

# TECHPULSE

— 2025 —

**The Rise of  
Smart  
Agriculture**

HOW TECH IS PLANTING A  
NEW FUTURE

**EXCLUSIVE**

**Event Highlights**

**5**

**Must See  
Chapter Events  
Unveiled**

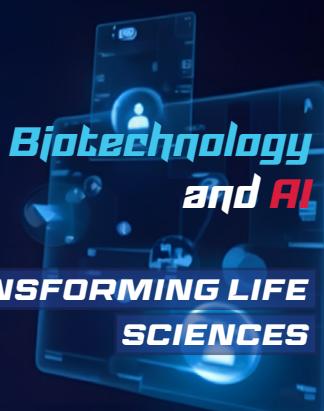
**Material Miracles**

ENGINEERING A NEW ERA  
FOR SRI LANKA



**Classrooms Go  
Digital**

SRI LANKA'S LEAP INTO  
DIGITAL  
CLASSROOMS



**Biotechnology  
and AI**  
TRANSFORMING LIFE  
SCIENCES

**+**

**Innovation  
for All**

HOW TECH DRIVES  
SOCIAL EQUALITY



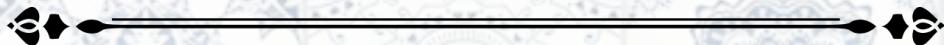
# WELCOME

Welcome to the premier issue of the IEEE Industry Applications Society (IAS) Student Branch Chapter of SLIIT magazine, TECHPULSE. We are proud to present this first edition, a key milestone that brings together our collective passion for technology, learning, and positive change.

Within these pages, you'll discover stories and features that weave together themes of education, nature, ethics, and equality - all united by the transformative power of technology. This magazine also showcases three exclusive interviews with inspiring individuals and five vibrant event spotlights, each illustrating the chapter's dynamic influence and achievements.

As you read, we invite you to celebrate with us the spirit of innovation, collaboration, and leadership that defines our community. Here's to celebrating fresh starts and the incredible support that made this possible!

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# Message from the Chairperson of IEEE Student Branch of SLIIT



As the Chairperson of the IEEE Student Branch of SLIIT, it fills me with immense pride to reflect on the journey of the IEEE IAS Student Branch Chapter (SBC) of SLIIT under the strong guidance of its Chairperson. What makes this chapter truly special is not just its milestones, but the passionate volunteer community that drives every success.

A highlight this year was achieving the highest IAS student membership count in Sri Lanka, a proud achievement that reflects the dedication and unity of our team. With new initiatives underway, I'm confident this momentum will continue to grow.

The strength of collaboration between the IAS SBC and the IEEE Student Branch has been evident through various events, along with joint efforts involving other SBCs and university chapters. It's been inspiring to see this chapter thrive through impactful events and partnerships.

To the Executive Committee, you've truly grabbed the opportunities given and acted on them. I wish you all continued success and encourage everyone to carry this legacy forward with enthusiasm and commitment.

**Mahdy Abdullah**  
Chairperson – IEEE Student branch of SLIIT  
(2024/25)

# Message from the Chairperson of IEEE IAS Student Branch Chapter of SLIIT



**I**t is with great pride that I share this message as the Chairperson of the IEEE Industry Applications Society Student Branch Chapter of SLIIT for the 2024/25 term.

This magazine is more than a record of achievements, it's a celebration of the passion, purpose, and perseverance that define our chapter. From technical workshops and bootcamps to projects bridging academia and industry, our journey this term has been driven by a team committed to meaningful impact.

We've focused not only on growing in numbers but also on creating space for innovation, inclusivity, and leadership through volunteerism. Each step forward was possible thanks to the energy and dedication of our volunteers, mentors, and partners.

A special note of appreciation goes to the IEEE Student Branch of SLIIT, whose continued support has been instrumental. The synergy between our Organizational Units, shaped by the thoughtful leadership of its Chairperson, has quietly strengthened our shared vision.

As we turn this new page with our first magazine, may it inspire you to reflect, connect, and contribute to what lies ahead.

**Hafsa Zainab Kaleelur Rahuman**  
**Chairperson – IEEE IAS SBC of SLIIT**  
**(2024/25)**

# Message from the Secretary - IEEE IAS Student Branch Chapter of SLIIT



Stepping into the role of Secretary for the IEEE IAS Student Branch Chapter of SLIIT has been one of the most meaningful parts of my university journey so far. It's not just about organizing documents or planning events, it's about being part of a team that truly believes in creating something valuable for others.

This year, we worked hard to make our chapter more than just active, we wanted it to be impactful. Every workshop, discussion, and initiative was backed by hours of planning, teamwork, and the belief that even small efforts can create lasting change. I've had the chance to work closely with some incredible people, and I've learned so much not just technically, but about leadership, patience, and purpose.

I'm proud of what we've achieved together, and even more excited about where we're headed. A huge thank you to the committee, our volunteers, and the supportive IEEE SB team for always showing up and giving your best.

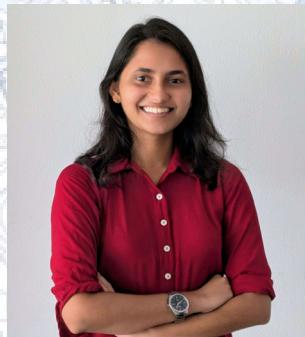
As you go through this magazine, I hope you not only see the events and highlights but also feel the passion and effort behind it all. And if you've ever thought of getting involved, I hope this inspires you to take that first step.

**Pasindu Parindya Rathnaweedra**  
Secretary – IEEE IAS SBC of SLIIT  
(2024/25)

# Behind the Magazine



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# The New Frontiers of Healthcare: How AI is Revolutionizing Medical Diagnostics

*In the fast-evolving intersection of technology, industry, and medicine, Artificial Intelligence (AI) stands as one of the most groundbreaking innovations of our time. No longer confined to administrative tasks or experimental research, AI is now at the core of how healthcare providers diagnose diseases, design treatments, and predict patient outcomes. From hospital floors to remote telemedicine centers, the integration of AI into diagnostics is setting new standards for accuracy, efficiency, and personalized care, redefining the future of medicine as we know it.*

## The Rise of Intelligent Diagnostics

In the early stages, AI in healthcare was primarily focused on handling paperwork, managing schedules, and automating repetitive tasks. However, today's AI technologies, powered by advanced machine learning and deep learning algorithms, are capable of analysing complex datasets at a scale and speed unimaginable to human clinicians. These systems can sift through millions of medical images, patient histories, and genetic profiles in seconds, identifying

subtle patterns that would likely elude even the most experienced specialists. Medical imaging has been one of the earliest beneficiaries. AI-driven tools now outperform human radiologists in certain diagnostic tasks, such as detecting breast cancer in mammograms by highlighting microscopic anomalies with greater precision and consistency. In burn and wound care management, AI algorithms assess infection risks, monitor healing progress, and even predict surgical needs, drastically improving patient outcomes.

## Speed and Precision: A Life-Saving Combination

Time is often the most critical factor in disease diagnosis. Traditional diagnostic methods, while accurate, can sometimes be slow due to the manual analysis required. AI tools are changing this dynamic by offering near-instantaneous assessments. For example, in burn and wound management, AI systems evaluate the depth and severity of injuries from high-resolution images in real time. These rapid analyses are particularly vital in emergency settings where early intervention can

mean the difference between recovery and severe complications.

Predictive analytics, a branch of AI, is also gaining momentum in preventive medicine. By analysing variables like patient demographics, comorbidities, lifestyle factors, and treatment histories, AI models can forecast the likelihood of disease progression or healing outcomes. This empowers clinicians to design proactive, personalized treatment plans rather than reactive ones, a shift that promises to reduce healthcare costs and enhance patient satisfaction across the board.

## A New Era of Personalized Medicine

One of AI's most promising contributions to healthcare is its ability to personalize medicine at an unprecedented level. Gone are the days of one-size-fits-all treatment strategies. AI algorithms now tailor healthcare plans based on each patient's unique genetic makeup, environmental exposure, and medical history. For instance, platforms like DeepView® are already transforming wound care diagnostics by predicting wound healing trajectories with astonishing accuracy, allowing clinicians to intervene earlier and more effectively.

This personalization extends beyond individual treatment plans. AI can stratify patients by risk, prioritize resources, and even identify the most promising candidates for clinical trials, accelerating medical research and innovation.

## Industrial Impact: AI and the Business of Healthcare

The integration of AI into diagnostics is not just reshaping medicine; it is also transforming the healthcare industry itself. Hospitals and clinics are rapidly adopting AI platforms to improve operational efficiency, reduce diagnostic errors, and meet the rising demand for precision medicine. Companies specializing in AI healthcare solutions, imaging technologies, and predictive analytics are witnessing unprecedented growth, drawing attention from venture capitalists, biotech investors, and tech giants alike.

Telemedicine has become another major frontier. With AI-enhanced diagnostic tools, remote consultations have become more reliable and accurate, enabling patients in rural or underserved areas to receive high-quality care without the need

to travel. AI's role in telehealth, especially when combined with real-time imaging analysis and predictive modelling, represents a significant leap toward global healthcare equity.

## Challenges and the Road Ahead

Despite these remarkable advancements, challenges remain. Integrating AI systems into traditional healthcare infrastructures requires significant investment in technology, training, and cybersecurity measures to protect sensitive patient data. Additionally, ethical and regulatory frameworks must evolve quickly to keep pace with AI's capabilities, ensuring that these powerful tools are used responsibly and equitably.

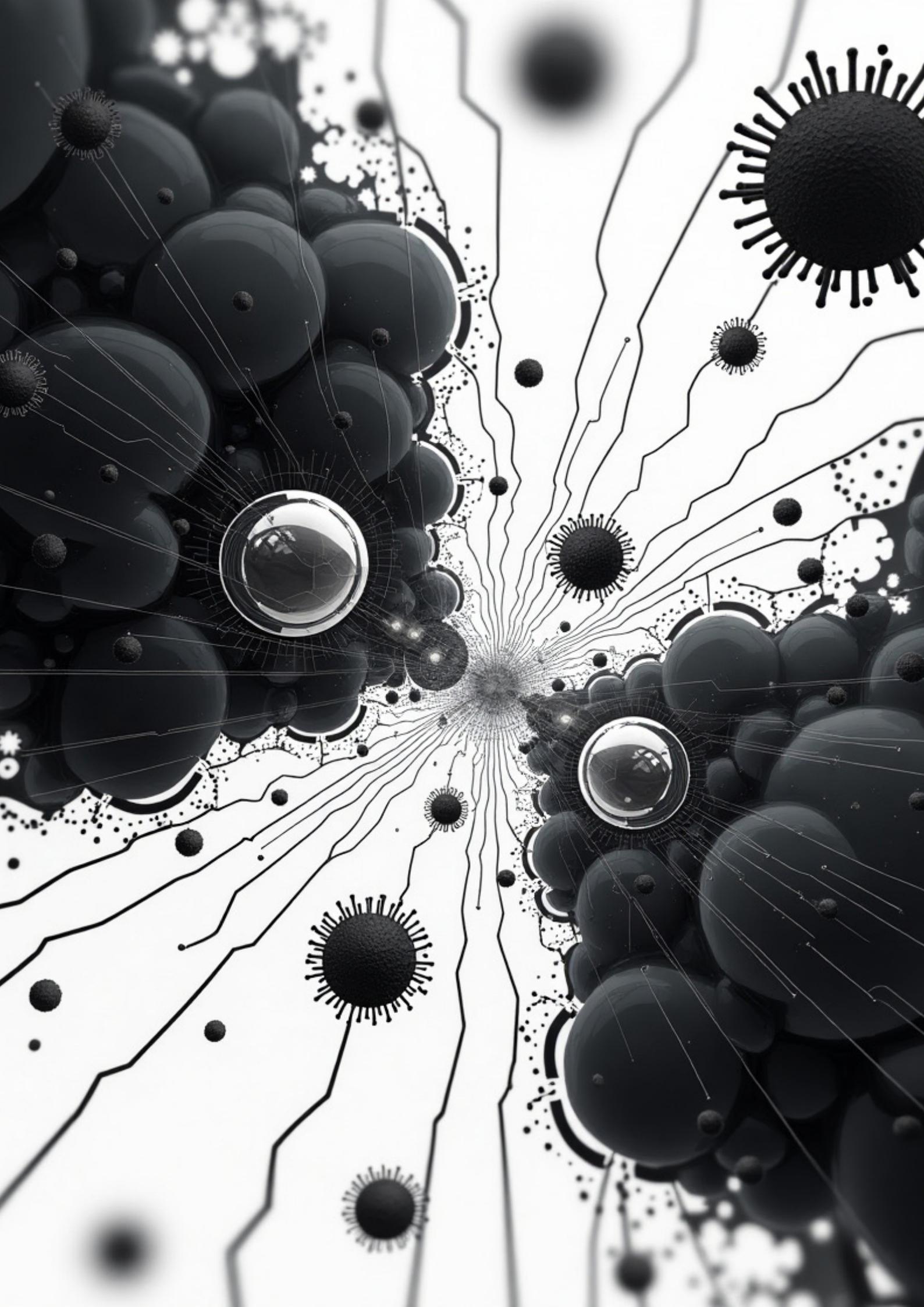
Moreover, while AI can augment and accelerate human decision-making, it cannot yet replace the essential intuition, empathy, and contextual judgment that clinicians bring to patient care. The best outcomes will come from a synergy of human expertise and machine intelligence, rather than competition between the two.

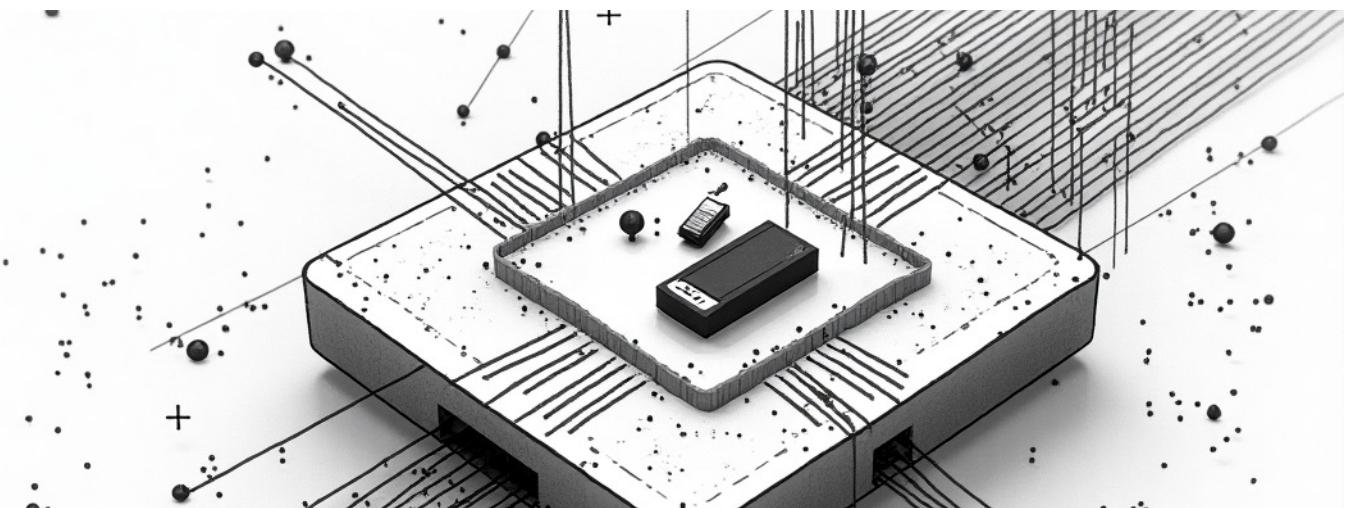
## Conclusion: Embracing the Future

Artificial Intelligence is not merely a tool of convenience in modern healthcare, it is a transformative force redefining what is possible. From diagnosing cancer earlier than ever before, to predicting wound healing outcomes, to crafting individualized care plans, AI is making medicine more precise, proactive, and patient-centered.

As AI technologies continue to evolve, healthcare providers, industries, and governments must work together to ensure that these innovations are accessible, ethical, and sustainable. The future of diagnostics, and healthcare at large-is intelligent, interconnected, and incredibly promising. Those who embrace this revolution today will lead the way to a healthier, more resilient world tomorrow.

Ruwani Hewage





# The Nano Leap: How Tiny Tech is Set to Revolutionize Sri Lanka's Future

*Imagine a world where diseases are cured at the molecular level, crops grow smarter, buildings heal themselves, and clothes can clean the air you breathe. Sounds like science fiction, right? Not anymore. This is the world of nanotechnology, a field of science and engineering that manipulates matter at the atomic scale to create powerful, intelligent solutions. Globally, nanotech is already making waves. But here's the exciting part: Sri Lanka is uniquely positioned to ride this tiny wave toward a massive transformation across its core industries.*

In healthcare, for example, scientists have developed nanobots so small they can navigate the bloodstream, targeting and destroying cancer cells without harming surrounding tissues. Unlike traditional chemotherapy, this approach is precise, reducing side effects and improving patient recovery. A recent study even showed how nano-scale machines could be activated by light to drill into cancer cells directly. Imagine the impact if Sri Lanka's hospitals could access such advanced, minimally invasive treatments. The country's tuberculosis, could be tackled in ways never before

possible. The National Institute of fundamental Studies (NIFS) in Kandy has already begun exploring the medical uses of Sri Lanka's naturally abundant minerals to develop nano-based drug delivery platforms.

