Of Things (IOT), a High-speed mobile network, and in cloud systems to stream software updates. 5G will also play a vital role in incorporating Artificial intelligence (AI) in our daily lives. Apart from all these advantages, there are some challenges like the expensive infrastructure of the 5G technology and non-supportive old devices towards the 5G technology which is needed to overcome.

Lastly, I heartily wish all the very best to the students from the batch of 2022 for their upcoming placement, and also, congratulate the students from the 2021 batch to grab the placement opportunity in big companies and best wishes for their future.

**Yogesh Kumar Rathore
Assistant Professor, CSE Dept**



5G wireless technology is meant to deliver higher information speeds, ultra-low latency, greater reliability, mass network capacity, expanded accessibility. Current users are able to encounter and associate with new enterprises through better and improved productivity. With high speed, superior reliability, and negligible latency – in the upcoming years, 5G will grow the versatile environment into new domains. 5G will affect each industry by making more secure transportation, far-off medical services, precision agriculture, digitized coordination and many more. 5G wireless technology is meant to deliver a whole new reality.

I convey my good wishes and vouchsafed blessings to the forthcoming batch of CSE 2018–2022 for their placement in the eminent company. A dazzling future awaits you. Hereby, wishing good-luck for bright and prosperous future to CSE 2017-21 batch.

**Ashish Pandey
Assistant Professor, CSE Dept**



Introduction

In India, 5g is the fifth generation technology standard for the broadband cellular network that cellular companies have been implementing worldwide since 2019. It is the planned successor to the 4G network which provides connectivity to the most current cellphones. According to the GSM Association, the 5g network is expected to have more than 1.7 billion subscribers worldwide by 2025. Enhanced mobile broadband in addition to making our smartphone better, 5g mobile technology can usher in new immersive experiences such as AR and VR with faster, more uniform data rates, lower latency, and lower cost-per-bit. 1g, 2g, 3g, 4g all led to 5g, which is designed to provide more connectivity than ever before. 5g is driving global growth. \$ 13.1 Trillion dollars of global economic output. around \$22.8 million new jobs will be created.

Abhisek Chakraborty (4th A)

An Advent Of Wireless Technology

"5G is the 5th generation mobile network." It is an iteration of cellular technology, engineered to greatly increase the speed & responsiveness of the wireless network or communication after 1G, 2G, 3G, and 4G networks.

The arrival of 5G technologies enabling smart devices will change the way we live and think. As, all the things we hope will make our life easier, safer & healthier will require a high-speed internet connection and 5G inculcate it that will tremendously change everything and make achievable all the undreamed technologies from self-driving cars to telemedicine.

5G will be able to handle a 1000 times faster traffic than today's network & it will ten times faster than 4G and earliest other technologies.

5G is able to provide greater flexibility, incredible transmission speed which supports a much wide range of applications therefore we can imagine everything and it will bring all of them into real existence.

Zeenat Saba (4th B)

History Of 5G

5G Technology, means a new future of the world. 5G Technology stands for 5th Generation Mobile Technology. 5G was first introduced on 3 April 2019 in South Korea. Verizon launched its 5G services in the United States. The country Philippines which was first to start the 5G network of Southeast Asia later Globe Telecom Commercially launched its 5G data plans to the consumers in June 2019. United States, United Kingdom, Germany, and China have also implemented the 5G network. 5G is developing in parallel with rapid advancements in AI and IoT. The combination of flexible, high-speed 5G networks with AI and IOT will underpin the new era of intelligent connectivity. According to GSMA Intelligence (GSMAi) forecasts, there will be a 1.35 billion 5G connection by 2025. 5G is a necessary upgrade to mobile products, guaranteeing that it continues to remain relevant to consumers, enterprises, and government in general.

