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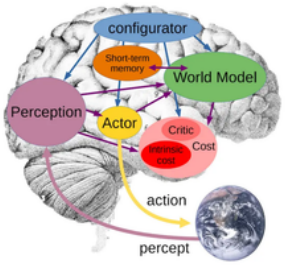

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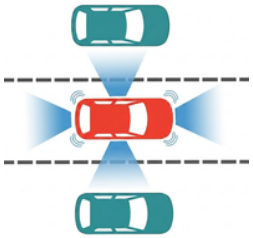

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CELEBRATING EXCEPTIONAL TALENT

Success is not an accident. It is hard work, perseverance, learning, studying, sacrifice and most of all, love of what you are doing or learning to do.

Mr. Pavan Samarathunga

by Ransadi de Alwis

Mr. Pavan Samarathunga, a proud alumnus of the Department of Electronic and Telecommunication Engineering, currently serves as a Technical Lead in Research and Development at Synergen Technology Labs. With a background in biomedical engineering, AI, and medical algorithm development, his work focuses on building safe and reliable healthcare solutions.

In this chat, he shared his journey from Research Engineer to R&D leadership, his views on AI-driven healthcare, and his advice for future engineers, reminding us that innovation in healthcare must always be guided by responsibility.

> "Building medical technology is not only about developing an algorithm. It is about developing something safe, reliable, properly validated, and suitable for real clinical settings."

1. To begin, could you tell us a little about your background and your current role as Technical Lead - Research and Development at Synergen Technology Labs? What does your day-to-day work mainly involve?

I studied at Royal College, Colombo, and later entered the University of Moratuwa to follow Biomedical Engineering. During my university years, I was involved not only in academics, but also in extracurricular activities such as rowing, and I served as the batch representative for the biomedical engineering group.

After graduating, I directly joined Synergen Technology Labs as a Research Engineer. I currently work as a Technical Lead in Research and Development. My day-to-day work mainly revolves around developing medical algorithms, especially in biosignal processing. Beyond algorithm development, my responsibilities include technical decision-making, research planning, algorithm validation, documentation, coordination with regulatory teams and external experts, and mentoring junior engineers. A good algorithm alone is not enough; it has to be tested, explained, documented, and prepared for clinical use.

2. You joined Synergen as a Research Engineer and later moved into technical leadership. Looking back, what were the key experiences in that journey that shaped your growth?

I joined Synergen in 2019 and started working on an ECG-related project with talented senior engineers. That environment shaped my career because it exposed me to real biomedical engineering problems where theoretical knowledge alone was not sufficient. Over the years, I gained experience in algorithm development, physiological signal processing, validation, documentation, and understanding how research ideas are converted into reliable products. One of the most meaningful experiences was being part of work connected to obtaining FDA regulatory clearance for a medical product. It taught me that building medical technology is about developing something safe, reliable, properly validated, and suitable for real-world clinical settings.

3. Your work brings together biomedical engineering, AI, signal processing, and algorithm development. How have these areas shaped your approach to problem solving in healthcare technology?

Biomedical engineering itself is a combination of biology, medicine, electronics, signal processing, mathematics, programming, and engineering design. When AI is added, the field becomes even more interdisciplinary. This taught me that innovation rarely comes from one area alone; it comes from connecting ideas from different areas.

When working with physiological signals such as ECG, we cannot simply treat them as numbers and blindly apply a model. We need to understand the physiology behind the signal, its clinical significance, noise characteristics, device limitations, and practical use. That mindset helps us build systems that are not just technically interesting, but practically useful.

4. You graduated with a First-Class degree in Biomedical Engineering and later completed a Master of Science in Artificial Intelligence at the University of Moratuwa. Looking back, what experiences guided you towards combining biomedical engineering with AI-driven research?

Biomedical Engineering was my first choice because I was interested in using engineering to solve healthcare problems. Later, after joining Synergen, moving towards AI became a natural requirement. Biomedical engineering gives the domain understanding, while AI provides tools to identify patterns, support decision-making, and handle large amounts of data.

During my master's studies in Artificial Intelligence, I realized that AI is like an iceberg. What we see on the surface is only the most visible part; underneath there is mathematics, statistics, optimization, classical machine learning, computer science, and engineering principles. For me, combining biomedical engineering with AI was a gradual and natural path.

5. Over the years, you have worked in both industry and academia, including undergraduate-level lecturing. How has balancing these two worlds changed your perspective as an engineer and researcher?
Working in both industry and academia has given me two different, but complementary, perspectives. In industry, the focus is on building systems that work reliably in the real world, with safety, validation, documentation, regulatory requirements, timelines, and real users in mind. Academia gives space to question ideas more deeply.
Teaching medical electronics and instrumentation reminded me that learning is not simply about collecting information. University students can question lecturers, discuss concepts with peers, and build deeper understanding. Balancing both worlds made me appreciate both practical application and conceptual depth.

6. Biomedical systems require high accuracy, reliability, and real-world adaptability. What principles guide your R&D process when developing AI-driven healthcare solutions?
The most important principle is safety. In healthcare, systems can influence patient-related decisions. We cannot think only about performance numbers, technical superiority, or novelty. No matter how advanced a system is, if it cannot be used safely, it should not be used.
We need to think beyond building a model. The difficult and important part is making sure the system behaves safely under different real-world conditions. That requires proper validation, clear documentation, robust testing, understanding failure cases, and fail-safe mechanisms wherever possible. Biosignals can be noisy and affected by external factors, so algorithms should be developed with real-world variability in mind. AI systems should support healthcare professionals rather than blindly replace their judgement.