But healthcare is just the beginning. Agriculture, Sri Lanka's economic backbone, is also ripe for nano-intervention. With farmers often facing unpredictable weather, pests, and low yields, nanotechnology offers a smarter way forward. Nano-fertilizers and nano-pesticides can release nutrients and protection exactly when and where crops need them, leading to higher yields with fewer chemicals. This not only boosts productivity but also safeguards our ecosystems. A 2023 research collection on precision agriculture highlighted how nanoparticles improve soil health, reduce environmental waste, and help plants become more resilient to climate change. For a country aiming for food security while fighting land degradation, this could be a game-changer.

Let's talk about energy. The world is racing toward

renewable solutions, and nanotechnology is helping lead the charge. In solar power, for instance, quantum dots and graphene-based nanomaterials are being added to solar panels to capture more sunlight and convert it into electricity more efficiently. Sri Lanka, blessed with sunlight all year round, could integrate these enhanced solar technologies to build a cleaner, more affordable energy future. Imagine villages powered entirely by rooftops infused with nanotech-enabled panels—off-grid, sustainable, and smart.

The construction industry is next in line. Picture cement infused with nanoparticles that makes buildings stronger, lighter, and more resistant to natural disasters. In a tropical country like Sri Lanka, where humidity, salt corrosion, and storms can reduce the lifespan of infrastructure, nano-engineered materials could be the key to safer, longer-lasting buildings. Some innovations even include self-healing concrete that fills in cracks on its own using embedded nanocapsules. This could revolutionize how we think about public infrastructure, reducing maintenance costs and extending the life of roads, bridges, and buildings.

Even the clothes we wear are becoming smarter thanks to nanotech. Sri Lanka's thriving textile industry could be transformed by fabrics made with nanosilver or titanium dioxide, materials that make clothes antibacterial, UV-protective, water-repellent, and even capable of neutralizing pollution. Global fashion brands are investing heavily in these smart textiles, and Sri Lanka, as a leading garment exporter, could gain a competitive edge by adopting and producing these innovations locally.

And perhaps most importantly, nanotechnology offers powerful tools to protect the environment. From water purification to pollution control, nano-solutions are emerging as green alternatives to traditional methods. Nanomaterials can filter heavy metals from contaminated water or break down oil spills without harming marine life. In a country surrounded by the ocean and rich in freshwater ecosystems, such innovations are not just useful; they're necessary. The NIFS is already studying how locally sourced graphite can be used to build energy-efficient water filtration systems.

All of this might sound like distant dreams, but the seeds of a nanotech revolution are already being planted right here in Sri Lanka. With institutions like NIFS leading the charge, and global research lighting the way, the nation has an opportunity to leap into the future. What's needed now is investment, education, and the courage to embrace innovation on the smallest yet most powerful scale imaginable.

Nanotechnology may be invisible to the naked eye, but its potential is colossal. For Sri Lanka, this is more than just a new technology, it's a new era. A chance to redefine industries, protect the environment, improve lives, and become a leader in science and sustainability. The nano-leap is here. The only question is: are we ready to take it?

**Ruwani Hewage**



## Igniting Innovation: The Birth of Matches and Dynamite

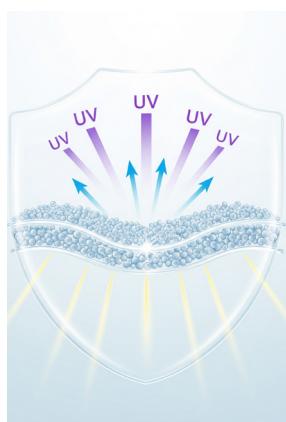
*In 1826, John Walker accidentally invented the friction match when chemicals on his wooden stick ignited while he was cleaning it. Likewise, Alfred Nobel's invention of dynamite was born when a vial of unstable nitro-glycerine spilled onto sawdust but didn't explode, leading him to develop a safer explosive that transformed mining and construction.*



# Tiny Tech, Big Impact: Everyday Uses of Nanotechnology

## Sunscreen

Thanks to nanotech, sunscreens today are way better than the thick, sticky ones we remember from childhood. Tiny particles like titanium dioxide and zinc oxide block harmful UV rays while feeling light and smooth on your skin.



## Clothing

Ever noticed water just roll right off your jacket? That's nanotechnology at work—tiny silica particles are added to fabrics to make them water- and stain-resistant, keeping you dry and clean.



## Coatings for Car Paintwork

Bird poop and coffee spills are no match for nanotech! Special coatings protect car paint and interiors from stains, keeping them looking fresh with less effort.

## Computers

Nanotechnology is the reason our computers and phones keep getting faster and smaller. For example, Intel's super-tiny 10-nanometer chips power a lot of the tech we use every day.

## Medicine

Imagine medicine that knows exactly where to go in your body. That's the magic of nanoparticles—they help treatments target specific cells, making them more precise and effective.



## Food

Nanotech makes food look better, last longer, and taste just right. It keeps yogurt bright, mayonnaise creamy, and even stops beer from going flat, while smart packaging helps keep food safe and fresh.

## Water Treatment

Tiny nano-iron particles help clean dirty water by breaking down pollution and killing germs, making it safer for people and the planet.

## 5G and Health Risks: Debunking the Myths

A prevalent myth suggests that 5G technology poses health risks, including causing cancer or weakening the immune system. However, 5G utilizes non-ionizing radiofrequency radiation, which lacks the energy to damage DNA or cause cellular mutations. Extensive research, including studies cited by the IEEE Committee on Man and Radiation (COMAR), has found no substantiated health risks associated with 5G exposure at levels below international guidelines. Moreover, the World Health Organization has stated that, after much research performed, no adverse health effect has been causally linked with exposure to wireless technologies.



Igniting the spark for tomorrow's innovators, IASpire '24 stands as a transformative initiative led by the IEEE IAS Student Branch Chapter at SLIIT. IASpire empowered participants with the knowledge and skills essential for the future of engineering, while seamlessly bridging the divide between academic learning and real-world industry demands. The event's core objectives included emphasizing the importance of Industry 4.0 and the basics of automation, delivering hands-on training in Programmable Logic Controllers (PLC) to sharpen practical expertise, fostering valuable connections by facilitating networking, and inspiring teamwork and collaboration among emerging professionals to tackle environmental challenges and respecting sustainability within engineering. Comprising of two dynamic phases, IASpire offered a remarkable experience, with each stage adding its own unique value and depth to participants' professional journeys.

On the 17th of February 2024, the webinar phase, conducted over the online platform Zoom, marked the official launch of the event, featuring distinguished industry experts. This session was divided into two parts, with guest speakers Mr. Thilina Bandara, Associate Principal Consultant at Nagarro and Visiting Lecturer, and Prof. Buddhika Jayasekara, Professor at the University of Moratuwa's Department of Electrical Engineering. Their presentations focused on the challenges and opportunities presented by smart technology in achieving sustainable automation, as well as the integration of automation in manufacturing to boost efficiency and productivity. With 50 participants in attendance, this phase laid a strong foundation by exploring both the potential and challenges of smart technology, emphasizing its role in advancing sustainable automation practices and enhancing manufacturing performance.

Moving into the second workshop phase, held on the 20th of April 2024 at Curtin University, Colombo, attendees engaged in hands-on training focused on Programmable Logic Controllers (PLCs). This interactive session was conducted by Mr. P. H Roshan Premarathne, Director at Sri Lanka Institute of Robotics. During this in-person workshop, students had the valuable opportunity to explore the inner workings of PLCs firsthand. They gained practical experience using Siemens software for PLC programming as well as operating the physical PLC boards. With 30 participants,

# IASpire

## Empowering Future Automation and



# 2024

## Empowering Engineers through Education and Collaboration



the workshop aimed to provide a comprehensive understanding of PLCs, their role in automation, and their diverse applications. Participants developed essential skills in PLC programming and troubleshooting while actively interacting with an industry expert. In addition to strengthening their technical expertise, attendees deepened their understanding of the real-world implementation of automation in manufacturing processes through immersive, hands-on activities.

Combining both phases, participants gained a thorough understanding of automation's impact on industry, spanning from theoretical concepts to practical application. IASpire went beyond traditional education by fostering a vibrant community and encouraging collaboration among emerging professionals. Through carefully organized networking opportunities, the event cultivated a strong spirit of unity and teamwork. It also highlighted the vital role of the Industry Application Society (IAS) within the broader IEEE community, reinforcing its importance as a hub for innovation and professional growth.





# Surveillance Capitalism: The Rise of Data-Driven Power

*Surveillance capitalism refers to an economic system where businesses collect, analyze, and sell personal data to generate profit. This model depends on the constant tracking of people's behaviors, habits, locations, and preferences, mostly through the digital devices and platforms they use every day. These include smartphones, social media platforms, smart home devices, and search engines. Most of the time, this tracking happens without full awareness or informed consent from users.*

The concept was introduced by Harvard Professor Shoshana Zuboff, who described it as the unilateral claiming of private human experience as free raw material for commercial practices. While the term may sound complex, the basic idea is simple. Whenever someone uses a service like Google, Facebook, or a navigation app, they provide personal information. This data is not just used to improve services but also turned into prediction products that are sold to advertisers and other entities.

One of the clearest examples of surveillance capitalism in action can be seen in the way social media platforms operate. Platforms such as Facebook, Instagram, and Twitter track nearly everything users do. They collect information about

likes, shares, friend connections, personal messages, and even the time spent looking at each post. This data is used to build detailed psychological profiles that allow companies to show highly targeted advertisements. A major scandal highlighting this issue was the Cambridge Analytica incident. In 2014, a researcher created a personality quiz app on Facebook that collected data not just from users who installed it but also from their friends. As a result, data from around 50 million profiles was harvested and used to influence political campaigns. This exposed how easily data collected under the guise of entertainment or convenience can be repurposed for manipulation.

Smartphones are another central tool in surveillance capitalism. Apps routinely ask for access to sensitive data like location, contacts, and call logs. Users often grant these permissions without reading or understanding them. In 2018, The New York Times investigated and found that several mobile apps were collecting location data from millions of users, often updating their location every few seconds. This data was then sold to advertisers, data brokers, or analytics companies. Even basic apps like weather widgets or mobile games were found to be sharing precise user locations. While such information may be used to improve user

experience, for example by showing local weather updates, the extent and frequency of data collection go far beyond what most users would consider reasonable.

Another rising aspect of surveillance capitalism comes from smart devices found in homes. These include voice assistants such as Amazon Alexa and Google Assistant, smart TVs, and even smart fridges. These devices constantly listen for commands and may upload recordings to cloud servers for processing. In some cases, these audio files were stored for years and analyzed by human reviewers for product improvement. A recent case involved the United States Federal Trade Commission taking legal action against Amazon for retaining children's voice recordings and location data for extended periods through its Alexa product. Even when parents tried to delete the data, the company did not fully comply with. This situation showed how smart home devices can collect sensitive data over long periods, often with limited transparency or control for users.

Cities are also becoming part of the surveillance capitalism network through the rise of smart city initiatives. These projects install sensors, cameras, and tracking systems to collect data on traffic, air quality, electricity usage, and citizen behavior. In theory, this can help governments improve services. However, when managed by private tech companies, the data collected becomes a commercial asset. A notable example is the Sidewalk Toronto project, led by Google's Sidewalk Labs. The plan was to build a technologically advanced neighborhood using sensors embedded in roads, buildings, and public spaces. Critics raised concerns that residents and visitors would be constantly monitored without a clear understanding of who owned the data or how it would be used. Eventually, the project was canceled, but it remains an important case showing the risks of private sector involvement in public data collection.

Globally, surveillance capitalism has spread rapidly. In the United States, the business model thrives due to a lack of strong federal privacy laws. Companies are largely free to collect and trade personal data as long as they do not lie about their practices. In contrast, the European Union has taken a stricter approach. The General Data Protection Regulation, known as GDPR, gives people more control over their data and requires companies to be transparent

about what data they collect and why. In 2023, Meta Platforms, the parent company of Facebook, was fined 1.2 billion euros for transferring personal data of EU citizens to the United States in violation of the GDPR. European regulators argue that people should have the right to know and decide how their data is used.

Other regions have different responses. In China, the government and companies engage in extensive data collection, which is often justified for reasons of national security and social management. Citizens are monitored using facial recognition and digital payment systems, sometimes as part of social credit programs. In India, digital services like Aadhaar and UPI have expanded access to banking and government services but raised concerns about privacy due to large-scale biometric data collection. In many parts of Africa and Latin America, weak regulation means that global tech companies operate freely, leading to concerns about data colonialism where foreign firms extract value from local populations without returning benefits.

Surveillance capitalism also poses serious threats to democracy and individual freedom. When companies can predict behavior, they can also influence it. Furthermore, when people know they are being watched, they may change their behavior, becoming more cautious or conformist. This kind of self-censorship undermines freedom of expression and creativity. In recent years, public awareness about digital privacy has grown. Movements and campaigns have emerged around the world demanding stronger data rights. Some people have started using privacy-focused apps, browsers, and search engines to limit data collection. However, opting out completely is very difficult in modern life. Most services are designed in a way that makes data sharing the default. Users must often accept lengthy terms and conditions just to access basic functionality.

For students in information technology, understanding surveillance capitalism is essential. It is not just a business or policy issue but a technical one. Every system or app built today has the potential to collect and store user data. Developers must think carefully about what data is needed, how it is stored, and how it is protected. Transparency, consent, and user control should be key principles in system design. At the same time, governments and institutions must continue

working on legal frameworks that can protect individuals while allowing innovation to continue.

In conclusion, surveillance capitalism is a global challenge that affects everyone who uses digital technology. It began with online advertising but has expanded into every area of life including healthcare, transportation, and urban living. While there are benefits to personalization and efficiency, they must be balanced with privacy and human

rights. Regulation, ethical design, and public education will all play important roles in shaping the future of data collection. By understanding the foundations of surveillance capitalism and its impact, young technologists and citizens alike can contribute to building a more just and transparent digital world.

**Arudkumaran Vengadeswaran**



## A Lifesaving accident: The Discovery of Penicillin

*In 1928, Alexander Fleming, a bacteriologist at St. Mary's Hospital in London, made a groundbreaking discovery that revolutionized medicine. Returning from holiday, Fleming noticed that a petri dish containing *Staphylococcus* bacteria had been accidentally contaminated by a mould, later identified as *Penicillium notatum*. Remarkably, the bacteria around the mould were destroyed, indicating that the mould secreted a substance capable of killing harmful bacteria. Fleming called this substance penicillin. It was only over a decade later, with the efforts of scientists like Howard Florey and Ernst Chain, that penicillin was purified and mass-produced, becoming the world's first widely used antibiotic. This accidental discovery has since saved millions of lives by effectively treating bacterial infections that were once often fatal.*



With the collaboration between the IEEE IAS Student Branch Chapter of SLIIT and SLTC Research University, Venturify 2024 rose into action. The event aimed to equip students with essential skills and insights to transform innovative ideas into successful ventures. Designed to foster entrepreneurial awareness and competence, the event exposed students to industry trends, business strategies, and networking opportunities critical for technology-driven ventures. Its objectives included inspiring students to think beyond technical solutions, providing foundational knowledge in entrepreneurship and market strategies, and connecting participants with industry mentors. The event featured three parts: a keynote speech, a panel discussion, and an interactive workshop, all focused on empowering future engineers with the mindset to drive innovation and business success.

The first webinar, held on 22nd of December 2024 at 7 PM, via the online platform Zoom, focused on “Introduction to Entrepreneurship & Growing a Business Idea.” The session was led by Dr. Lakshitha Pahalagedara, Dean of the Faculty of Postgraduate Studies and Research at SLTC. It introduced participants to fundamental entrepreneurial concepts, including identifying market opportunities, developing business ideas, and navigating the early stages of a start-up. As the opening session of Venturify, it laid a strong foundation for aspiring entrepreneurs, equipping them with essential knowledge to build and refine



# Venturify 24 Entrepreneurial Mindsets



their business concepts.

On the 12th of January 2025 at 7 PM, the second webinar took place on Zoom, focusing on methods to attract initial customers, retain them, and scale businesses using data analytics. Mr. J.P. Hamantha Chandrakumara, founder and CEO of BME Services (Pvt) Ltd, led the session, offering expert advice on customer retention strategies and effective business growth. Attendees gained actionable insights and practical techniques to enhance and expand their entrepreneurial ventures.

The event concluded with a dynamic in-person session on 2nd February 2025, held from 9 AM to 2 PM at Curtin University Colombo. It opened with an inspiring keynote speech by Mr. Peter D. Almeida, founder and former MD/CEO of N-able (Pvt) Ltd, titled "Redefining Growth and Innovation." This was followed by an interactive panel discussion featuring industry leaders Mr. Kasun Edirisinghe, CEO of BladeGen Tech, and Ms. Dilini Ekanayaka, co-founder of Asyncdot and Electriquote. The session drew delegates from universities across Sri Lanka, enhancing a spirit of collaboration and fostering meaningful knowledge exchange among participants.

Venturify 2024 successfully fulfilled its goal of cultivating an entrepreneurial mindset among engineering undergraduates by equipping them with the essential knowledge, skills, and industry exposure needed to thrive in the startup ecosystem. Through providing practical tools and mentorship, the event empowered students to transform their ideas into viable ventures, laying the foundation for sustained entrepreneurial and innovative endeavours.