Mounica Thakar (6th B)

5G Working Principle

Wireless communications systems use radio frequencies to carry information through the air. 5G works the same way but uses a higher radio frequency that is less cluttered. This allows it to carry more information at a much faster rate. Like 4G LTE, 5G is also based on OFDM (Orthogonal Frequency Division Multiplexing) and works according to the same cellular network principles. The new 5G NR (New Radio) air interface will further upgrade OFDM to offer a much higher level of flexibility and scalability. 5G will not only provide faster and better mobile broadband services than 4G LTE but will also expand to new service areas such as mission-critical communications and connecting the massive IoT. This is made possible by many new 5G NR air interface design techniques, such as a new self-contained TDD sub-frame design. 5G technology will be able to slice a physical network into multiple virtual networks. This means that operators will be able to deliver appropriate network segments based on usage and thus can better manage their networks.

Manpreet Singh Saluja (4th A)

Impact and Broad Uses

5G will impact people's lives very broadly. It is the perfect backbone for the Internet-Of-Things(IoT), which will lead to support the increasing number of devices and will improve the response time among connected devices. Not only that, but it will also enable self-driving cars to make split-second decisions, making them safer. 5G could usher in a high-tech industry using augmented reality to boost productivity and precision in industries. Healthcare is another crucial sector that is going to be revolutionized through 5G. Smart medical devices will provide real-time updates on patients, which will result in correct diagnosis. Also, IT and the communication industry will get huge benefits from 5G, as the amount of data collection will be huge through it. All these impacts and broad uses of 5G will surely lead to affect our economy positively.

- Isha Mishra (4th A)

Availability

5G is the newest wireless networking technology that phones, smartwatches, cars, and other mobile devices, and who knows what else, will use in the coming years, but it's not yet available in every region around the world. As of February 2021, over 30% of the world's countries have 5G. Some estimates forecast that by 2026, 5G subscriptions will reach 3.5 billion.

In 2018, one of India's largest telecom providers (then called Idea Cellular) merged with Vodafone and is now called Vi. Vodafone was already preparing for 5G, having set up "future-ready technology" in 2017 by upgrading their entire network to support it.

Bharti Airtel announced in early 2021 that their network is 5G ready. Reliance Jio and Bharat Sanchar Nigam Limited (BSNL) are other mobile network operator in India who are planning to provide 5G in the second half of 2021. Overall 5g will be soon available in India and soon we'll witness the speed of the latest generation of cellular internet technology.

- Musab Hashmi (6th B)

Edge of 5G over previous Generation

5th generation technology purveys an extensive range of characteristics in particular a technology to congregate all networks at one platform. It is designed to assist a 100x extension in traffic capacity and network efficiency. Low latency, cloud gaming technology, less interference, improved virtual reality, and peer-to-peer communications are the foremost reasons for preferring the 5G network over earlier generations. IoT with 5G advancements gets better and faster, providing automated devices with excellent features. It also authorizes for implementation of virtual networks, generates subnet, so as to offer connectivity more adjusted to specific needs. This technology is expected to revolutionize mobile networking and create new economic opportunities.

- Ishita Verma (4th A)

Wrapping it up

In this era of the internet, every day we hear people buzzing about the 5G technology which is basically a 5th Generation mobile network that has successfully begun its deployment in the year 2019 after the previous 4 wireless network standards. South Korea was the first country which adopted this new technology and after a few hours, Verizon launched it in the United States resulting in some disputes. Later in 2019, the Philippines became the first southeastern Asia country to establish 5G technology.

The three broad areas where we will be seeing the major application of 5G technology are- Enhanced Mobile Broadband, Mission-Critical Communications, and Massive IoT. The salient features of 5G like – great speed of transmission, much lower latency, network slicing, a greater number of connected devices, uniform and consistent connection all across the world make it more unique and beneficial for people of varied fields, including a common man.

5th generation technology is designed to impart amazing and remarkable data capabilities, uninterrupted call volumes, and immeasurable data broadcast within the latest mobile-enabled with 5G technology and a more enhanced operating system. Hence, it is a more reliable and empowered technology, which will interconnect the entire world without barriers with the utmost security and strong mutual authentication.

