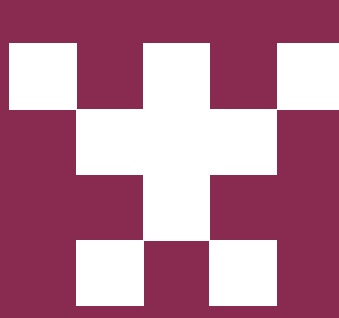




# git informed

UPDATES YOU'LL ACTUALLY WANT TO PULL



Technology is everywhere, weaving its way into our daily lives, shaping the future, and transforming the way we think, connect, and create. Through every innovation and every breakthrough, there's a story—a story of curiosity, perseverance, and the boundless potential of human ingenuity.

In these pages, we celebrate the marvels of the modern world, explore ideas that push boundaries, and share stories of individuals who dare to dream and innovate. Whether it's unraveling the mysteries of the internet's backbone or diving into the inspiring journeys of trailblazers, this newsletter is a space for discovery, learning, and inspiration.

## WHAT'S INSIDE THIS ISSUE?

**SECTION 1: Tech Around Us**

**SECTION 2: Alumni Talk**

## ***Message from the Faculty***



**Dr. P. Vasuki**

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Department of IT

Faculty Coordinator - SSN IEEECS

I am proud of the entire IEEECS unit for creating such an engaging and technically enriching newsletter. It is always a pleasure to work alongside these motivated young minds. From the artistic poetry of GSM to the detailed insights on submarine cables, the concise and focused content is sure to delight readers. The alumni sharing their success stories adds an inspiring touch, fostering meaningful connections and learning opportunities. Kudos to the editors, office bearers, and designers for their dedicated efforts. Wishing the newsletter a successful journey ahead.

# Section 1

## Tech Around Us

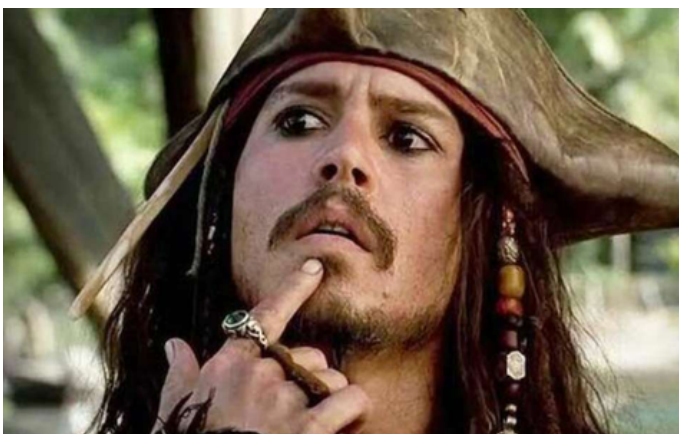
Imagine you're on a fully paid vacation to Guam. After soaking in the island's beauty, you board a ship to sail across the Pacific Ocean to Hawaii. As you cruise, you decide to drop anchor deep into the ocean to enjoy the tranquil surroundings. The sun sets on the horizon, and you sit back, mesmerized by the serene scene.

Little did you know, you may have just ignited a geopolitical conflict.

Yes! Dropping your anchor could trigger a hybrid cold war between the US and China. Why? Because beneath the ocean's surface lies the Asia-America Gateway (AAG), a massive 20,000-kilometer-long submarine communications cable system linking Southeast Asia to the United States, via islands like Guam and Hawaii.