# Materials Science and Engineering: Pioneering a New Era of Technological Innovation in Sri Lanka

*From local developments to global breakthroughs, Sri Lanka has the potential to be a rising hub in materials innovation. In a world driven by smart materials and sustainable solutions, studying how materials interact with the environment isn't just a research topic; it is a key part of innovation.*

One such excellent example of how a simple yet extraordinary phenomenon influenced the world would be the lotus leaf effect. This phenomenon, scientifically termed the “hydrophobic effect”, was the inspiration for the development of a wide range of water-repellent surfaces that you use! More products using this effect include self-cleaning windows, textiles and corrosion-resistant coatings. This branch of engineering brings together such interactions and other material properties to create better, more effective solutions in terms of materials. While the advancement of technology is rising globally, Sri Lanka itself is starting to take its first steps into the world of Materials Science and Engineering, with

the goal of turning revolutionary research into technologies that can help the island with its future development.

Materials Science and Engineering (MSE), shortly described, is a broad field that sums up the study of materials from at its atomic level behaviour, which lead to the development, design and production of new, enhanced materials to satisfy engineering requirements. It involves understanding the basic characteristics of materials and how to use them to produce better devices and products. The main categories of material that fall under the study in the MSE field are namely: metals, polymers, ceramics and composites. This branch of engineering is basically the foundation for everything else - it helps build all the physical materials that other fields rely on! Be it the engineering, agriculture, food, biomedicine, electrical, environmental, energy, textiles or automotive & aerospace field, MSE plays a fundamental role by enabling the design, development, and optimization of materials

essential to each field's advancement.

Materials Science and Engineering (MSE) has the chance to become a leading field in Sri Lanka, thanks to the country's unique environment and natural resources. Since agriculture is a big focus in Sri Lanka, there are many opportunities to apply MSE in useful ways. Specifically, agricultural byproducts, or the materials that are thrown away with no use, have the potential to be recycled as improved materials. Using these natural resources promotes new and creative material designs that fit local needs and help protect the environment, while supporting sustainable practices. A fitting example of MSE's impact is replacing dangerous materials with safer, locally available options. Asbestos, although widely used in construction, particularly in roofing materials, is a carcinogen, a substance that gives rise to cancer. Thus, it is raising significant health and environmental concerns. To solve this problem, researchers in Sri Lanka have investigated using agricultural waste like cornhusk, rice husk and bagasse (bamboo) fibres as eco-friendly alternatives to asbestos in cement sheets. In addition to providing a renewable and biodegradable alternative, these natural fibres, which are commonly found locally, help in the creation of environmentally friendly building materials that satisfy demands and standards. Research in this area can be extended to improved construction materials that are practical, cost-effective and sustainable. Such research conducted is on the use of cellulose fibres extracted from cornhusk residues to reinforce soil-based building materials, reducing damage to the material. Such examples reflect the vast area on which MSE can help Sri Lanka engineer towards a developed, innovative and sustainable future.

Sri Lanka's emerging developments in the field of MSE is fostered by many local institutions, which also sometimes collaborate with international ones for enhancing productivity and driving more effective, sustainable development. Some local institutions that actively contribute to the field include:

- University of Moratuwa (UoM)
- Centre for Advanced Materials Research (University of Sri Jayewardenepura)
- Sri Lanka Institute of Nanotechnology (SLINTEC)

- National Institute of Fundamental Studies (NIFS)

Other international collaborations include:

- University of Moratuwa and Queensland University of Technology (QUT)
- Access Engineering PLC and University of Moratuwa with UK Universities
- Sabaragamuwa University of Sri Lanka and Wuhan University of Technology

All these institutions are dedicated to advancing the field of MSE in Sri Lanka by promoting research, innovation, and education to support national development and technological progress.

Sri Lanka, being a developing nation, face a few challenges in promoting and upbringing of MSE. For instance, although Sri Lanka owns excellent minerals for high-tech applications, development has been disturbed by a lack of proper research on upgrading these resources. Adding value and promoting industrial growth require a focus on innovative materials and nanotechnology. Furthermore, modern facilities and equipment are generally lacking in many of the nation's research labs. The lack of research facilities and career growth in Sri Lanka makes it hard for institutions to meet international standards and do proper research. As a result, many skilled professionals look for jobs abroad. However, there are some good opportunities available for motivated students in the MSE field. Institutions like the Sri Lanka Institute of Information Technology (SLIIT), Malabe and the University of Moratuwa offer MSE degree programs for interested students. Institutions like NIFS also focus on developing the country's mineral resources to make the most out of the industry and support Sri Lanka's progress. Working in materials science and engineering can lead you to a vast range of career opportunities and roles, from improving production processes and developing new materials to analysing why components fail and designing products or equipment. Thus, MSE will offer a wide range of career opportunities for anyone who chooses to enter the field.

Materials Science and Engineering (MSE) has enormous potential to shape Sri Lanka's future as a leading country for sustainable development and

tech innovation. With the country's unique resources and environment, MSE can play a significant role in helping local industries grow. To fully develop this field in Sri Lanka, it's important to improve MSE education, raise awareness about the field, introduce students to research opportunities, and build strong connections with industries, both locally and internationally. These steps can help unlock the full potential of MSE, driving the country forward in terms of innovation, national growth, and a more sustainable economy. Despite challenges including limited infrastructure and resource constraints, through international collaborations, strategic investments, and

institutional measures, Sri Lanka is progressively paving its way towards the future. The country could create new opportunities in industries including manufacturing, healthcare, energy, and environmental sustainability by embracing the revolutionary potential of MSE, which includes green technology and advanced materials. With sustained dedication and collaboration between sectors, MSE has the potential to lead Sri Lanka into a new age of scientific and technological advancement.

Lihini Wijesekara

## 5 Mind-Blowing Materials You Need to Know About!

**Shape Memory Alloys:** This 'magical' material works by remembering its original shape. No matter how hard you try to change it, a little heat can help it come back to its shape!

Applications: Eyeglass frames, heart stents, microvalves

**Carbon fibre:** Very lightweight, yet extraordinarily strong, this material can revolutionize many fields with its extraordinary properties.

Applications: Bicycle frame, tennis rackets, composite materials

**Transparent Aluminium:**

Aluminium oxynitride, rather, is a transparent ceramic material. Currently under research, this material can change the way the current world works.



Applications: Armoured vehicle, Phone cases, Architectural applications



**Conductive polymers:**

This exciting new class of electrical material have the potential to be used in many fields due to its electronic and optic properties.

Applications: artificial muscles, rechargeable batteries, sensors



**Self-Healing Concrete:**

This material, also known as bacterial or bio concrete, repairs itself when cracks form, using bacteria as a healing agent!

# From University to Industry: Transition to the Real World

*In this exclusive interview, we sit down with Mr. Dimeth Wimalasena – a dedicated Electrical Engineering graduate from SLIIT, Malabe, with a passion for renewable energy and power systems. Having served as both Chairperson (2024/25) and Vice Chairperson (2023/24) of the IEEE Power & Energy Society (PES) Student Branch Chapter at SLIIT, Dimeth has inspired students and supports innovation within the field. Now making progress as an Electrical Engineer at WindForce PLC, Sri Lanka's pioneering renewable energy company, he shares insights on his academic journey, his early professional experiences, and his hopes for a cleaner, more sustainable energy future.*



## Can you share your journey from being a student member to your current role in the industry?

My journey began as a student member of IEEE, where I initially joined as a volunteer. Over time, I became an active member and eventually took on the role of Chairperson of the Power and Energy Society at my university. Serving as a student leader gave me the opportunity to explore key areas of the energy sector while sharpening my ability to lead technical initiatives. The exposure I gained through IEEE events, projects, and industry engagements allowed me to go beyond academics and gain valuable insight into real-world challenges. Today, I work as an Electrical Engineer at Windforce PLC, focusing on the development and operation of renewable power systems.

## How did your IEEE experience influence your transition into the industry?

IEEE offered me much more than technical knowledge. It provided a platform to understand how the industry functions, including its professional ethics and the direction of emerging energy technologies. Through organizing technical events, site visits, competitions, and panel discussions, I developed a deeper appreciation for practical engineering challenges and industry expectations. This experience significantly eased my transition into the renewable energy sector at Windforce.

**In what ways did your IEEE network support your career development or job search?**

The IEEE network connected me with industry professionals, academics, and peers who shared a common passion for energy and sustainability. These relationships offered mentorship, career guidance, and opportunities for collaboration. Engaging with IEEE professionals helped me navigate my career path and ultimately led me toward opportunities at organizations like Windforce PLC.

**Are there specific skills or mindsets you believe are essential for success in today's industry?**

Absolutely. The modern energy sector demands a combination of strong technical skills and adaptability. With the shift toward renewable energy and smart grid technologies, staying up to date with evolving tools, standards, and best practices is essential. Beyond that, a growth mindset, problem-solving ability, and a collaborative approach are key.

Being proactive, open to continuous learning, and capable of turning complex ideas into actionable solutions are qualities that define successful engineers today.

**Any message you'd like to give to future students and IEEE members?**

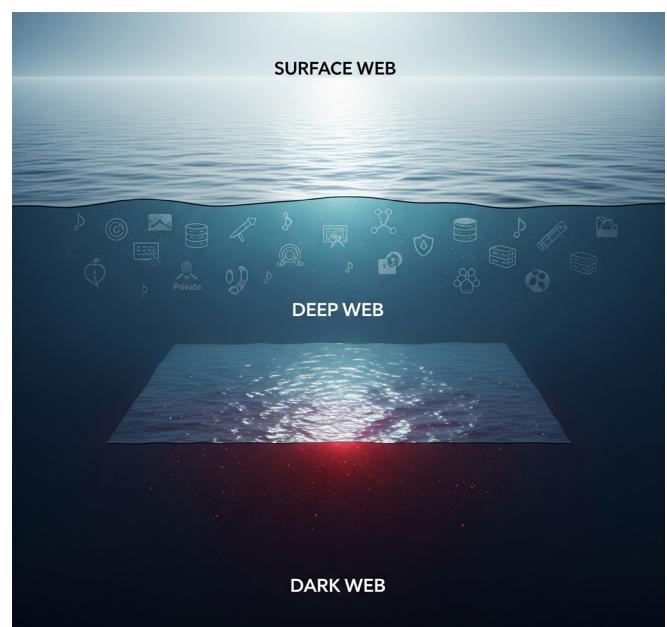
Make full use of your time with IEEE. It's far more than just a student club—it's a global platform for knowledge-sharing, leadership growth, and building a professional network. Take initiative, get involved in challenging projects, and don't hesitate to seek mentorship. The connections and experiences you build today can shape your future career. Most importantly, believe in your potential to make a meaningful impact, especially in a field like energy, where innovation and sustainability are more important than ever.

**Interviewed by: Lihini Wijesekara**



## The Deep Web vs. The Dark Web

*A common misunderstanding is that the deep web is synonymous with illegal activities. The deep web encompasses all parts of the internet not indexed by standard search engines, including academic databases, private emails, and subscription services. The dark web, a small portion of the deep web, is where illicit activities may occur. Conflating the two overlooks the legitimate and essential functions the deep web serves.*







# Digital Education: A Global Perspective on EdTech Integration

*Digital education has emerged as a pivotal component of modern learning systems worldwide, driven by rapid technological advancements and the pressing need for adaptable learning models. The global significance of digital education is underscored by the United Nations' Sustainable Development Goal 4, which explicitly references technology in six of its ten targets, highlighting its role as an input, delivery method, skill, planning tool, and social context provider.*

In practice, digital tools have become ubiquitous in classrooms and online environments. Over the past two decades, a vast number of students, educators, and institutions have adopted digital learning platforms. For instance, massive open online courses (MOOCs) experienced exponential growth, with enrollments rising from zero in 2012 to approximately 220 million by 2021. Language learning applications like Duolingo averaged 20 million daily active users in 2023, and online encyclopedias such as Wikipedia received over 240 million page views per day in 2021. Prominent online course providers like Coursera reported over 100 million registered learners globally. These trends illustrate the expansive reach of online

learning, facilitated by the dramatic increase in global internet usage from 16 percent of the world's population in 2005 to about 66 percent in 2022 and the fact that by 2022, roughly half of the world's secondary schools had internet connectivity for teaching purposes.

Education technology, commonly referred to as EdTech, encompasses a broad spectrum of tools and platforms designed to enhance teaching and learning. Learning management systems, adaptive tutoring programs, virtual laboratories, educational games, and open content platforms have become increasingly prevalent. Digital platforms enable widespread content sharing, and open educational resources (OER) can significantly reduce costs for learners and institutions. For example, the U.S. state of North Dakota saved over USD 1 million in textbook expenses after investing approximately USD 110,000 to transition to OER materials.

Interactive multimedia, including video lectures and virtual reality (VR) simulations, contribute to creating engaging learning experiences. Research indicates that immersive VR can substantially improve student engagement and learning outcomes. A 2024 review found that classroom VR

applications typically enhance cognitive and behavioral engagement and are particularly effective for students with learning disabilities, although they necessitate considerable teacher training and student digital literacy. The proliferation of artificial intelligence (AI) has introduced capabilities such as personalized tutoring, automated grading, and language translation. UNESCO notes that breakthroughs in AI have amplified the effectiveness of EdTech tools, prompting discussions about AI potentially supplementing certain human interactions in teaching.

Institutions are increasingly utilizing data analytics to monitor learning progress, and many contemporary applications employ algorithms to customize content according to each learner's proficiency level. Social media and collaborative tools facilitate interaction between students and teachers across distances, while mobile devices provide access to educational resources even in remote areas.

Despite the promising advancements, the impact of digital education has been uneven. In affluent countries and well-resourced schools, technology integration is often seamless. A 2018 OECD study revealed that approximately 65 percent of 15-year-old students in OECD schools had teachers confidence in using digital devices, and 54 percent had access to effective online learning platforms. The COVID-19 pandemic necessitated a swift transition to online learning globally, effectively transforming the world into a large-scale experiment in digital education. Higher education institutions adopted digital modalities as campuses closed, with many universities shifting to online or hybrid models. Students worldwide also engaged in informal learning opportunities via the internet.

However, significant disparities persist. Many disadvantaged learners lack access to essential devices, reliable internet, or even electricity at home. UNESCO highlights that digital resources are predominantly concentrated among wealthier households, leaving poorer students less likely to own computers or tablets and to be online. This digital divide exacerbated existing educational inequalities during the pandemic, with approximately 500 million students about 31 percent globally being completely unreachable

by remote learning, predominantly from impoverished and rural communities. Even considering radio, television, and mobile phone initiatives, only about one quarter of students worldwide could be reached through the online systems established by countries. These challenges have prompted governments and organizations to prioritize inclusivity. UNESCO and its partners launched the Rewired Global Declaration on Connectivity for Education, a roadmap aimed at ensuring that connected technologies advance inclusive education based on principles of equity and human rights [8]. Many nations have implemented policies to expand internet access; for instance, about 85 percent of countries now have policies targeting school or learner connectivity, and over a third have laws aiming for universal internet service. Such initiatives have led to improvements in countries like Kyrgyzstan and Costa Rica, where negotiated agreements and subsidized programs significantly reduced broadband prices and decreased the rate of unconnected households from 41 percent to 13 percent within a few years.

Nevertheless, substantial digital literacy gaps remain, even within connected communities. UNESCO notes that many teachers have limited training in effectively utilizing technology, and that technical and pedagogical skills for digital instruction are not universally present across schools. A new concern arises with the advent of advanced technologies: some analysts warn of an emerging AI divide, cautioning that marginalized groups including women, minorities, and the poor may not equally benefit from advancements like AI-driven tutoring unless AI literacy is addressed at the community level .

Despite these challenges, the potential benefits of EdTech continue to drive innovation. Countries and institutions are responding with various policies and organizational strategies. Numerous education ministries have adopted national digital learning strategies that emphasize expanding infrastructure, training educators, and developing digital curriculum standards. UNESCO and other multilateral organizations have facilitated stakeholder dialogues; for example, in 2023, UNESCO convened over 40 education ministers for a global summit on AI in education, emphasizing the need to integrate new technologies with attention to ethics, inclusion, transparency, and

safety.

At the institutional level, some governments provide devices to students or implement bring your own device programs, while others promote open-source software to reduce costs. Support for open educational resources and digital libraries aims to lower content expenses and tailor materials to local contexts. However, UNESCO reports that evidence on the effectiveness of many EdTech tools remains limited, with surveys indicating that most popular applications and platforms lack rigorous evaluation. This has led to calls for enhanced research and regulation, emphasizing that technology use in education should support clear learning objectives and avoid disadvantaging marginalized learners.

Emerging technologies like AI, VR, and augmented reality (AR) are increasingly featured in educational strategies. AI-driven tools are already employed for automated grading, language translation, and adaptive practice exercises. Generative AI, such as ChatGPT, presents both opportunities and challenges for learning. It can generate personalized content or learning companions but also raises concerns about accuracy, bias, and academic integrity. UNESCO's recent work underscores the necessity of building AI literacy by educating students and teachers on understanding and responsibly using AI.

Immersive media are also making inroads into classrooms. VR headsets can simulate laboratory experiments or historical environments more cost effectively and safely than real life scenarios, while AR can overlay digital information onto physical surroundings. Research suggests that these tools can enhance learning engagement. As previously noted, VR tends to increase student motivation and engagement when effectively integrated. However, these advanced technologies remain relatively expensive and require robust infrastructure, limiting their impact to well-funded settings. Global analyses, such as those by the OECD, suggest that technologies including AI can improve education by enabling more personalized, inclusive, and efficient learning, but only if managed as part of a comprehensive digital transformation of education systems.