- Bhumika Bhandari (6th A)

The Fact Factory

1. 5g means fifth-generation wireless technology like 3g brought us the email, 4g brought us to live streaming videos and video calls, 5g will bring us driverless cars or self-flying drones
2. All 5g networks are not the same, wireless networks are built using different frequencies of radio waves. So 5g can travel in millimeter waves, megahertz waves, and also gigahertz waves
3. 5g frequency is very strong and can travel very long distances which can now connect kilometers away villages from city networks, with such high radio waves it can travel walls just like a light ray travels through a glass
4. South Korea is the first country to launch 5g networks in the whole country in 2019.
5. Samsung is the first company to launch a 5g mobile and Hawaii is the first company that made a 5g supporting CPU.



Answer Me in One

1. In 5G, 'G' stands for?
2. 5G has _____ latency than 4G.
3. How many types of technologies are there in 5G?
4. What performs operations like accessing Network Exposure Function for retrieving resources?
5. A unit of the telecom systems that processes baseband signals

Answers - 1. Generation 2. Lower 3. 3 types 4. NF (Application Function) 5. BBU (Base Band Unit)

Departmental Activities

SSIPMT provides its students to enhance their skills by presenting multiple opportunities, experiences, and exploration through different activities every year. Similarly, this year opportunities came as the Computer Society of India (CSI) Regional student convention organized by the Computer Science and Informational Technology branch with Interesting events like ICT quiz, Code debugging, Poster Designing, Web designing, Multimedia contest, Android/mobile app development. Then we had the webinar on Interactive session with Successful Startup founders by the speaker Prateek Pandey, The Co-founder of Letsmobility Software solutions. Student Development Programs are also conducted for the growth of them in technology burning in the market, the 6th-semester students are getting training from Zensar in different domains mentoring their overall development. Next, there is an Intel Training program to be organized in the coming months for the students. Also, Congratulations to our faculties for patenting two innovative device designs, first the Rotatable Laptop Base stand with Screen, and second the AI-Based Controlled Wheelchair for paralyzed Patients. This surely motivated many of the students to think and innovate something which will serve the betterment of society. CSE Department always focuses on the overall nourishment of the students and their excellence in every field, hence setting a benchmark for the other departments.



Placed Students

1. Akanksha Pandey (Infosys, TCS NQT)
2. Ankit Kumar Pithalia (Calsoft, Teksystem)
3. Shivan gi Manas (Hexaware, Cognizant)
4. Shashwat Singh (Hexaware, Teksystem)
5. Rishita Rathore (Teksystem)
6. Simran Rai (Cognizant)
7. Rishikesh Shrivastava (Cognizant, TCS NQT)
8. Rishabh Pandey (Cognizant, TCS NQT)
9. Prachi Sharma (Cognizant, TCS NQT-Digital)
10. Abhishek Singh (Cognizant)
11. Akhilesh Sahu (TCS NQT)
12. Ravleen Kaur Bindra (TCS NQT)
13. Kuldeep Singh Thakur (TCS NQT)
14. Riya Tamrakar (TCS NQT)
15. Yashwant Upadhyay (TCS NQT)
16. Taniya Rao Kallepalli (TCS NQT)
- 17.Vanya Shrivastava (TCS NQT)
18. Sagar Sahasi (TCS NQT)
19. Simar Kaur (TCS NQT)
20. Shubhi Shrivastava (TCS NQT)
21. Manisha Jain (TCS NQT)
22. Onkar Nagpal (TCS NQT)
23. Kaushal Kumar Gupta (TCS NQT)
24. Shreyansh Tiwari (TCS NQT)
25. Prakhar Pandey (Accenture)
26. Stuti Agrawal (TCS NQT-Digital)
27. Shrutika Naidu (Collabera)
28. Apurva Shukla (Collabera, HSBC)