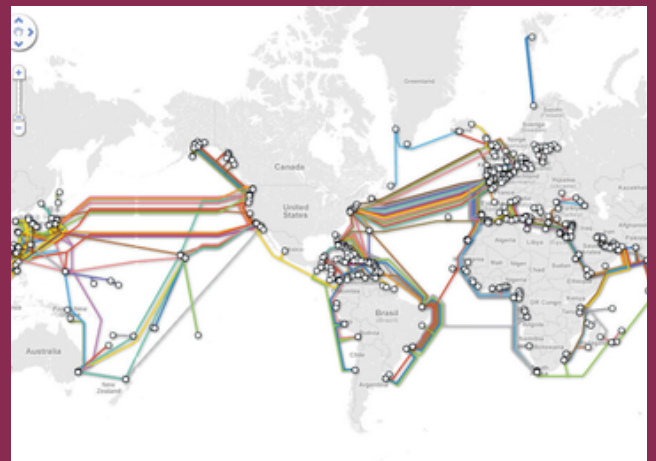
### UNDERSEA CABLES: THE BACKBONE OF THE INTERNET

The very reason you can read this article is because of these undersea cables. But how do they work? How do they carry such enormous amounts of data across continents? And how did we manage to coordinate this marvel of modern technology?



Let's break it down.

### HOW DO SUBMARINE CABLES WORK?



Modern submarine cables use fiber-optic technology. Lasers at one end fire at incredibly rapid rates down thin glass fibers to receptors at the other end. These fibers are shielded with layers of plastic—and sometimes steel wire—for protection.

Here's a simplified explanation of how your data travels across the globe.

*Dora, in India, wants to send a “Happy Birthday” message to her friend Sandhya in the US. What happens next?*

1. **Encoding the Message:** Dora opens WhatsApp, types “Happy Birthday,” and hits send. Her message is instantly converted into binary code—a sequence of 0s and 1s.
2. **First Point of Contact:** The binary data is transmitted as radio signals from Dora's phone to her router. The router, acting as a gateway to the Internet, forwards the data to her Internet Service Provider (ISP).
3. **Travel Through Land Networks:** The ISP sends the data through fiber-optic cables, transmitting it as light pulses. These pulses travel through land-based networks, passing through various hubs and routers
4. **To the Ocean:** At the edge of the country, Dora's data enters a submarine cable system. These undersea cables carry the data as light signals across vast distances, with repeaters boosting the signal every few hundred kilometers.
5. **Arrival in the US:** On reaching the US, the light signals are converted back into electrical signals at a landing station. From there, they travel through the US internet backbone to Sandhya’s local ISP.
6. **Final Delivery:** The data reaches Sandhya's phone and is converted back into readable text. Sandhya sees Dora’s message on WhatsApp—all in microseconds.

## FROM OCEAN CABLES TO SATELLITES

The internet’s future is heading to space. Companies like Jio SpaceFiber in India plan to use Medium Earth Orbit (MEO) satellites for a balance between coverage and speed, while Starlink relies on Low Earth Orbit (LEO) satellites for faster speeds and lower latency. This shift could transform connectivity, especially in rural and remote areas

## GSM: GREAT SIGNAL MAGIC

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In the world of waves, where signals roam,  
GSM built a digital home.  
At nine hundred megahertz, it found its start,  
A global system, connecting heart to heart.

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SIM cards cradle your unique ID,  
Roaming freely across land and sea.  
Encryption guards your words mid-flight,  
Making secrets safe, even out of sight.

SMS writes tales in concise flair,  
From love confessions to urgent repair.  
Data arrives with EDGE and GPRS,  
First steps into wireless finesse.

From the 90s birth to the present day,  
GSM paved a remarkable way.  
A digital bridge for all to connect,  
Its legacy stands with immense respect.