In conclusion, the landscape of digital education

is rapidly evolving. Online platforms and EdTech offer the promise of extending learning opportunities, customizing instruction to individual needs, and fostering new forms of collaboration. However, historical experiences caution against underestimating the challenges of equitable access, teacher training, and pedagogical integration. The COVID-19 pandemic highlighted both the potential and the pitfalls of digital education, necessitating a deliberate and inclusive approach moving forward. Emphasizing robust digital ecosystems that ensure reliable connectivity and devices for all students, equip educators with necessary skills, and evaluate tools for quality and privacy is essential. When thoughtfully implemented, this approach can help realize the vision of education for all in the 21st century.

**Arudkumaran Vengadeswaran**

Synergy Springs 2025 was an exclusive event, organized exclusively for IEEE members of SLIIT, with a vision to empower participants for future professional and personal success. It marked a significant milestone for the IEEE IAS Student Branch Chapter of SLIIT, as it brought forth a unique platform dedicated to fostering leadership qualities and cultivating essential soft skills among its members. Held on the 2nd of March 2025, the event showcased an impressive array of activities designed to inspire growth and collaboration. Featuring seminars, workshops, and interactive sessions, Synergy Springs successfully facilitated the development of vital soft skills such as team building, effective communication, networking, critical thinking, and active participation.

The event began with a welcome speech delivered by Mahdy Abdullah, the President of the IEEE Student Branch Chapter of SLIIT, Malabe. After this warm introduction, the program continued with an interactive icebreaker activity led by Chathumina Kalatuwage, the Vice Chairperson of the IEEE Student Branch Chapter of SLIIT, Malabe.

This was followed by an engaging workshop on professional development and the acquisition of industry relevant knowledge, conducted by Mr. Yohan Joseph. The workshop session offered valuable insights into the benefits of volunteering within the IEEE community. Drawing from his experience as the Immediate Past Chairperson of the IEEE Student Branch Chapter of SLIIT (2023/24), he shared how active involvement helped him grow professionally, build networks, and develop key soft skills. Mr. Yohan emphasized the importance of initiative, commitment, and making the most of opportunities as a student volunteer. His talk inspired participants to engage more actively in IEEE for both personal and professional growth.

The energy of the event was further boosted through team games, that encouraged participants to work together. These included building a balloon tower using only duct tape and a lively game of Pictionary. Another exciting activity involved getting into teams and passing a lime through a “tunnel” made of cardboard, ensuring the lime never touched the ground. The “Secret Train” added a fun twist, where a message was passed along a line using only actions, often resulting in humorous misunderstandings. All these games

# SYN

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## A Catalyst for Lead



# ERGY GS 2025 lership and Growth



helped develop important soft skills such as teamwork, coordination, agility, communication, and strategy.

As a final highlight of the event, Mr. Ranuka Perera led an engaging Public Speaking Workshop and debate session. The workshop focused on building confidence and effective presentation skills through practical tips on body language, tone, and structure. It was an interactive session where participants were encouraged to practice speaking. To conclude, volunteers introduced themselves to the group, applying what they had learned in a supportive environment that helped boost their confidence and public speaking experience.

As a concluding speech, a heartfelt vote of thanks was delivered by Yasas Maddumage, Vice Chairperson of the IEEE IAS Student Branch Chapter of SLIIT, expressing gratitude to all participants, speakers, and organizers for making Synergy Springs a successful and inspiring experience. The event concluded with an iftar, which served as an initiative to promote cultural inclusivity and unity among participants. This shared meal provided a welcoming space for everyone to come together to observe and appreciate the spirit of Ramadan. The iftar was successful in fostering a sense of community, encouraging mutual respect among all participants. It was a valuable opportunity for participants to connect on a personal level, celebrate diversity, and strengthen the bonds within the IEEE community.

Synergy Springs was more than just an event; it was a meaningful journey of growth, learning, and connection. The dedication of the organizers, the enthusiasm of the participants, and the valuable insights shared by the speakers made it a truly memorable experience. We extend our heartfelt thanks to everyone who contributed to its success and look forward to many more opportunities to inspire and empower our IEEE community at SLIIT.

# Participant Perspectives

Synergy Springs was an amazing and refreshing experience for me. I really appreciated how it brought people together with so much positive energy and creativity. I gained a lot—new friends, new perspectives, and even more confidence in myself. It helped me improve my teamwork and communication skills, and I learned how to step out of my comfort zone. Also, I picked up some good insights from others' experiences and stories shared during the sessions. Everything was organized so well, and it had such a good vibe from start to finish. I'd love to join again if there's another one in the future!

**Chamadith Abeysinghe**  
IEEE RAS Student Branch Chapter of SLIIT -  
Editor (2025/26)

It was a good opportunity to get to know the new ex-com members and other newbies interested in IEEE. I learned teamwork through the interactive games we had, and I learned how to deliver a speech in public confidently, thanks to the session done by Ranuka Ayya. I really enjoyed the Iftar we had at the conclusion of the event. Overall, it was a great event. Hats off to the organizing committee!

**Ruwanya Athukorala**  
IEEE Student Branch Chapter of SLIIT -  
Volunteer Management Team member (2025/26)  
IEEE IAS Student Branch Chapter of SLIIT -  
Secretary (2023/24)





# A Student Leader's Journey with IEEE IAS Student Chapter

*Ramudu Welikala, an Electrical Engineer at Eximus Power and Energy (Pvt) Ltd., has played a leading role in the Sri Lankan engineering community through his service as Chairperson of the IEEE Industry Applications Society (IAS) Student Chapter at SLIIT for 2023/2024. This interview highlights Ramudu's journey as IAS chairperson- exploring the challenges he faced, the opportunities he embraced, and the impact his leadership has had on both his fellow students and his own professional growth.*



## What drew you specifically to the IEEE IAS Student Branch Chapter, and how does it differ from other IEEE societies? in terms of focus and activities?

I was not a person who volunteered at too many events, but I always gave my best in whatever I joined. I happened to apply for the IEEE IAS SBC when I saw the flyer for the Ex-Com volunteering, and after the interview, I was directly chosen as the chairperson. I remember wondering to myself, "What was this chapter like?" Working with the IEEE IAS SBC, I realized you can truly connect with technology and innovation. Being the chairperson gave me the opportunity to learn many new things and grow personally. I saw it as a challenge I could accept; to help IAS grow and make an impact. Embracing this challenge, I was able to enhance the reputation of IEEE IAS SBC and organize many new events. Looking back, I'm proud that I took this step, as it allowed me to contribute meaningfully while also developing myself.

## What are the most important skills or insights you gained from being active in the IEEE IAS Student Branch Chapter?

When it comes to being a chairperson, it comes with many responsibilities, where coordinating and making sure events are properly executed are only a few of them. Therefore, with a lot of weight on the position, it was a completely new leadership role for me, with real responsibility. It gave me a chance to explore industrial connections and the world beyond just lectures. I gained many new

skills and opportunities through this experience. As this experience as a chairperson, I had the opportunity to develop my leadership, project management, and communication skills, it also allowed me to interact with diverse teams at the same time giving me a well-rounded experience. Through this, I also improved my time management and creativity. Being exposed to taking initiative for tasks taught me that a leader should take ownership of errors as well. Most importantly, it gave me the confidence to take initiative and connect with industry leaders. I'm grateful for these qualities, as I know I can carry them with me into the workplace, which I did, and it was helpful.

**Were there opportunities through IEEE IAS Student Branch Chapter(such as industry visits, mentorship, or networking) that connected academic learning and industry experience?**

Yes, definitely. At IEEE IAS SBC, it is all about bringing together the connection between theory and real-world engineering. My very first exposure at IEEE IAS SBC was through an event that was organised named IAISpire, where I engaged with professionals working on cutting-edge industrial technologies and automation. It helped me understand how the concepts we learn in lectures are applied in actual industry settings. Being part of IEEE gave me access to platforms like IEEE Collabratec, which gives you the opportunity to connect with likeminded individuals and with industry experts from around the world. The global network I built through IEEE allowed me to learn from professionals beyond Sri Lanka. At IEEE IAS SBC, I had the opportunity to learn about entrepreneurship from a different perspective than how other events I've seen in that area would be done and you can attend industry visits.

**In what ways has leading the IEEE IAS Student Branch Chapter influenced your professional life or leadership style in the workplace?**

When it comes to leadership, I believe it's all about working well as a team. Through my experiences walking alongside different teams, I realized that people come in all varieties. Some are excellent at their work, some are more average, and some need encouragement and support to perform. This gave me the chance to interact with all kinds of

people, which is something I've seen reflected in the workplace as well. Just like in any organization, there are always people who excel, some who get by, and others who need to be guided to do their best.

As the Chairperson, I had the opportunity to interact with individuals both above and below my position. This taught me how important it is to manage people according to their place in the hierarchy. The approach for communicating with a boss is not the same as with an employee, and I learned to adjust my style based on who I was dealing with. Through this, adaptability became an important skill for me- figuring out how to make each event stand out, like when I initiated "Venturify" and "Synergy Springs." These events aren't very common in other IEEE IAS SBCs, and it pushed me to be more creative and take the lead on new ideas. This adaptability applies in the workplace too. If you aren't willing to update your skills or adapt, you risk falling behind.

Finally, serving as chairperson taught me the importance of taking ownership whenever my team encountered issues. I've learned that a leader stands by their team and is responsible not just for successes, but also for the problems that come up along the way. management, and communication skills, it also allowed me to interact with diverse teams at the same time giving me a well-rounded experience. Through this, I also improved my time management and creativity. Being exposed to taking initiative for tasks taught me that a leader should take ownership of errors as well. Most importantly, it gave me the confidence to take initiative and connect with industry leaders.

**What message or advice would you like to share with students or anyone hoping to join IEEE or the IEEE IAS Student Branch Chapter?**

Volunteering for IEEE is a completely new experience. Personally, being part of IEEE IAS SBC was fun, you get opportunity to make friendships, late night event planning and joyful event experiences that you can cherish for a lifetime. To anyone interested, I would say that IEEE is an amazing opportunity to work with all kinds of people, not just academics and industry professionals, but also students from other

universities and professionals from other countries. You also get to collaborate with technology in ways that go beyond ordinary lectures. Volunteering for something like this is a new experience, and it pushes you to step out of your comfort zone. While doing so, you get the chance to develop new skills, even discovering abilities within

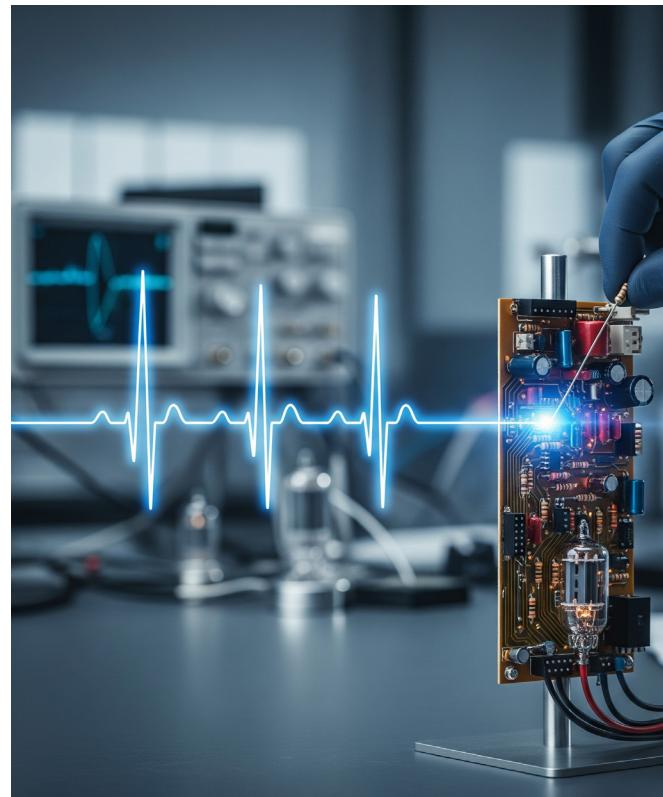
yourself that you might not have realized before. It's also an opportunity to face new problems and challenge yourself. I encourage you: keep challenging yourself, be curious, and stay motivated to grow. When you are part of IEEE IAS SBC, you're always building new opportunities for yourself and others.

Interviewed by: Lihini Wijesekara



## When Mistakes Lead to Masterpieces: Accidental Engineering Innovations

*Wilson Greatbatch, an electrical engineer, accidentally invented the implantable pacemaker in the late 1950s while working on a heart rhythm recording device. During an experiment, he mistakenly installed the wrong resistor in a circuit, which caused the device to emit intermittent electrical pulses rather than continuous signals. Recognizing that these pulses mimicked the natural heartbeat, Greatbatch realized the potential for a device that could regulate abnormal heart rhythms. This serendipitous error led to the development of the first implantable pacemaker, a life-saving device that helps maintain regular heartbeats in patients with cardiac arrhythmias. Since its invention, the pacemaker has undergone numerous improvements and has saved millions of lives worldwide by preventing heart failure and sudden cardiac death.*



# From the IEEE IAS Global Community

The IEEE Industry Applications Society (IAS) proudly celebrates its 60th anniversary in 2025. For six decades, IAS has been at the forefront of advancing engineering and technology that directly impact industries and improve lives. The society continues to support its members, students, Young Professionals, and Women in Engineering (WIE) through a diverse range of webinars, publications, courses, and conferences.

In recent years, the IEEE IAS Community has emphasized “Technology for the Benefit of Humanity,” advancing contributions to humanitarian projects and forging impactful partnerships within IEEE. This achievement highlights IAS’s ongoing commitment to innovation and industry applications that make a difference worldwide.







# The Rise of Data Science in Sri Lanka: Empowering Industries through Intelligent Insights

*Data science has rapidly evolved from a niche discipline into a core driver of innovation across multiple sectors. In Sri Lanka, the integration of data science is gaining momentum, influencing domains such as agriculture, finance, healthcare, and public administration. Now, data science is being adopted in Sri Lanka, carrying potential towards a data-driven future.*

The 21st century is defined by data. Every transaction, interaction, and digital footprint contributes to a growing ocean of information. Data science—an interdisciplinary field combining statistics, machine learning, and domain expertise—has emerged as the key to unlocking actionable insights from this data. In Sri Lanka, data science is moving beyond academia and IT labs, steadily making its way into the core operations of public and private institutions.

Agriculture remains a primary livelihood in Sri Lanka. With climate change threatening crop

yields and traditional farming methods becoming less reliable, data science is helping farmers optimize planting cycles, forecast weather, and detect crop diseases using image recognition and IoT sensors. The Department of Agriculture has begun integrating satellite imagery and machine learning models to support smart farming initiatives. Further, hospitals in Colombo and Kandy are adopting predictive analytics to manage patient inflows, allocate resources, and even forecast potential disease outbreaks. Projects like AI-assisted diagnostics and patient risk profiling are being piloted using anonymized health data from government clinics. Leading banks in Sri Lanka are using data science for fraud detection, credit scoring, and personalized financial services. By analysing transaction histories and customer behaviour, banks are improving risk management while offering tailored product recommendations.

Universities such as the Sri Lanka Institute of Information Technology (SLIIT), University of Moratuwa, and University of Colombo have

introduced specialized undergraduate and postgraduate programs in data science. These initiatives are nurturing a new generation of data scientists equipped with practical knowledge in Python, R, SQL, cloud computing, and machine learning. Hackathons, data challenges, and research collaborations with industry partners are accelerating real-world exposure.

Despite its promise, the adoption of data science in Sri Lanka is not without obstacles. Key challenges include the quality of data. Inconsistent or unstructured datasets hinder model accuracy. Further, there is limited access to cloud computing and GPUs affects large-scale deployment. The demand for skilled data professionals still outpaces supply. Additionally, there is a growing need for clear data governance policies to protect citizen data.

The adoption of data science in Sri Lanka faces several significant challenges that impact its growth and effectiveness. A major obstacle is the quality and accessibility of data; inconsistent, incomplete, or unstructured datasets limit the accuracy and reliability of analytical models.

Additionally, the country's digital infrastructure remains underdeveloped, with limited access to advanced cloud computing resources and GPUs, which restricts the deployment of large-scale data science projects. Another critical issue is the shortage of skilled data professionals, aggravated by brain drain and insufficient local training programs, which hampers the ability to meet rising industry demands. Furthermore, the absence of robust data governance frameworks raises concerns about data privacy and security, underscoring the urgent need for clear policies to protect citizen data and ensure ethical use. Addressing these challenges through improved infrastructure, education, and governance is essential for Sri Lanka to fully harness the potential of data science and AI technologies. Data science is not merely a technological trend; it is a transformative force that can redefine how Sri Lanka approaches its national priorities. By embracing data-driven decision-making, the country can unlock new efficiencies, drive inclusive development, and pave the way for innovation across all sectors.