Accomplishments of Department

1. Our **honorable HoD, Dr. J.P.Patra** has patented a device that is an “**AI-Based Controlled Wheelchair for paralyzed Patients**”.
2. Our **departmental faculties** have jointly worked on an idea of “**Rotatable Laptop Base stand with Screen**” and patented it.
3. **Suraksha Mandhan** of the 6th Semester has secured an internship of **1 lakh per month at Adobe Company** as a Product Engineer through Adobe SheCodes Challenge.
4. **Satvik Shrivas** of the 6th Semester has qualified **Google CodeJam** with 90 points and is appointed as a Software Developer Intern at **GeeksForGeeks**.
5. **Apurv Gupta** of the 6th Semester is appointed as Software Developer Intern at **Voomp Company** and is a mentor at **Girl Script Summer of Code 2021**.
6. **Ghananjali Janghel** of the 4th Semester has participated in the **32nd Senior National Korfbal Championship held in Haryana (Palwal)**.
7. **Sakshi Bhuwal** from the 4th semester has achieved the **Excellence in Education award**, as the Vice president Education of the club at toastmasters international.
8. **Himanshi Malagar** from the 4th semester has achieved the **PR Torchbearer award** as Vice President Public Relations of the club at toastmasters international.
9. **Samridhhi Tiwari** and **Nirali Kansara** from the 6th semester have achieved the **Transparency in Treasury award** as the treasurer and the president of the club at Toastmasters international.
10. **Rhea Jain** has achieved the **Pathway Star award** for completing a pathway as well as helping two members to complete level 1 of their respective pathway.
11. **Rudraja Vansutre** and **Nirali Kansara** from the 4th semester and 6th semester respectively have achieved the **Transparency in Administration award** as the secretary and the president of the club

What is a framework?

A framework, or package framework, is a platform for developing software applications. It provides a foundation on which software developers will build programs for a selected platform. The framework is similar to an application programming interface (API), though technically a framework includes an API. To find frameworks' popularity we tend to use reliable sources (GitHub, Stack overflow developer survey 2020).

React



JavaScript-based client-side web-frameworks are dominating. React isn't the first however foremost fashionable among web developers. Developed by Facebook to implement the web's view layer in a component-based way.

Key options

- It has the locution "Learn Once, Write Anywhere" as software engineers will use React to develop Apps for any kind of User Interface, e.g., Web, Mobile, Desktop, or for Smart TV.
- Among all the Client-Side Web Frameworks, React offers the simplest Server-Side Rendering with pretty good SEO support.
- Facebook is actively developing React and swing their all effort behind it. On 2.7 billion Facebook users react features are tested. It will stay within the trade as long as Facebook is there.

When to use:

- The development team has information on JavaScript.
- Highly interactive or enterprise-grade applications are designed.
- The company desires to use one framework for multiple platforms.

When not to use:

- The development team has very little to no expertise in JavaScript.
- If the speed of development is the most significant criteria.
- For less complicated, less interactive applications.

Django



In 2005, 2 young engineers Adrian Holovaty and Simon Willison created a Python-based, Server-Side Web framework that follows the MTV architectural pattern. In the last decade, Python's popularity augmented by leaps and bounds, which directly affected the high adoption of Django. Besides that, Django offers several pleasant features and is presently one of the most Server-Side Web frameworks.

Key options

- It offers extensibility via pluggable apps where third-party apps can simply be plugged.
- It offers a breakneck development velocity.
- Django works seamlessly with the Python ecosystem, which is one of the biggest ecosystems within the business.

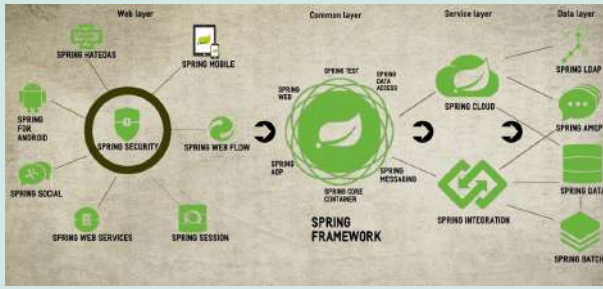
When to use:

- In enterprise software development, where the rate of development may be an essential issue.
- The app must integrate with different fashionable cutting-edge projects coping with Machine learning or deep learning.
- In Serverless Computing.

When not to use:

- Very basic and Straightforward application development.
- In large-scale Enterprise application development, where an application ought to be extremely climbable.
- The development team has no experience in Python and has no time to find it out.

Spring



Rod Johnson created the Spring framework as an Inversion of Control, Server-Side Web framework in 2002. Since then, Spring has grown with time and currently the primary Web framework in Java-based application development.