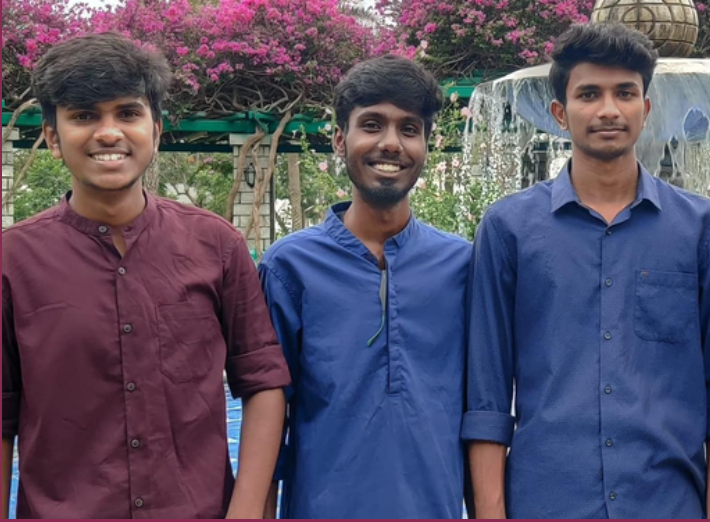
## About GSM

GSM (Global System for Mobile Communications) revolutionized mobile communication in the late 1980s by transitioning from analog to digital technology. Operating in bands like 900 MHz and 1800 MHz, GSM uses **TDMA (Time Division Multiple Access)** to efficiently share frequency channels, ensuring clear voice calls and data transmission.

Key features like the **SIM card** allow seamless roaming across networks, while SMS enables quick text communication. With advancements like **GPRS** and **EDGE**, GSM laid the groundwork for today's mobile internet and continues to evolve alongside 3G, 4G, and 5G technologies.

## Section 2

### Alumni Talk



The **NIRAL Thiruvizha**, an annual state-level event spanning 7 regions and 38 districts, is a hub of innovation. This year, **Ragul (SSN IT, 2024)**, a Data Engineer at Comcast, alongside teammates **Mahendra Varma** and **Raghul Bheem**, stood out as finalists with their transformative project: a cutting-edge **Electronic Health Record (EHR) system**.

Despite entering SSN as lateral entry students with no prior IT background, the trio embraced the steep learning curve and turned challenges into opportunities.

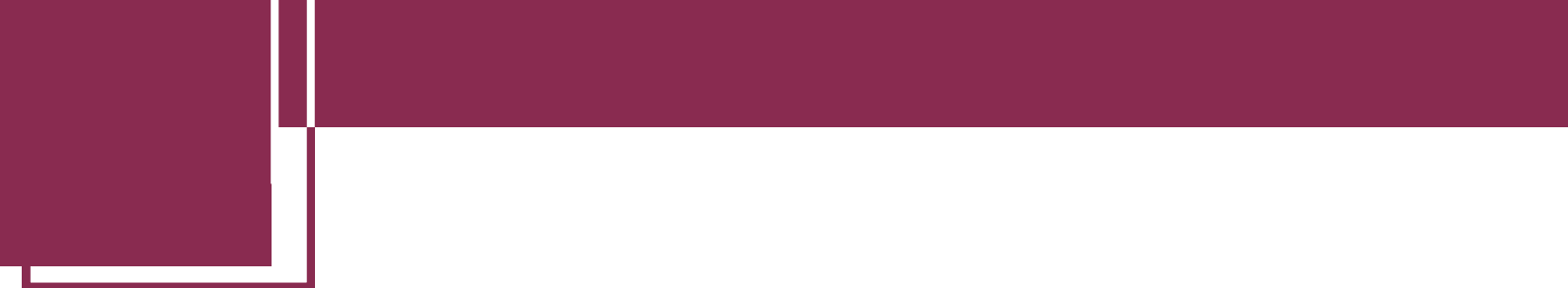
Here's an excerpt from our conversation with Ragul:

**Congratulations on making it to the finals of the NIRAL Thiruvizha TN Startup Competition! How does it feel to achieve this milestone?**

It was an incredible feeling when we found out our idea had been selected. This recognition has given us the confidence to push forward and continue working toward our vision.

**Can you briefly introduce yourself and tell us what inspired you to participate in this competition?**

My name is Ragul, and I'm currently working as a Data Engineer at Comcast. During our college days, we didn't participate in any hackathons or tech events. So, we saw this as the perfect opportunity to showcase our skills and prove our worth in a competitive space.



## **What problem does your project address, and how does it provide a solution?**

Personally, I've struggled with keeping my medical records organized, especially during follow-up visits or when seeking a second opinion from doctors. Often, I missed important prescriptions or reports. I realized that this was not just my problem; countless others face similar challenges. This inspired us to build a system to help individuals manage and document their medical histories efficiently.