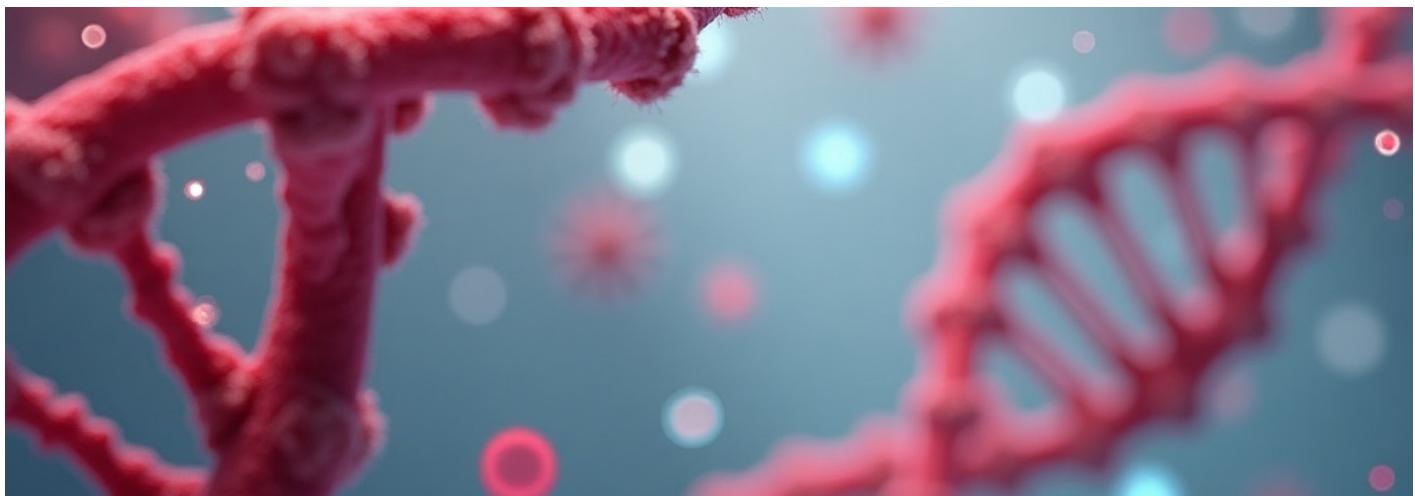
**Sandali Samarasinghe**

## Mission Mangal: Rebooting the System

*In the movie Mission Mangal (2019), one particularly memorable scene in Mission Mangal is when the Mars orbiter loses contact and chaos breaks out. Kartika Aggarwal (played by Taapsee Pannu) did something that shook the entire team; she switched the whole computer system off and switched it on again. Seems simple and risky, but this was simply the process of rebooting the system — a solution she recalls from home when her washing machine froze. This method was successful in bringing the mission back on track! This scene cleverly shows that not all technical problems need complex fixes — sometimes, everyday experiences hold the answers. Engineering doesn't always begin in labs; it may even start in the laundry room!*







# CRISPR: The Genetic Scalpel Revolutionizing Life Insights

*Imagine a world where inherited diseases are erased before birth, where HIV is no longer a life sentence, and where food grows more abundantly without harming the environment. What once seemed like the realm of science fiction is now becoming reality, thanks to CRISPR-Cas9, a revolutionary gene-editing tool that is reshaping the boundaries of biology and medicine.*

This technology, originally discovered as a bacterial immune defence system, has been transformed into a molecular scalpel that allows scientists to precisely cut and alter DNA. The possibilities it unlocks are extraordinary, and the stories emerging from its use are both thrilling and cautionary.

In 2018, the world was rocked by the announcement of the first CRISPR-edited human babies. Chinese researcher He Jiankui claimed to have modified the embryos of twin girls, Lulu and Nana, to remove a gene called CCR5, which is used by the HIV virus to infect cells. The goal was to make them resistant to HIV for life. The experiment, which bypassed international ethical guidelines and regulatory oversight, was met with global outrage. Yet, it

the long-term health and genetic consequences remain uncertain, this case thrust CRISPR into the public spotlight as both a miracle tool and a moral dilemma.

On a more hopeful note, CRISPR has been making headlines for its ability to cure devastating genetic disorders. One of the most inspiring examples comes from Victoria Gray, a woman in the United States who became the first patient to be successfully treated for sickle cell anaemia using CRISPR. Her doctors edited the gene in her bone marrow cells to turn back on fatal haemoglobin, a healthy alternative to the faulty adult version. Since her treatment in 2020, Victoria has been free from the debilitating pain crises and transfusions that once ruled her life. This single case has become a beacon of hope for thousands of others suffering from inherited blood disorders, proving that CRISPR can rewrite not just DNA, but destinies.

The power of CRISPR is also being explored in the global fight against HIV. Unlike traditional antiretroviral treatments that suppress the virus, CRISPR offers the radical potential to eliminate it altogether. In a 2023 clinical trial in the U.S., scientists used CRISPR to target and remove latent

HIV DNA hiding in the genomes of infected patients. Early results showed that in some individuals, the viral genetic material became undetectable after treatment, suggesting that a functional cure might be within reach. While further trials and safety evaluations are needed, this could signal the beginning of a future where HIV is not just treatable, but curable. Beyond human health, CRISPR is already reshaping how we grow our food. In Japan, the first CRISPR-edited tomatoes were approved for sale in 2021. These tomatoes are engineered to produce higher levels of GABA (Gamma-Aminobutyric Acid), a natural compound believed to lower stress and blood pressure. Unlike genetically modified organisms (GMOs) that insert foreign genes, CRISPR allows for small, precise tweaks within the plant's own DNA. The result is a crop that looks, tastes, and behaves like any other tomato, except it's healthier and bred with pinpoint precision. These developments hold great promise for creating crops that are more nutritious, pest resistant, and climate-resilient without the baggage of traditional GMOs.

Even diseases of the mind may one day be within CRISPR's reach. In a recent 2024 study, researchers

used CRISPR to target the APOE4 gene, a major genetic risk factor for Alzheimer's disease. In laboratory mice, editing this gene significantly reduced the buildup of amyloid plaques in the brain and improved cognitive performance. While these are early results and human trials are still in the planning stages, the potential to prevent or slow down Alzheimer's at the genetic level is groundbreaking. CRISPR could offer hope for millions facing a disease that has long remained untouched by conventional medicine.

As CRISPR technology continues to evolve, its impact will ripple across every aspect of life, from curing illness and combating epidemics to feeding a hungry world and potentially extending the human lifespan. But with great power comes the need for caution, oversight, and ethical responsibility. The line between healing and enhancement, between innovation and interference, is thin and often blurry. Yet one thing is clear: CRISPR is not just a tool, it's a turning point. Humanity now holds the blueprint of life in its hands, and what we choose to do with it will define our future.

Ruwani Hewage



## Nobel Prize on a roll

*In 2004, while playing around with graphite, physicists Andrei Geim and Konstantin Novoselov had a spark of genius. They weren't using fancy tools to isolate the world's strongest material. Instead, they used scotch tape!*

*This regular adhesive tape was used to peel off thinner and thinner layers. What stuck was graphene, a single layer of carbon atoms -incredibly strong, conductive, and flexible. Their "Friday night experiment" with tape earned them the 2010 Nobel Prize in Physics.*



**P**ath to Internship '24' was initiated to empower students by bridging the gap between academic learning and industry demands, providing them with the essential skills, knowledge, and opportunities needed to successfully secure internships and start their professional careers. Path to Internship '24 was a collaborative effort led by the IEEE Student Branch Chapter of SLIIT and IEEE IAS Student Branch Chapter of SLIIT, supported by key partners from both industry and academia. Designed with inclusivity, the event welcomed participants from diverse academic backgrounds and socio-economic statuses, fostering a community where mutual support was encouraged. The event aimed to help students occupy essential career skills, including awareness on how to create compelling CVs and LinkedIn profiles, mastering interview techniques, effective internship search strategies, and foundational communication and project management skills. Supported by IEEE Young Professionals Sri Lanka, the IEEE IAS Sri Lanka Chapter, and the SLIIT Faculty of Computing Media Unit, these partnerships were significant for the event's success. The event unfolded in two stages: a virtual preparation session on April 20th via Zoom, followed by an in-person session on May 11th at the SLIIT campus, featuring a distinguished lineup of speakers and industry professionals.

The virtual prep session on April 20th was led by Mr. Praneeth Peiris, a seasoned software engineer, influential speaker, and popular tech YouTuber. Held from 7:00 PM onwards via Zoom and live streamed on YouTube, the session focused on helping participants craft professional profiles by creating effective CVs and LinkedIn profiles. Mr. Peiris provided in-depth guidance on LinkedIn features, teaching attendees how to showcase their skills, experiences, and achievements. This enabled participants to bring together their academic accomplishments and career goals by effectively marketing themselves to potential employers using digital platforms.

The main event, held on 11th May 2024 at SLIIT premises, attracted over 200 students, professionals, and attendees, offering a highly valuable experience to everyone who participated. It featured a panel discussion with experts, Mr. Chathura Ganegoda, Head of Commercial Excellence at Rockland Distilleries, Mr. Dhaminda Siriwardena, Head of Software Engineering Zone24x7, and Mr. Samantha

# Path to Ir 20

## Equipping Future



# internship

24

## re Professionals



Indika, Assistant General Manager, MEP, Sanken construction (Pvt) Ltd. The event was moderated by Mr. Bhanuka Dayawansa, Vice Chair of the IEEE IAS Sri Lanka Chapter. The program also included practical workshops on CV building and interview skills led by Mr. Kasun Yukthika Abeyasinghe, Technical Lead Engineer at Rockland Distilleries (Pvt) Ltd., and Mr. Thilina Yapa Bandara, Associate Principal Consultant at Nagarro, respectively. The audience was honoured by the presence of distinguished guests such as Ms. Lihini Rajapaksha, Chairperson of the Student Activities Committee IEEE Sri Lanka Section; Ms. Vismini Amarasinha, Student Representative of IEEE Sri Lanka Section; Mr. Harindu Mallawaarachchi, Vice Chair of the Volunteer Management Sub-Committee of the Student Activities Committee IEEE Sri Lanka Section; and Prof. Pradeep Abeygunawardhana, Branch Counselor of the IEEE Student Branch of SLIIT. The event included interactive sessions and comprehensive lectures, all centred on industry-relevant topics.

In conclusion, Path to Internship '24 successfully joined academia and industry by emphasizing experience and equipping undergraduates with the essential tools and strategies to secure internships. The program played an important role in developing well-rounded professionals ready to innovate and tackle global challenges, aligning with IEEE's mission to advance technology for humanity's benefit. The event's overwhelming success was reflected in over 1,300 registrations, with more than 450 participants joining online and over 200 attending the physical session. This strong engagement demonstrated the high demand and appreciation for practical career development opportunities. Ultimately, Path to Internship '24 proved to be an invaluable initiative that raised awareness about internships and highlighted the critical importance of real-world experience for students preparing to enter the professional world.





# Her Future, Rewritten: Sri Lanka's Innovation for Equality

*In a nation where tradition and innovation intersect, Sri Lankan women are rewriting the narrative of equality. Driven by determination, empowered by technology, and armed with resilience, they prove that no dream is too big to achieve.*

As traditional values and modern aspirations walk side by side, Sri Lanka is witnessing a powerful movement towards gender equality. Despite having a long history of social and economic barriers, recent developments in industries, such as tourism, information technology, and corporate leadership, continue to challenge traditional norms and create new opportunities for women. These efforts are successful in providing greater access to leadership roles, financial independence, and professional growth for women, allowing them to reach their dreams with no restrictions. Although ongoing challenges exist, these advancements have not failed in proving that industrial development in Sri Lanka can help change gender roles, promote equality and driving sustainable social change. These collective actions not only promise to boost women's participation in the economy but also

pave way for a more resilient and inclusive society in the island.

Historically, Sri Lankan women have played significant roles in society. For instance, leaders like Queen Anula of Anuradhapura era and Queen Lilavati of Polonnaruwa era have made history with their periods on the throne, marking resilience and leadership in medieval Lanka. In nearer history, the country advances women's political leadership by electing the world's first female prime minister, Sirimavo Bandaranaike, in 1960. However, at present, certain obstacles prevail within the country. There is an apparent difference in pay between men and women, with women earning 27% less than men on average. Additionally, women are underrepresented in STEM careers, particularly in fields like engineering and technology, despite high educational qualifications. In the field of education, women have reached parity with men or even outperformed them in some areas. For example, in 2017, women made up almost 49% of undergraduate enrolments in STEM programs at local universities. However, this progress has not been reflected in the workforce. By 2024, the female

labour force participation rate had dropped low of 29%, while the rate for men remained significantly higher at 71%. The contrast between labour participation between the genders is significant.

Technology is helping women across Sri Lanka in powerful new ways, from small villages to online businesses. For instance, there are apps developed especially for women. The Suhuruliya 2.0 program, led by the Information and Communication Technology Agency of Sri Lanka (ICTA), aims to teach 10,000 women digital skills and help them reach international markets. It aims to empower 10,000 female entrepreneurs with digital skills and facilitate their entry into global markets. In Science, Technology, Engineering and Mathematics (STEM) fields, projects like NextGen Girls in Technology, recognized by UNESCO, are training girls in rural areas with coding, AI, and robotics skills. Additionally, large-scale efforts such as DP Education's Coding and Robotics Campuses aim to train half a million young girl coders, opening pathways to technological careers. Furthermore, social stigma, language barrier, work-life balance, lack of training facilities and low salaries have long kept many Sri Lankan women away from the hospitality industry, especially those in the rural areas, but initiatives have taken up the task of redefining the tourism sector, allowing women to shine more in this male-dominated sector. Amba Yaalu resort, an all-female power-driven resort, is proof for this advancement. Additionally, microfinance and entrepreneurship programs are supporting women in launching and scaling their businesses. Likewise, technology has proven to be a strength to women in Sri Lanka, becoming a backbone for their lives.

Several problems prevailing in the country have kept women away from being part of the developing technological and innovation sectors. Cultural barriers, for instance, have confined women into domestic responsibilities, limiting their freedom to engage in the outside world. Furthermore, gender biased education systems in the country have limited women to reach out to opportunities. Women only make up 20% of the workforce in STEM field (science, technology, engineering, and mathematics) professions. There are other inequalities that restrict women from pursuing chances and realizing their highest potential, such as differences in workload distribution, where women alone are burdened with much of the

housework, making it difficult for them to pursue in formal employment. Additionally, a major challenge for women in tech is the scarcity of role models, with few in leadership roles. This underrepresentation can hinder career growth and lead to feelings of isolation and discouragement. Another key challenge is gender bias. Through studies, it is found out that even with similar qualifications, women are less likely to be promoted and are frequently subjected to harsher criticism than men. This makes it harder for them to earn due respect and advance in their careers. Mothers, who also have a maternal duty to take care of their children, do not receive appropriate necessary support due to inadequate childcare services, ineffective parental leave policies, and possible corruption, making it tough for mothers to participate in career advancement. Innovation has been a key support in reshaping the future of women in Sri Lanka, creating new opportunities for leadership, economic participation and social participation.

Improving women-centric solutions, such as the targets of promoting STEM education among women and allowing digital access through to rural parts of the country, will continue to promote and make women more enthusiastic about being part of innovation. If Sri Lanka maintains its commitment to empowering women through technology and innovation, the island is ready to lead the region in digital inclusion and gender equality, helping women reach their full potential and creating a fairer, stronger society for the future.

**Lihini Wijesekara**

# Where Women Lead: Sri Lanka's All-Female Resort

Within the scenic landscapes of Kandalama, Dambulla, stands with pride a resort with a special distinction. Amba Yaalu resort is one driven solely by the warmth and dedication of women, who cook, garden, clean, provide exceptional hospitality and service, and manage all activity. It was opened in January 2025 and has since become a symbol of women's empowerment and progress in Sri Lanka's tourism industry. This initiative by seasoned hotelier Chandra Wickramasinghe, and management by Jeewanthi Adikari, the resort manager, has been a pinnacle example of how the tourism and hospitality sector has improved in helping Sri Lankan women unleash their full potential without any hindrance, while supporting the economy of the nation.

## Otara Gunewardene – Founder of ODEL, Embark, and Otara Foundation

"I felt I had a responsibility towards the women of Sri Lanka—to show that we could compete in the business world, while still being devoted to our children."

## Ashcharya Peiris – Sri Lanka's First Blind Fashion Designer

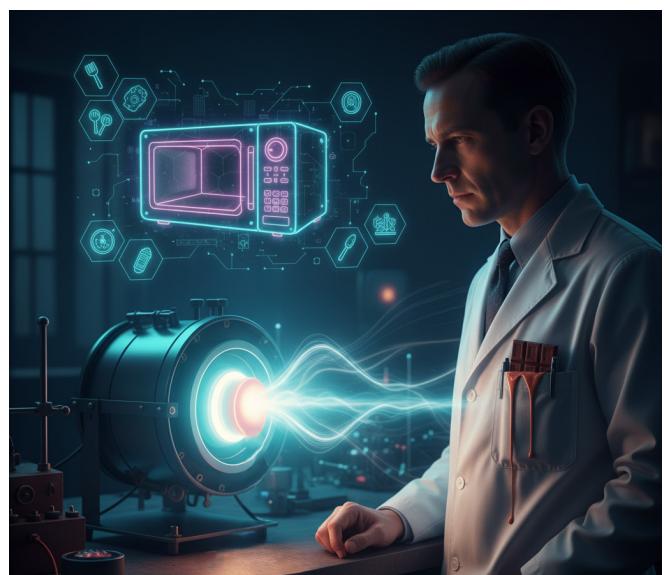
"I may have lost my sight, but I never lost my vision."