The best part of the framework is evolving with the dynamical landscape and playing an enormous role in creating Java relevant within the age of Cloud computing.

Key options

- It is an enterprise-grade, Server side rendered, primarily MVC (Model-View-Controller) Web framework with support for Asynchronous and Reactive programming. It is additionally the leading JVM-based Web Framework.
- Spring Web Framework is an element of the larger Spring scheme, that supports further Cloud Native development, Batch processing, Event-driven application development, and many more.
- It is meant for large-scale application development and offered everything you wish for such application development (e.g., refined security, varied data sources, multiple cloud deployment).
- Its Fast Application development features are among the best in the Web development landscape.

When to use

- In enterprise software development, where JVM is the well-liked Runtime language.
- In large-scale, extremely scalable, or hardware-intensive application development.
- In projects where maturity and stability are well-liked over the speed of development.

When not to use:

- Very basic and Straightforward application development (e.g., Proof of Concept development).
- In Serverless Computing, Spring isn't the proper alternative.
- If development rate and quicker release are the key criteria.

Flutter



An open-source framework created by Google named Flutter is a mobile UI framework released in May 2017. It permits you to develop a native mobile application with only one codebase. This implies that you just will use one programming language to create two different apps (for iOS and Android).

Key options:

- you can modify your code and see the results in real-time. It is known as Hot-Reload. It solely takes a brief amount of time when you save to update the application itself.
- It's cheaper to develop a mobile application with Flutter as you do not have to be compelled to produce and maintain 2 mobile apps (one for iOS and one for Android).
- It is stunning – you will simply use widgets provided by Flutter and individualize them to form a valuable UI for your customers
- Flutter encompasses a strong community, and it is solely the beginning!

When to use:

- Your new app will look constant, even on old versions of android and iOS systems. There are not any further prices for supporting older devices. It successfully runs on Android Jelly Bean or newer, as well as iOS 8 or newer.
- Flutter apps work in a sleek and quick method, while not hanging and cutting while scrolling.
- Flutter is meant to create it simple to form your widgets or customize the present widgets.

When not to use:

- Flutter is still new and not every practicality that you wish is often found in these libraries. This implies that your developers would wish to make them by themselves, which can be long.
- Dart is the key necessity.
- Flutter isn't widely supported by CI platforms like Travis or Jenkins. So, to attain automatic building, testing, and deployment, your development team must use and maintain custom scripts.

- Srijan Agrawal (4th B)

Newsletter Team

Dear students,



The newsletter aims at providing knowledge and wisdom through words. The significance of a newsletter is to expand your reach and strengthen your ties with the ongoing technology trends. The global COVID-19 has unprecedented impacts on our lives, hoping you're all safe and in good health. In such a chaotic situation of the pandemic, through digital transformation, our department took an initiative to conduct numerous events in particular code debugging, poster designing, web designing, multimedia contest, android app development programs, webinars, and training students in various domain.

The core propaganda of a newsletter is to cultivate knowledge, notify about upcoming events, piece up information, and create credibility. Through a newsletter, we can help you to stay up to date with the latest advancements in education and technology and providing hassle-free access to information. It furnishes an entertaining read for interesting and relevant topics, by unlocking a wide range of articles, tools, and websites. It not only aware us of the latest ongoing technology craze but also shed a light upon the myths and misconceptions. It assists readers to learn something, encourages them, and lays a constructive impact.

Mentor - Taniya Jain
Assistant Professor, CSE Dept.

Heads



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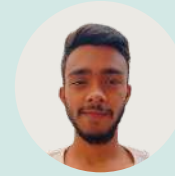
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The upcoming cover theme for July 2021 issue is Robot Process Automation. Students may submit their articles in categories such as Technical trends, Interesting facts, small Technical Game. Deadlines of the submission will be informed soon. Please note that Cyber Trinity is a Newsletter for members of large and not a journal form publishing full-fledged research papers. Therefore, we expect articles written at the level of the general audience. Please send your article in MS-word format to Editor in Chief Abhinav Dubey, in the email id cse.newsletter@ssipmt.com with details of the sender(name, semester, branch). Issued on behalf of the Computer Science Department