## **What makes your project unique, and how do you envision it standing out from similar solutions?**

Our initial goal was to create an Electronic Health Record (EHR) system with enhanced features. However, as we delved deeper into research, we discovered a significant gap in live applications addressing real-time needs for both patients and healthcare providers. Our unique selling point is the integration of features like medical history summarization, chronological and department-based record storage, and even live ambulance booking with real-time dispatch. Ultimately, our solution aims to tackle the challenges faced by both doctors and patients, making healthcare more accessible and efficient.

## **What were the biggest challenges you faced while working on your project, and how did you overcome them?**

The biggest challenge we faced was the incredibly tight timeline—just two and a half months to complete everything. Adding to the pressure, I had internship responsibilities, which made it even more overwhelming. But we didn't let that defeat us. Through countless late nights and unwavering teamwork, we pushed beyond our limits. We refused to give up, knowing that success doesn't come without sacrifice. In the end, we not only met our deadline but proved that passion and persistence can overcome any challenge.



### **How did the college, mentors, and team members support you during this journey?**

This project wouldn't have been possible without the hard work and dedication of my friends, Mahendra Varma and Raghul Bheeman. Since day one of college, they've been friends first and teammates second. Balancing my internship, I often rolled into college late in the evening, with most of our discussions and work happening at night. My teammates didn't hesitate to stay up late, ensuring we stayed on track.

Our mentor, Joe Sir, was the real unsung hero of this journey. We often worked late into the night and sent review documents at 4 or 5 AM on the day of the project review. Despite this, Joe Sir was always there, offering immediate feedback and encouragement. His guidance, problem-solving approach, and quirky insights made all the difference. He truly inspired us to give our best, even when we were half-asleep.

### **What was your preparation like for the competition, and how did you refine your project for the finals?**

For the final pitch and presentation, we conducted a trial run and internal review with the CEO of SSN iFound. Their constructive feedback on areas for improvement, along with their appreciation for what we'd done well, was incredibly valuable and helped us refine our project.

### **What has been the most memorable or impactful moment of this experience for you?**

This journey had its fair share of ups and downs. A significant turning point was our participation in the ICCSP poster presentation, where our idea was showcased. However, the feedback we received wasn't as positive as we had hoped, and it initially shattered our confidence. Instead of letting it defeat us, we viewed it as an opportunity to improve. We worked tirelessly, refining our project, and it paid off when we received appreciation from the panel at NIRAL.

One of the most memorable moments came when we received an unexpected call from a doctor at JIPMER. He appreciated our idea and offered valuable suggestions. This validation from a professional in the field reaffirmed that we were on the right path.

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### **What's next for your project after the competition? Do you have plans to scale or expand it further?**

We are committed to spending more time and effort to develop this project into a fully-fledged application. However, as we're just starting our careers, balancing work commitments and project development is challenging. If given the opportunity, we'd love to scale this application and take it to the next level. We're also open to collaborating with juniors who are interested in taking this idea further.

### **How has this achievement influenced your goals, and what message would you like to share with our readers?**

Initially, we were filled with fears and doubts, which is why we avoided participating in events. Looking back, we realize those missed opportunities were chances for learning and growth. Our message is simple: don't be afraid to step out of your comfort zone. Take those opportunities, embrace the learning process, and give things a try—you never know where it might take you! If we can do it, you can achieve even more. Keep that fire burning, and don't let it fizzle out!

This concludes the volume, marking another step in the journey of exploring ideas, innovations, and accomplishments. Each edition is crafted with the aim of delivering insights and inspiration, fostering a deeper connection to the world of technology and its limitless potential.

With every story, every insight, and every perspective shared, we hope to contribute to a collective journey toward knowledge and understanding.

Thank you for taking the time to engage with this edition. Until the next volume, continue to embrace knowledge, pursue excellence, and stay informed.

# EDITORIAL



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# DESIGN



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