## Jeewanthi Adikari – Manager, Amba Yaalu Resort

"This is a place where women can realise their potential. They will not be inside the shell. Instead, they will come out and try to perform better."

## From Candy Bars to Kitchen Stars: The Microwave Oven's Sweet Origin

In 1945, engineer Percy Spencer was working with magnetrons, a key component in radar technology, when he noticed that a chocolate bar in his pocket had melted unexpectedly. This surprising discovery showed that microwaves could heat food quickly. Spencer then experimented further, leading to the invention of the microwave oven. This accidental breakthrough transformed cooking by making it faster and more convenient, changing kitchens worldwide forever. Talk about a "sweet" accident!



# Did you know?

In a world brimming with information, some facts still manage to surprise us. From the history of technology to quirky everyday truths, here are some facts that reveal the unexpected wonders of life

## **The Term “Technology” Dates Back to 330 BC**

According to studies, the word “technology” was coined by Aristotle in 330 BC, combining the Greek words “techne” (art or craft) and “logia” (principle).



## **Apple’s iPhone Ads Always Show 9:41 AM**

The clock on iPhone screens is always set to 9:41 AM in Apple’s promotional materials. This instant in time commemorates Steve Jobs’ 2007 unveiling of the original iPhone, giving emphasis to the product’s debut.

## **The Firefox Logo Features a Red Panda, not a Fox**

Despite its name, the Firefox browser’s logo actually depicts a stylized red panda, also known as a “fire fox.” Talk about a wild misunderstanding!



## **Google Rents Goats for Lawn Maintenance**

Goats have been used by Google to mow the grass at its Mountain View headquarters in place of conventional lawnmowers. This environmentally friendly strategy lowers the company’s carbon footprint. Pretty much being the GOAT here!

### The First Computer Mouse Was Made of Wood

In 1964, Douglas Engelbart invented the first computer mouse, and it was crafted from wood. Sounds pretty mousy for such a groundbreaking invention!



### Nokia's First Product Was Toilet Paper

In the 19th century, Nokia began as a paper mill that produced goods like toilet paper before growing into a massive telecommunications company. Later, the business moved into mobile phones and electronic devices.

### The First Smartphone Was Introduced in 1992

IBM unveiled the first smartphone, named "Simon," in 1992. It was more than ten years ahead of current smartphones, with a touchscreen, the ability to write emails, make calls, and run simple programs.



### The First Alarm Clock Only Rang at 4 AM

In 1787, the first mechanical alarm clock was created with the intention of only ringing at four in the morning. Alarm clocks couldn't be adjusted to different times until much later. That must have been exhausting.

### The World's Fastest Internet Can Download Netflix in Under a Second

Researchers have developed an internet connection capable of transferring data at 178 terabits per second. At this rate, the full Netflix library can be downloaded in just under a second.



# The AI Horizon in Sri Lanka: A Conversation with Dr. Nushara Wedasingha

Dr. Nushara Wedasingha stands at the intersection of academia and cutting-edge innovation. As a lecturer at SLIIT and an external researcher at the University of Oxford, he is currently spearheading the development of an AI-based tool to screen patients with Parkinson's disease and track the effects of interventions. In a recent virtual interview, he spoke candidly about the transformative role of AI in Sri Lanka, the country's challenges in adopting advanced technologies, and his advice for the next generation. What stood out most was his warm, enthusiastic demeanor and unwavering passion for making technology meaningful.



**H**e opened the conversation with a surprising reminder: AI is not a recent invention. “We’ve been living with AI throughout our lives,” he said. “It goes back to the 1940s with the birth of digital electronics. Today, we notice AI more because of advancements in machine learning and deep learning, but those are just subsets of AI, not AI itself.” While foundational theories emerged

in the 1950s, he explained, real-world applications only started gaining momentum in the late 1990s. Now, those applications are redefining industries globally.

In healthcare, for example, AI has advanced to the point where critical surgeries can be performed remotely. A specialist thousands of miles away can conduct life-saving procedures using robotic systems. “AI helps us view problems from a new perspective,” he said. “It reveals patterns in data that were previously invisible to us.” This analytical power enables early detection of subtle changes in a patient’s condition, sometimes even beyond what trained professionals might notice.

The impact of AI isn’t limited to healthcare. “Finance, manufacturing, tourism, they’re all evolving,” he said. “AI enables smarter decision-making, fraud detection, resource optimization, and personalized services. It has revolutionized entire industries. We’re in a new era.”

But despite these global advancements, Sri Lanka faces critical barriers to harnessing AI effectively. Chief among them is access to quality data. “We think we have data. But we don’t,” he emphasized. “Without large, diverse, and context-specific datasets, AI models can’t perform well.” Publicly available models like YOLO or AlexNet, he explained, are trained on foreign datasets and may not be suited to the local context. “These models are often designed for specific problems in other countries. When we apply them here, they fail to capture our industry-specific variations.”

Another major challenge is the knowledge gap. Many assume AI is plug-and-play. “Some industries think they can just drop a pre-trained model into their system. That’s a huge mistake,” he warned. “Without understanding the model’s architecture, they may face high computational costs that strain their budgets.” He highlighted approaches like TinyML, which can drastically reduce complexity using methods like pruning, quantization, and knowledge distillation. “With proper understanding, we can build cost-effective AI solutions suited to our country’s needs.”

Infrastructure limitations add to the difficulty. AI typically requires high-performance computing or reliable cloud services. “In developed countries, if your system can’t handle the load, you offload it to cloud platforms like AWS or Google Cloud. But do we have that luxury? Do we even have stable internet across the country?” he asked. These constraints are particularly problematic in rural or under-resourced regions.

On the topic of AI and the future of work, Dr. Wedasingha didn’t shy away from reality. “Yes, AI will impact jobs. No doubt about it,” he said. “But that doesn’t mean jobs will disappear entirely. When one door closes, another opens.” He shared his own shift from electrical and electronic engineering to AI as an example. “If AI can replace your job, then you must learn to control AI. Be the one building the systems, not the one replaced by them.”

He emphasized the growing need for hybrid skillsets. Bank managers are learning AI to manage intelligent systems. Neurologists are using AI for faster and more accurate diagnoses. “I’m now working with a neurologist at Oxford who understands AI inside and out because his field is changing. You can’t just be a doctor or an engineer anymore. The future belongs to those who blend disciplines.”

Dr. Wedasingha also voiced concern over the government’s lack of proactive support. “Unfortunately, engagement is minimal,” he said. “Many leaders don’t understand AI and rely too heavily on advisors.” He cited a recent government announcement of a translation tool as a major AI milestone. “That’s something Google Translate already does. It’s not a bad initiative, but we need to aim higher. We’re competing with countries developing autonomous vehicles.”

He urged the government to seek out and support local AI talent. “There are Sri Lankan researchers both in academia and the private sector doing phenomenal work. Their projects deserve recognition, funding, and promotion.”

One actionable step, he suggested, is the formation of expert advisory panels. “Involve those who truly understand AI, not just those with big titles. Sometimes a B.Sc. graduate knows more about practical AI than a Ph.D. holder.” He stressed that effective collaboration between academics, industry professionals, and policymakers could unlock locally relevant, scalable solutions. “With the right vision, AI can drive significant economic growth for Sri Lanka.”

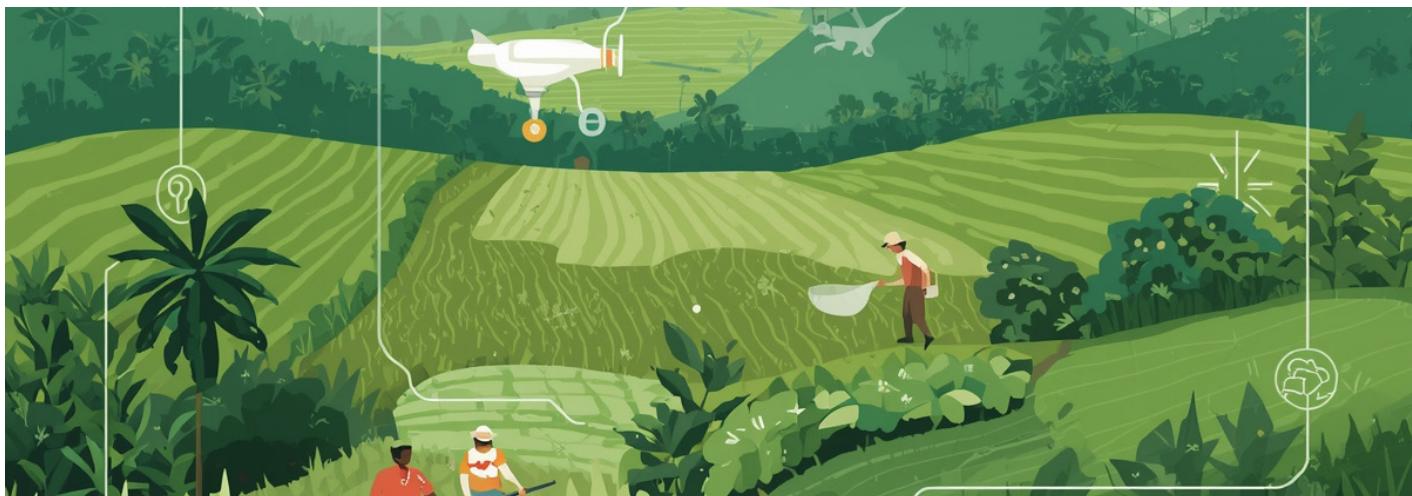
Looking ahead, Dr. Wedasingha remains cautiously optimistic. “We still have time, if we correct our path now,” he said. He sees immense opportunity for AI in healthcare, finance, law, and engineering. With technologies like TinyML, AI can be embedded in affordable hardware, offering scalable, low-cost solutions. “We must build AI systems that are budget-friendly, locally relevant, and trained on local data. If we keep ignoring modern trends, we’ll always lag behind. But if we act now, we can transform our future in just five years.”

He ended with heartfelt advice to the youth of Sri Lanka: “The knowledge is out there. You have the internet. Don’t blame your lecturers, your government, or your parents. If you have a computer and Wi-Fi, you can learn anything.” He encouraged students to use platforms like YouTube, Google Colab, and open courses from institutions like MIT. “You get the lectures, slides, labs—even the answers. Everything is there. Don’t waste time on distractions. Seek the knowledge. That’s all it takes.”

Dr. Nushara Wedasingha’s journey from Mobitel to SLIIT to Oxford reflects the very path he envisions for Sri Lanka: bold, curious, adaptable, and action-oriented. As the country stands on the brink of a technological revolution, voices like his will be essential to guiding both policymakers and young innovators toward a smarter, AI-driven future.

**Interviewed by: Arudkumaran Vengadeswaran**





# From Tradition to Technology: Smart Agriculture in Sri Lanka

*As the climate and environment continue to evolve, it is time for Sri Lanka's farmers to take a step to change, shifting from age-old traditional practices to embracing the new era of agricultural technology in their fields. Sri Lanka, a blessed island where agriculture is heritage and livelihood, is now standing at the brink of a digital transformation, where tradition meets technology to redefine how food is grown, harvested, and sustained for generations to come. Will our farmers and land take the stance?*

With a history spanning more than 5000 years, agriculture has always been a major industry in Sri Lanka, a country rich in diversity. Agriculture has changed over time to become what it is today, starting with Chena farming in ancient Lanka. At present, the country's agricultural landscape is facing unique problems and challenges. The economic crisis has had a huge blow on all citizens, posing challenges with the shortage of food, fuel and medicines. Farmers, too, struggle to obtain essential fertilizers to nourish and sustain their crops. To address these ongoing and future challenges, the integration of technology could offer transformative solutions to improve efficiency and reduce dependency

on chemical fertilizers.

Smart farming is a concept about using technological advancements to increase both the quantity and quality of agricultural products. Proven strategies for raising productivity per hectare of land include smart agriculture, effective water management, and soil moisture and humidity monitoring. So far, certain technologies have been used in the world to help with agricultural tasks, integrating advanced technologies like the Internet of Things (IoT) and Artificial Intelligence (AI) to boost productivity, efficiency, and sustainability in farming. IoT, simply explained, has the idea of connecting devices, automobiles, and other electronic equipment to a network for data exchange, and is used in various other fields such as healthcare, security and traffic management. IoT devices assist farmers by offering real-time and historical data for forecasting crop health, weather, and soil quality. IoT applications include sensor utilized systems that surveil fields, crops, soil, livestock and storage, water irrigation, waste reduction and livestock monitoring. AI application in farming include aspects such as soil monitoring and weed management, where AI can be used to detect and adjust necessities as required. Another striking

example is the use of drones. The way farmers handle their crops is being completely transformed by drones, as they facilitate precise spraying, effective crop monitoring, and early disease or pest detection by supplying real-time aerial data. With the help of this technology, farmers can make information-based choices for increased yields and sustainability while also reducing labour costs and increasing productivity.

Within the ever-developing technological era of the world, Sri Lanka is making strong moves to bring technology into farming, opening a new chapter for agriculture on the island. An exceptional local contribution, for instance, is the GeoGoviya platform. This smart agricultural platform, founded in 2022 by Sri Lanka's Department of Agrarian Development (DAD) in collaboration with the International Water Management Institute (IWMI), provides farmers in Sri Lanka with up-to-date information on weather, soil, crops, and water. It combines drought monitoring, Geographic Information Systems (GIS) analytics, and climate solutions, and it assists farms in managing climate risks and implementing sustainable practices by providing professional advice. Further advancements have been made by universities to support smart farming. One such example is the development of a system that uses an Arduino UNO board with sensors to track plants that grow with or without soil considering Sri Lanka's food crisis and the country's dearth of fertiliser and manure. Furthermore, Sri Lanka Institute of Information Technology (SLIIT) has implemented a prediction system for vegetable cultivation, which provides price prediction, yield prediction and crop optimization. Sri Lankan researchers have also taken up the task of finding new ways of implementing technology into agriculture. For small-scale farmers in Sri Lanka, a mechanical paddy transplanting equipment provides an affordable option. This idea was created especially for one of the nation's main crops. Another such implementation is the research on super absorbent polymers for agricultural purposes, to help with water content in soil to enhance transplanted seedling growth. Such innovations mark a promising effort of Sri Lankans to embrace smart agriculture, paving way towards an era of agriculture with enhanced efficiency, productivity and sustainability.

Smart agriculture is a revolution with its own

benefits and challenges. Integrating technology into farming is an efficient option. It helps to optimize cultivation conditions, allows effective monitoring, and predictions regarding crop yields and future impacts can be known. This is a huge benefit for farmers who struggle with problems that pose challenges to their crops. Another evident advantage is that this system can allow further expansion of agriculture. Traditionally, vast land areas, fertilizers and pesticides are necessities for agriculture. Additionally with the increasing population, it is rather challenging to satisfy customer needs. However, with the integration of technology, infrastructure such as IoT greenhouses, rooftops, walls, and even supermarkets and shipping containers, can accommodate crop cultivation. This exclusive feature can support small scale farmers with their business as well and will reduce the effort farmers have to exert to obtain produce.

Another exceptional benefit is that through technology, it is proven that pesticide and fertilizer requirements are low. Precision farming allows conservation of water and energy, enhancing eco-friendly farming practices and resulting cleaner, organic harvests. On the other hand, certain challenges can hinder the integration of technology into the agricultural sector. One main disadvantage is the lack of sufficient land. In Sri Lanka, mostly small land areas are used for cultivation purposes, and it is harder for farmers to afford or fully benefit from advanced technology in the field. Small plots often cannot support large machinery or justify the investment in modern systems, which limits the potential for long-term improvements in productivity. Moreover, particularly in open, unattended places, IoT in agriculture is vulnerable to security threats including data theft and tampering. It is essential to secure systems using access control, authentication, and encryption. There are other practical disadvantages as well, that must be further developed to give its optimum performance. For example, in the aspect of drones, lighting, angles, and background noise all affect real-world photos, and grain variations from pests or dirt add complexity. For accuracy, this calls for bigger, more varied datasets and presents a challenge to image processing. Making these systems efficient and easy to use requires quick, precise processing of crucial data. Amidst the difficulties, Sri Lanka keeps pushing the limits, actively resolving barriers, and working to provide

practical smart agriculture solutions for a more productive and sustainable future. Sri Lanka, being a land where agriculture plays a vital role in livelihoods and the economy, stands to benefit greatly from the adoption of smart farming technologies. Smart agriculture in the fields present vast opportunities, from increasing export possibilities and boosting food security to promoting sustainable agriculture. Supportive regulatory structures that promote creativity and farmer involvement are essential for future advancement. Smart agriculture tech has the potential to revolutionise the industry into a revolutionary, effective, and sustainable system if it is guided in the correct path. In conclusion, adopting this silent revolution is not only advantageous but also necessary to ensure Sri Lankan agriculture's continued prosperity. working to provide practical smart agriculture solutions for a more productive and sustainable future.

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Lihini Wijesekara

## The Crown Jewels of Sri Lankan Agriculture

**Coconut:** In Sri Lanka, coconut cultivation supports livelihoods and food security, thriving in adverse climates. Edible products include coconut oil, water, and milk, while industrial products like coir and activated carbon are also key.

**Tea:** With a century-long history that dates to the British colonial era, tea contributes significantly to Sri Lanka's economy through export revenue. Ceylon tea is distinguished from other tea-producing nations by its outstanding quality, flavour, and scent, which have earned it international recognition. Sri Lanka, with over 23 percent of the global market, is the third-largest producer of tea.



**Paddy:** Rice is the most important staple crop in Sri Lanka, occupying most of the agricultural land and supporting the livelihoods of many. Over 90% of irrigated paddy lands are in the dry zone.

**Rubber:** Sri Lanka's rubber industry began in 1876 with the planting of the first rubber trees in Gampaha. Sri Lankan natural rubber, particularly Lanakprene, is in high demand worldwide due to its premium quality, odourless nature, light colour, and clean characteristics, making it ideal for high-quality rubber products.

**Cinnamon:** Cinnamon, has a rich history dating back to ancient times when it was highly prized by traders from Egypt, Rome, and later Europe. Known as "true cinnamon", Sri Lankan cinnamon was a major reason for colonial interest in the island, especially by the Portuguese, Dutch, and British. Today, Sri Lanka remains the world's largest producer and exporter of true cinnamon, renowned for its superior quality, aroma, and flavor. It continues to be a significant agricultural export, supporting thousands of rural livelihoods and maintaining the island's reputation in global spice markets.





# The Double-Edged Code: Ethics in the Age of AI and Biotechnology

*We live in an age where machines can think, genes can be edited, and life itself can be redesigned. Artificial Intelligence (AI), biotechnology, genetic engineering, and data-driven science are reshaping what it means to be human. But with every new breakthrough comes a crucial question: should we do it, just because we can? The race to advance technology has never been faster but neither has the urgency to define its boundaries. The line between innovation and intrusion is thinner than ever and navigating that line is no longer just the job of scientists, it's a societal responsibility.*

**T**ake biotechnology and gene editing, for example. CRISPR-Cas9, the revolutionary tool that enables scientists to precisely alter DNA, has opened the door to curing genetic disorders like sickle cell anaemia and cystic fibrosis. Yet, the same technology can be used to engineer embryos, enhance intelligence, or increase physical traits raising the possibility of “designer babies” and superhumans. The infamous case of He Jiankui, the Chinese scientist who edited the genes of twin girls to resist HIV, sparked global backlash for violating ethical norms and disregarding long-term consequences. While the intentions may have been protective, the implications were profound:

a precedent was set for altering the human germline.

In parallel, Artificial Intelligence is rewriting the rules of privacy, autonomy, and labour. AI-driven surveillance systems can recognize faces and track individuals without consent. Algorithms can determine who gets a job interview, who receives a loan, or even who is flagged by law enforcement. In medicine, AI can assist in diagnostics and surgery, but also poses risks of bias, lack of accountability, and the replacement of human decision-making. AI systems trained on biased data can perpetuate social inequalities. The infamous case of COMPAS, an algorithm used in U.S. courts to predict recidivism, showed racial bias, disproportionately labelling Black defendants as high-risk. Human cloning, once science fiction, is now technically feasible. In 2004, South Korean scientist Hwang Woo-Suk claimed to have cloned human embryos though later retracted due to fraud. Today, while therapeutic cloning (for stem cell research) is under cautious exploration, reproductive cloning remains banned in most countries due to ethical, identity, and dignity concerns. The core issue concerns. The core issue lies in the commodification of life turning human existence into a customizable product. Would a cloned human be a full person with rights, or a creation subject to ownership?

These are questions science cannot answer alone.

Global policies are gradually taking shape. The UNESCO Universal Declaration on the Human Genome and Human Rights (1997) asserts that the human genome is the heritage of humanity and calls for limits on practices that could harm human dignity. The WHO recently called for global governance on human genome editing, emphasizing that germline edits must not be used until ethical, social, and safety standards are established. In AI, the EU AI Act proposes strict regulation on high-risk applications like surveillance, while the OECD AI Principles promote transparency, accountability, and human rights.

Even in the corporate world, tech giants like Google and Microsoft have released internal AI ethics guidelines, but enforcement remains weak. Meanwhile, countries like China continue to develop AI and biotech at massive scales with minimal public debate, raising concerns about ethical oversight. The divide between nations with strong regulatory frameworks and those with loose or absent policies poses a challenge to ensuring global ethical standards.

While the world races ahead, it's important to note that Sri Lanka currently does not conduct

gene-editing or human cloning research at any significant level. Ethical restrictions, lack of advanced infrastructure, and limited funding in genetic science have kept the nation on the sidelines of these global debates. Similarly, AI development in Sri Lanka is still in early stages, focused mostly on basic automation and data analytics in industries and universities, rather than controversial applications like facial recognition or predictive policing. Although local researchers are exploring AI in healthcare and agriculture, the nation has not yet engaged in the deeper ethical conflicts faced by tech superpowers.

As exciting as the future looks, one thing is clear: ethics must evolve alongside technology. If we are to preserve what makes us human, then our morality must guide our machines, not the other way around. Policies should not only keep up with the pace of innovation, they must define its limits, protect dignity, and ensure that science serves humanity, not the other way around.

**Ruwani Hewage**

## NASA's Space Joystick... from a Gaming Console

**N**ASA engineers adapted Microsoft Xbox 360 controllers to operate Robonaut 2 on the International Space Station because they are intuitive, affordable, and astronauts were already familiar with them. Using these controllers made it easier to control the robot's arms and hands precisely, helping astronauts perform tasks more efficiently in space without needing to design a custom control system. This smart use of existing technology saved time and costs while improving robot operation.







# A Greener Tomorrow: How Sri Lanka Could Become the Island That Runs on Sunlight and Innovation

*In the year 2035, a flight descends into Colombo under a sky buzzing with silent electric drones. The buildings below shimmer with solar glass windows, and the streets hum softly with electric tuk-tuks weaving through lanes lined with vertical gardens. In this imagined future, Sri Lanka has become a beacon of green innovation, a self-sustaining island powered almost entirely by the wind, sun, and waves. But this isn't science fiction. This is the path we could take, starting now.*

Today, Sri Lanka faces a critical crossroad. The country spends billions importing fossil fuels, only to battle rising fuel prices, power cuts, and pollution. Meanwhile, we're blessed with what many countries crave, year-round sunlight, strong ocean currents, and vast wind corridors. It's as if nature is handing us the blueprint for clean energy; we just need to read it.

Green technology isn't just about solar panels and wind turbines anymore. It's about smart grids that talk to each other, bioengineered algae that produce fuel, and transparent solar films that turn

every window into a mini power station. Germany, a country with far less sunlight than Sri Lanka, now generates nearly half of its electricity from renewable sources. If they can do it, imagine what we can achieve, with over 2,800 hours of sunshine a year!

One of the most inspiring real-world stories comes from the small village of Galgamuwa, where a community-led solar project lights up schools, homes, and farms. No grid connection, no diesel generators, just the sun and a vision. Multiply that across thousands of villages, and you have a grassroots energy revolution. According to a 2022 study from the Asian Development Bank, decentralized solar microgrids can cut rural poverty by up to 40% in energy-deprived communities.

But green tech goes beyond just power. Picture this: algae-based biofuel plants along the coast, turning seawater and sunlight into jet fuel. Roads made of recycled plastic infused with solar cells, powering streetlights. Schools cooled with rooftop gardens and rainwater-fed air circulation systems. These ideas may seem futuristic, but companies around

the world are already piloting them—and Sri Lanka has the perfect climate, talent, and urgency to bring them home.

One of the most overlooked treasures we have is ocean energy. Sri Lanka's coastline stretches over 1,300 km, offering immense potential for wave and tidal power. Countries like Scotland are already harnessing ocean currents using submerged turbines. If even a fraction of our marine energy were tapped, it could supply uninterrupted electricity to the island, particularly during monsoon seasons when solar efficiency drops.

Transportation is another opportunity dressed as a challenge. Imagine transforming Sri Lanka's iconic tuk-tuks into electric vehicles powered by solar-charging stations placed at every major bus stop. With proper policies and incentives, we could phase out fossil fuel vehicles by 2040, slashing emissions and boosting the local EV market. Already, several Lankan startups are working on low-cost, solar-powered electric bikes and three-wheelers, but they need visibility and support.

The potential is there. Technology is here. What's missing? Vision and bold leadership. Government

policies must incentivize clean energy investments, reduce taxes on green tech imports, and promote public-private partnerships. Universities must offer programs that blend engineering with sustainability. Citizens must demand change, not with protests, but with purchasing power, education, and innovation. As per the International Renewable Energy Agency (IRENA), every dollar invested in renewable energy generates three times as many jobs as fossil fuel investments. That means clean energy doesn't just save the planet, it grows the economy.

Sri Lanka is not too late to lead. In fact, we are just early enough to leap ahead. Let's imagine a Sri Lanka where every rooftop is a power plant, every bus is electric, and every drop of rain is captured and reused. Where our children breathe cleaner air, our farmers grow with smarter tools, and our cities glow without burning carbon. The green revolution isn't coming, it's already here. And this tiny island, full of sunshine and possibility, might just be the unexpected hero the world needs.

Ruwani Hewage



## The Accidental Discovery of DNA Fingerprinting

*O*n September 10, 1984, Professor Sir Alec Jeffreys of the University of Leicester noticed distinctive patterns in DNA samples while developing an X-ray film. He first thought, "God, what a mess," but he quickly saw the uniqueness of these patterns, which led to the development of DNA fingerprinting. This discovery revolutionized forensic science and has been essential in criminal investigations and paternity cases.



**O**n the 8th of May 2025, the IEEE IAS Student Branch Chapter of SLIIT, in collaboration with the IEEE Student Branch of SLIIT, proudly presented Path to Internship '25- an inspiring event crafted to help students gain valuable career insights, build their professional path, and secure their dream internship. Designed for aspiring professionals, the event promised a blend of practical advice and knowledge to guide participants toward success in the competitive world of work.

The event commenced with an informative virtual prep session in Microsoft Teams, comprising two engaging segments. The first session was led by Ms. Shamilka Samaranayake, Human Resources Manager of Talent Acquisition and L&D at Acentura Inc. and focused on "CV Writing & AI in the Workplace". It provided attendees with expert strategies for crafting striking resumes and adapting to the evolving landscape of technology-driven recruitment. Adding an interactive touch, Ms. Samaranayake conducted live CV reviews for the delegates, providing them with personalized, actionable feedback. She also focused on the transformative impact of artificial intelligence on recruitment processes and workplace environments, highlighting how professionals can proactively adapt their skills to meet future industry demands. The second session, conducted by Mr. Sameera Abeysinghe, Chief Technology Officer at OREL IT, delivered an insightful session on "Job Market Trends & Industry Demands." Drawing on his extensive experience leading innovations in AI, cloud, and cybersecurity, he offered valuable perspectives on the evolving skills required in Sri Lanka's IT sector. He also shared his passion for mentoring emerging professionals through academic collaborations, hackathons, and public forums. Both sessions seamlessly combined practical expertise with real-time interaction, making them both enlightening and impactful, while providing attendees with a clear understanding of current industry expectations and future career opportunities. The virtual prep session attracted an impressive audience of over 700 participants, reflecting the strong interest and enthusiasm for career development among students and professionals alike.

The physical session of "Path to Internship," held on May 10th, 2025, at the SLIIT Main Auditorium, Malabe, brought together over 350 participants

# Path to Internship '25



# internship

# 25



from across Sri Lanka for a focused day of career development, industry engagement, and soft skills empowerment. The event began with a warm welcome speech from the Vice Chairperson of IEEE Student Branch of SLIIT, Chathumina Kalatuwage.

The morning featured a keynote by Mr. Geethika Senod, Entrepreneur and Creative Director, who inspired attendees with insights on soft skills such as communication, teamwork, and leadership. His talk emphasized empathy and authentic leadership as keys to success and concluded with an interactive Q&A. A panel discussion moderated by Ms. Shashika Lokuliyana, Senior Lecturer of the Faculty of Computing, SLIIT then brought together industry leaders from various domains. This included Mr. Tishan Dahanayakage, Director of Engineering at WSO2, Mr. Kasun Delgolla, Chief Technology Officer at Surge Global, Mr. Chanaka Prasad, Founder of idea8 & Co-founder of X8 Product Studio, and Mr. Ishara Rathnayake, CEO of Top Ceylon Exports (PVT.) LTD. They shared valuable advice on certifications, project-building, and aligning academics with industry needs. A highlight was a live CV review session offering real-time, constructive feedback.

The day's formal program concluded with tokens of appreciation presented to the panelists, followed by closing remarks and a vote of thanks from Event Chairperson Yasas Maddumage, Vice Chairperson of IEEE IAS Student Branch Chapter of SLIIT. Attendees were also given a preview of upcoming industry visits and participated in a group photo. Afterwards, participants engaged in the Career Fair, which featured leading companies such as BLADEGEN, CodeZela, Idea8, and Optimize Solution. The fair offered valuable opportunities for students to connect directly with hiring managers, explore internships and job openings, and network one-on-one with industry professionals, making it a key highlight that enriched the overall event experience.

On May 23, 2025, 50 students were selected from over 300 registrations to participate in an industry visit to WSO2, Colombo. The visit featured two insightful sessions: one on professional soft skills by Mr. Asanka Abeyweera, and another on job market trends and industry demand by Mr. Suhan Dharmasuriya. Both sessions included interactive Q&A segments and a team-building ring-to-pole challenge. Participants also enjoyed a guided tour

of WSO2's vibrant workspace and concluded the visit with a networking lunch, providing valuable opportunities to connect with industry professionals. A Token of Appreciation was formally presented on behalf of the Organizing Committee, by Yasas Maddumage, the Event Chairperson, to thank the WSO2 team and to conclude a professionally enriching and memorable experience.

On the 9th and 15th of July 2025, the industry visit session extended into a two-day immersive experience at Sysco LABS, Colombo. 50 students were selected to participate, gaining firsthand exposure to state-of-the-art software engineering practices and career opportunities within the organization. The visit included three insightful sessions. Ms. Senara Sudasinghe opened by outlining Sysco Corporation's food service journey, highlighting Sysco LABS as an innovation hub and explaining the company's structure and values. Next, Mr. Layansan Rajendram provided an overview of Sysco LABS Colombo's software engineering workflows, covering agile methods, team collaboration, design practices, deployment, and quality engineering. The final session, led by Mr. Pasindu Liyanage and Mr. Pasan Wadasinghe, focused on career paths and internship opportunities, sharing their key roles within the

Software Development Life Cycle (SDLC). The Organizing Team of PTI '25 presented a Token of Appreciation to the Sysco LABS team, marking the conclusion of a valuable and memorable experience.

The event successfully enriched students with practical knowledge and insights into industry expectations, career trends, and essential soft skills. Path to Internship 2025 not only offered valuable exposure and learning opportunities through its industry visits but also succeeded in securing internship placements for participating students as a direct result of these visits. By connecting participants directly with industry professionals through sessions, panel discussions, and interactive activities, it empowered them to better navigate the evolving job market and build a strong foundation for their professional journeys. This remarkable experience fostered both personal growth and career readiness, successfully preparing students to confidently pursue their goals in today's competitive landscape.



# Volunteers of the Year: Honouring the Champions Behind the Success

This page is dedicated to celebrating the remarkable dedication and hard work of our volunteers who have played an essential role in the growth of IEEE IAS Community at SLIIT.

We honour their unwavering commitment and recognize the vital impact they have had in making our events and initiatives successful.

## Best Volunteer of the Term: Chathumina Kalatuwage



Chathumina Kalatuwage has been an outstanding volunteer and leader at IEEE IAS Student Branch Chapter SLIIT. Serving as the Vice Chairperson of the Path to Internship (PTI) 2025 event, he single-handedly managed the finances with precision and dedication, playing a vital role in acquiring partners that made the event a resounding success. His dedication and hard work have inspired many other aspiring volunteers. Chathumina went above and beyond by volunteering for both program and logistics aspects of Synergy Springs, despite not being on its organizing committee, ensuring everything ran smoothly. Recognized as one of the best volunteers IEEE IAS Student Branch Chapter of SLIIT has seen since its inception, he also holds the position of Vice Chairperson of the IEEE Student Branch of SLIIT, a well-deserved testament to his leadership and dedication.

## Outstanding Volunteers of the Term



Nithika Perera



Thathsarani Wijesinghe



Inuri Ediriweera



Pavan Kumarage



Thisula Lewhan



Panduka Wijesinghe

# IEEE IAS Student Branch Chapter Achievements



“Path To Internship - 2024”, a collaborative effort led by the IEEE Student Branch Chapter of SLIIT and IEEE IAS Student Branch Chapter of SLIIT, secured a Top 3 position in the **Best Industry Collaborative Project (SB OU Category)** at the IEEE Sri Lanka



Recognized as the Student Branch Chapter with the highest number of IEEE IAS members in Sri Lanka.



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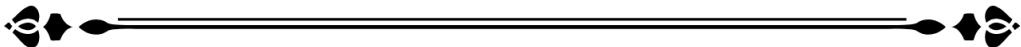


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projects, and more!

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# Resources



## The New Frontiers of Healthcare: How AI is Revolutionizing Medical Diagnostics

[1] "Artificial Intelligence in Medical Diagnosis: Medical Diagnostics and AI," *SpectralAI*, Oct. 04, 2024. <https://www.spectral-ai.com/blog/artificial-intelligence-in-medical-diagnosis-how-medical-diagnostics-are-improving-through-ai>

[2] C. Putty, "Revolutionizing Patient Care with AI-Driven Diagnostics," *Thoughtful.ai*, Sep. 13, 2024. <https://www.thoughtful.ai/blog/revolutionizing-patient-care-with-ai-driven-diagnostics>

[3] W. Dorocka, "How AI is improving diagnostics and health outcomes," *World Economic Forum*, Sep. 25 2024. <https://www.weforum.org/stories/2024/09/ai-diagnostics-health-outcomes>

## The Nano Leap: How Tiny Tech is Set to Revolutionize Sri Lanka's Future

[1] D. Khullar, "Rise of the Nanomachines," *The New Yorker*, Jun. 13, 2024. <https://www.newyorker.com/magazine/2024/06/24/rise-of-the-nanomachines>

[2] "Nanotechnology and Advanced Materials | National Institute of Fundamental Studies (NIFS), Sri Lanka," *Nifs.ac.lk*, 2018. <https://www.nifs.ac.lk/research/nanotechnology-and-advanced-materials>

[3] P. K. Tyagi, A. Arya, S. Ramniwas, and S. Tyagi, "Editorial: Recent trends in nanotechnology in precision and sustainable agriculture," *Frontiers in Plant Science*, vol. 14, Aug. 2023, doi: <https://doi.org/10.3389/fpls.2023.1256319>.

[4] S. Malik, K. Muhammad, and Y. Waheed, "Nanotechnology: A Revolution in Modern Industry," *Molecules*, vol. 28, no. 2, p. 661, Jan. 2023, doi: <https://doi.org/10.3390/molecules28020661>.

## Surveillance Capitalism: The Rise of Data-Driven Power

[1] B. Barth, "Smart cities or surveillance cities?", *Planning Magazine*, American Planning Association, Mar. 2019. <https://www.planning.org/planning/2019/mar/smartsitics/>

[2] D. Ingram, "Factbox: Who is Cambridge Analytica and what did it do?," *Reuters*, Mar. 20, 2018. Available: <https://www.reuters.com/article/technology/factbox-who-is-cambridge-analytica-and-what-did-it-do-idUSKBN1GW07F/>

[3] European Data Protection Board, "1.2 billion euro fine for Facebook as a result of EDPB binding decision," May 22, 2023. [https://edpb.europa.eu/news/news/2023/12-billion-eu-ro-fine-facebook-result-edpb-bindingdecision\\_en](https://edpb.europa.eu/news/news/2023/12-billion-eu-ro-fine-facebook-result-edpb-bindingdecision_en)

[4] Federal Trade Commission, "FTC and DOJ Charge Amazon with Violating Children's Privacy Law by Keeping Kids' Alexa Voice Recordings Forever and Undermining Parents' Deletion Requests," *Federal Trade Commission*, May 31, 2023. <https://www.ftc.gov/news-events/news/press-releases/2023/05/ftc-doj-charge-amazon-violating-childrens-privacy-law-keeping-kids-alexa-voice-recordings-forever>

[5] J. Gray, "Surveillance capitalism vs the surveillance state," *Noema Magazine*, Jun. 17, 2020. <https://www.noemamag.com/surveillance-capitalism-vs-the-surveillance-state>

[6] J. Laidler, "High tech is watching you," *The Harvard Gazette*, Mar. 04, 2019. <https://news.harvard.edu/gazette/story/2019/03/harvard-professor-says-surveillance-capitalism-is-undermining-democracy/>

[7] J. Valentino-DeVries, N. Singer, M. Keller, and A. Krolik, "Your Apps Know Where You Were Last Night, and They're Not Keeping It Secret," *The New York Times*, Dec. 10, 2018. Available: <https://www.nytimes.com/interactive/2018/12/10/business/location-data-privacy-apps.html>

[8] M. Ressa, "We are in the last two minutes of democracy," Nobel Peace Lecture, Dec. 2021. <https://www.nobelprize.org/prizes/peace/2021/ressa/lecture>

[9] S. Zuboff, "Big Other: Surveillance Capitalism and the Prospects of an Information Civilization," *Journal of Information Technology*, vol. 30, no. 1, pp. 75–89, Mar. 2015, doi: <https://doi.org/10.1057/jit.2015.5>.

## Materials Science and Engineering: Pioneering a New Era of Technological Innovation in Sri Lanka

[1] D. K. Jaf and P. I. Abdulrahman, "A Review on Self-Healing Concrete," *Advanced Materials Research*, vol. 1175, pp. 139–148, Feb. 2023, doi: <https://doi.org/10.4028/p-52lej6>.

[2] M. Ates, T. Karazehir, and A. S. Sarac, "Conducting Polymers and their Applications," *ResearchGate*, 2012. [https://www.researchgate.net/publication/231285488\\_Conducting\\_Polymers\\_and\\_their\\_Applications](https://www.researchgate.net/publication/231285488_Conducting_Polymers_and_their_Applications)

[3] "Nanotechnology and Advanced Materials | National Institute of Fundamental Studies (NIFS), Sri Lanka,"

- Nifs.ac.lk, 2018. <https://www.nifs.ac.lk/research/nanotechnology-and-advanced-materials>
- [4] S. H. Mohammed and S. H. Shahatha, "Shape memory alloys, properties and applications: A review," May 22, 2023.[https://www.researchgate.net/publication/371034063\\_Shape\\_memory\\_alloys\\_properties\\_and\\_applications\\_A\\_review](https://www.researchgate.net/publication/371034063_Shape_memory_alloys_properties_and_applications_A_review)
- [5] Smith Salifu and Peter Apata Olubambi, "Transparent aluminium ceramics: fabrication techniques, setbacks and prospects," vol. 60, no. 1, pp. 24–40, Dec. 2022, doi: <https://doi.org/10.1007/s43207-022-00266-1>.
- [6] T. N. Fernando and I. P. Batuwita, "Manufacturing of Roofing Sheets Reinforced with Pretreated Cornhusk Residues as an Alternative for Asbestos Sheets," 2021 *From Innovation To Impact (FITI)*, pp. 1–5, Dec. 2021, doi: <https://doi.org/10.1109/fiti54902.2021.9833063>.
- [7] T. Peijs, R. Kirschbaum, and P. J. Lemstra, "A critical review of carbon fiber and related products from an industrial perspective," *Advanced Industrial and Engineering Polymer Research*, Apr. 2022, doi: <https://doi.org/10.1016/j.aiepr.2022.03.008>.
- ### Digital Education: A Global Perspective on EdTech Integration
- [1] Global Education Monitoring Report Team, "Global education monitoring report, 2020: Inclusion and education: all means all, Easy to read version, key messages, recommendations," Unesco.org, 2020. <https://unesdoc.unesco.org/ark:/48223/pf0000373724>
- [2] "Impact Report Archives - Coursera Blog," Coursera Blog, 2021. <https://blog.coursera.org/tag/impact-report> (accessed Jul. 30, 2025).
- [3] OECD, "OECD Digital Education Outlook 2021," OECD, 2021. [https://www.oecd.org/en/publications/oecd-digital-education-outlook-2021\\_589b283f-en.html](https://www.oecd.org/en/publications/oecd-digital-education-outlook-2021_589b283f-en.html)
- [4] "The State of Broadband 2022," Broadband Commission, Nov. 08, 2022. <https://www.broadbandcommission.org/publication/state-of-broadband-2022>
- [5] UNESCO, "Launch of the Rewired Global Declaration on Connectivity for," Unesco.org, 2021. <https://www.unesco.org/en/articles/launch-rewired-global-declaration-connectivity-education>
- [6] UNESCO, "Technology in education," Unesco.org, 2023. <https://www.unesco.org/gem-report/en/technology>
- [7] UNESCO, "Working Papers on Education Policy 07 Artificial Intelligence in Education:Challenges and Opportunities for Sustainable Development Education Sector
- [8] United Nations Educational, Scientific and Cultural Organization," 2019. Available: <https://www.gcedclearinghouse.org/sites/default/files/resources/190175eng.pdf>
- [9] United Nations, "Goal 4 | Ensure Inclusive and Equitable Quality Education and Promote Lifelong Learning Opportunities for All," *United Nations*, 2022. <https://sdgs.un.org/goals/goal4>
- [10] "WHAT'S NEXT? Lessons on Education Recovery: Findings from a Survey of Ministries of Education amid the COVID-19 Pandemic," Unesco.org, 2024. <https://www.unesco.org/gem-report/en/publication/whats-next-lessons-education-recovery-findings-survey-ministries-education-amid-covid-19-pandemic>.
- [11] W. Holmes, Z. Hui, F. Miao, and H. Ronghuai, *AI and Education*. UNESCO Publishing, 2021. Available: <https://unesdoc.unesco.org/ark:/48223/pf0000376709>
- [12] Z. Yu, "A meta-analysis of the effect of virtual reality technology use in education," *Interactive Learning Environments*, vol. 31, no. 8, pp. 4956–4976, 2023. <https://doi.org/10.1080/10494820.2021.1989466>

### The Rise of Data Science in Sri Lanka: Empowering Industries through Intelligent Insights

- [1] "Financial Stability Review 2023 Central Bank of Sri Lanka." Available: [https://www.cbsl.gov.lk/sites/default/files/cbslweb\\_documents/publications/fssr/fsr\\_2023e.pdf](https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/publications/fssr/fsr_2023e.pdf)
- [2] IWMI, "Smart farming transforms agriculture in Sri Lanka," *International Water Management Institute (IWMI)*, Mar. 03, 2025. <https://www.iwmi.org/blogs/smart-farming-transforms-agriculture-in-sri-lanka/>
- [3] J. Jerushan, "Challenges and Solutions for AI Development in Sri Lanka," *App-dev.lk*, 2024.<https://www.app-dev.lk/blog/challenges-solutions-ai-development-sri-lanka>
- [4] R. Samarakkiva, "Data science research in Sri Lanka: Human resource challenges and prospects," Lirneasia, 2021. Accessed: Jul. 30, 2025. [Online]. Available: <https://lirneasia.net/wp-content/uploads/2021/12/Data-science-research-in-Sri-Lanka.pdf>

### CRISPR: The Genetic Scalpel Revolutionizing Life

- [1] D. Cyranoski, "The CRISPR-baby scandal: what's next for human gene-editing," Nature, vol. 566, no. 7745, pp. 440–442, Feb. 2019, doi: <https://doi.org/10.1038/d41586-019-00673-1>.
- [2] H. Frangoul, "CRISPR-Cas9 Gene Editing for Sickle Cell Disease and β-Thalassemia," *New England Journal of Medicine*, vol. 384, no. 3, Dec. 2020, doi: <https://doi.org/10.1056/nejmoa2031054>.
- [3] S. Nonaka, C. Arai, M. Takayama, C. Matsukura, and H. Ezura, "Efficient increase of γ-aminobutyric acid (GABA) content in tomato fruits by targeted mutagenesis," *Scientific Reports*, vol. 7, no. 1, p. 7057, Aug. 2017, doi: <https://doi.org/10.1038/s41598-017-06400-y>.
- [4] Q. Xiao, D. Guo, and S. Chen, "Application of CRISPR/Cas9-Based Gene Editing in HIV-1/AIDS Therapy," *Frontiers in Cellular and Infection Microbiology*,

vol. 9, no. 69, Mar. 2019, doi: <https://doi.org/10.3389/fcimb.2019.00069>.

[5] Y. Gao et al., "Sensory deficit screen identifies nsf mutation that differentially affects SNARE recycling and quality control," *Cell Reports*, vol. 42, no. 4, p. 112345, Apr. 2023, doi: <https://doi.org/10.1016/j.celrep.2023.112345>.

### **Her Future, Rewritten: Sri Lanka's Innovation for Equality**

[1] Bharatha Mallawarachi, "Women's Day 2025: All-women-run resort breaks gender barriers," *AP News*, Mar. 08, 2025. <https://apnews.com/article/sri-lanka-tourism-women-hotel-1812d3dcc7031ca09a2283dc1ead8050>

[2] "Science Needs Women So Let Her STEM | United Nations in Sri Lanka," *srilanka.un.org*, Feb. 11, 2023. <https://srilanka.un.org/en/218563-science-needs-women-so-let-her-stem>

[3] "Information and Communication Technology Agency of Sri Lanka," *Icta.lk*, 2024. <https://icta.lk/media/news/suhuruliya-20-embarks-on-empowering-all-women-in-sri-lanka-through-the-digital-economy>.

[4] L. Partin, "Biggest Challenges for Women in Tech," *Global Trade Magazine*, Jun. 22, 2022. <https://www.globaltrademag.com/biggest-challenges-for-women-in-tech/>

[5] L. Ratwatte, "Converging Crises and the Cost of Exclusion: Unveiling the Invisible Women of Sri Lanka's Economy," *Journal of International Women's Studies*, vol. 25, no. 3, Apr. 2023, Available: <https://vc.bridgew.edu/jiws/vol25/iss3/3>

[6] "UNESCO laureate empowers Sri Lankan women and girls to take their," *Unesco.org*, 2023. <https://www.unesco.org/en/articles/unesco-laureate-empowers-sri-lankan-women-and-girls-take-their-place-emerging-technology-sector>.

[7] V. Ganesan and G. Herath, "Advancing gender equality in Sri Lanka: A crucial balancing act | McKinsey," *www.mckinsey.com*, Mar. 18, 2019. <https://www.mckinsey.com/lk/our-insights/advancing-gender-equality-in-sri-lanka-a-crucial-balancing-act>

[8] W.-F. Secretariat, "Closing the gender gap in Sri Lanka," *Women Entrepreneurs Finance Initiative*, Nov. 03, 2021. <https://we-fi.org/closing-the-gender-gap-in-sri-lanka/>

[9] "Women in Sri Lanka paid 27% less than men, over 70% of Sri Lankan women of working age out of the labour force, ILO study finds," *International Labour Organization*, Apr. 02, 2024. <https://www.ilo.org/tar/resource/news/women-sri-lanka-paid-27-less-men-over-70-sri-lankan-women-working-age-out?lang=ta>

### **From Tradition to Technology: Smart Agriculture in Sri Lanka**

[1] Gagani Rathnayake and Budditha Hettige, "Drone-based IoT for Smart Agriculture: A Review,"

*ResearchGate*, Sep. 07, 2023. [https://www.researchgate.net/publication/378634705\\_Drone\\_based\\_IoT\\_for\\_Smart\\_Agriculture\\_A\\_Review](https://www.researchgate.net/publication/378634705_Drone_based_IoT_for_Smart_Agriculture_A_Review).

[2] Geema Induruwage and Roshan Adithya, "Implementation of Smart Agriculture using IoT in Sri Lanka," *ResearchGate*, Feb. 28, 2023. [https://www.researchgate.net/publication/368845352\\_Implementation\\_of\\_Smart\\_Agriculture\\_using\\_IoT\\_in\\_Sri\\_Lanka?\\_](https://www.researchgate.net/publication/368845352_Implementation_of_Smart_Agriculture_using_IoT_in_Sri_Lanka?_)

[3] Isuru Dhananjaya Bandara, N. Fernando, S A M A N, and S Senanayake, "Design and Development of a Paddy Transplanting Machine for Small-scale Farmers," *ResearchGate*, Nov. 12, 2021. [https://www.researchgate.net/publication/356162235\\_Design\\_and\\_Development\\_of\\_a\\_Paddy\\_Transplanting\\_Machine\\_for\\_Small-scale\\_Farmers](https://www.researchgate.net/publication/356162235_Design_and_Development_of_a_Paddy_Transplanting_Machine_for_Small-scale_Farmers).

[4] IWMI, "Smart farming transforms agriculture in Sri Lanka," *International Water Management Institute (IWMI)*, Mar. 03, 2025. <https://www.iwmi.org/blogs/smart-farming-transforms-agriculture-in-sri-lanka/>

[5] J. Zha, "Artificial Intelligence in Agriculture," *Journal of Physics: Conference Series*, vol. 1693, no. 1, p. 012058, Dec. 2020, doi: <https://doi.org/10.1088/1742-6596/1693/1/012058>

[6] K. S., "IoT in Agriculture : Smart Farming," *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, pp. 181–184, Nov. 2018, doi: <https://doi.org/10.32628/cseit183856>.

[7] L. N. Ranathunga, W. M. D. I. S. Wijemanna, M. G. S. Sathsara, and R. G. B. K. Gamage, "Agriculture in Sri Lanka: The Current Snapshot," *International Journal of Environment, Agriculture and Biotechnology*, vol. 3, no. 1, pp. 118–125, 2018, doi: <https://doi.org/10.22161/ijeab/3.1.15>.

[8] O. Vishali Priya and R. Sudha, "Impact of Internet of Things (IoT) in Smart Agriculture," *Recent Trends in Intensive Computing*, Dec. 2021, doi: <https://doi.org/10.3233/apc210176>.

[9] R. Gamage, H. Rajapaksa, A. Sangeeth, G. Hemachandra, J. Wijekoon, and D. Nawinna, "Smart Agriculture Prediction System for Vegetables Grown in Sri Lanka," *IEEE Xplore*, Oct. 01, 2021. <https://ieeexplore.ieee.org/abstract/document/9623259>.

[10] T. N. Fernando, S. A. Ariadurai, C. K. Disanayaka, S. Kulathunge, and A. G. B. Aruggoda, "Development of Radiation Grafted Super Absorbent Polymers for Agricultural Applications," *Energy Procedia*, vol. 127, pp. 163–177, Sep. 2017, doi: <https://doi.org/10.1016/j.egypro.2017.08.106>