7. Since data plays such an important role in AI, How should engineers think about data in biomedical projects?
Data is the key. One of my professors used to say that if you input garbage into a model, you will get garbage as the output. Without good data, even a sophisticated model will not give a reliable result. Ideally, when developing a system with specific requirements, you should collect the data yourself, because you can decide what to collect, when to collect it, from whom, and under which conditions.
But when that is not feasible, existing datasets can bring a project up to a certain level. Then, a smaller targeted data collection can be used for fine-tuning and final validation. The data has to suit the intended use case.

8. With rapid developments in AI, wearables, digital health, and intelligent diagnostics, which emerging trends do you believe will have the greatest impact on biomedical engineering?
Wearable monitoring will have a major impact. Wearable devices are becoming increasingly capable of continuously collecting physiological data, and when combined with AI, they can support early detection, remote monitoring, and more personalized healthcare. AI-assisted clinical decision support systems will also become important, not as a replacement for doctors, but as a way to support decision-making, reduce workload, identify patterns, and help clinicians make faster and more informed decisions.
Multimodal health systems are another important direction, where ECG, medical imaging, lab results, wearable data, and other patient information can provide a more complete picture. Privacy-preserving learning, edge computing, interoperability, and clinical integration will also matter. For all these trends, responsible development is the key.

9. What are your thoughts on the use of robotics in healthcare?
Robotics is a very important area, and I believe it can help clinicians immensely. In surgery, a doctor requires years of experience to develop precision, muscle memory, and decision-making. Robotics can support that precision, make certain procedures more consistent, and help address limitations in the number of highly experienced specialists. But safety remains the main point. Even though robots can be very precise, they are not autonomous to the level where they can work without a doctor. Robotics should develop further, but with patient safety and clinical workflow integration at the center.

10. As someone experienced in research and product development, how do you bridge the gap between academic ideas and practical solutions that can be deployed in real-world healthcare settings?
The gap between academia and real-world product development is one of the most important challenges in healthcare technology. In academia, we often begin with a novel idea or research question. In industry, especially in healthcare, a good idea is only the beginning. Practical questions must be asked early: Is this solving a real clinical problem? Can it work with real-world data? What happens when input data quality is poor? How do we validate and document it? How will it fit into the workflow of actual users? What are the risks?
Converting an innovative idea into a production-grade medical product requires both research thinking and engineering discipline, along with collaboration with clinical experts, regulatory teams, product teams, and external resource persons.

11. Finally, as a professional who has navigated research, innovation, leadership, and academia, what advice would you give to undergraduates aspiring to build impactful careers in biomedical engineering, AI, and research and development?
My main advice is to build strong fundamentals. Learn mathematics properly. Learn engineering concepts deeply. Do not just implement things. Anyone can build a robot or write a program by following a tutorial, but as engineering students, you should understand why something works, when it fails, how to improve it, and how to make sure it will not fail again.
If you are interested in research and development, read research papers and learn how proper research is done. Research is not just about finding a topic and applying a model. It is about understanding a problem deeply, identifying gaps, designing a method carefully, validating it properly, and communicating the findings clearly.
With the rise of AI, many people fear that jobs will disappear. AI will change the nature of jobs, but I believe it will create many opportunities for engineers who have strong fundamentals. Use AI to improve yourself, but do not depend on it blindly. Do not chase trends blindly. Use your head, build your foundation, stay curious, question what you learn, and use new technologies as stepping stones.

World Models: The Next Milestone in AI and Physical Intelligence?

by Kumal Hewagamage

The Illusion of Understanding

For the past few years we have been using LLMs for various tasks, and their responses easily give us the impression that they think almost like humans. But do they truly understand the real world, or are they just highly sophisticated next-word prediction models?

This question is currently causing a major rift in the AI research community. Dr. Yann LeCun, the executive chairman of Advanced Machine Intelligence Labs, recently made waves by stating that relying purely on Large Language Models to reach true human-level intelligence is a dead end. He points out that today's LLMs are like a genius with a vast memory who can retrieve almost any fact instantly, yet they completely lack the ability to invent new solutions or understand the physical reality around them.

Why Language is Not Intelligence

Figure 1 - Yann LeCun, a renowned computer scientist and Turing Award winner. He argues that language models cannot achieve genuine intelligence because text alone is a poor substitute for experiencing the physical world.

Why is language alone failing to deliver real-world intelligence? The main issue comes down to how these models learn versus how humans learn. LLMs only predict the most probable output based on statistical correlations in text data. They can generate a detailed description of an action, but they cannot actually perform it, see the physical result, and use that feedback to improve.

Imagine how a human teenager learns to drive a car. They only need about 10 to 20 hours of practice to master the basic physics of driving and handle complex roads safely. Meanwhile, autonomous vehicle systems require millions of hours of training data and still struggle with simple, unexpected edge cases.

This gap shows what happens when an AI model does not truly understand its environment. Without an understanding of space, time, gravity and momentum, an AI cannot accurately anticipate the physical consequences of its actions. This is why up to 90% of generative AI proof-of-concepts remain stuck in the prototype phase. An unpredictable 5% error rate is simply too dangerous for real-world production or robotic tasks.

Understanding World Models

Because of these limitations in LLMs, there is a shift toward world models to achieve genuine real-world intelligence. World models learn in an intuitive way that is much closer to biological entities. An LLM reads trillions of static words, but humans and animals learn by interacting directly with a noisy, dynamic physical environment.

A world model builds an internal simulation of the physical world right inside its own network architecture. At a high level, this system functions through a few tightly integrated core components rather than a single processing stream. As shown in Figure 2, when a raw input or “percept'' comes in from the real world, it is processed by a Perception module [1].

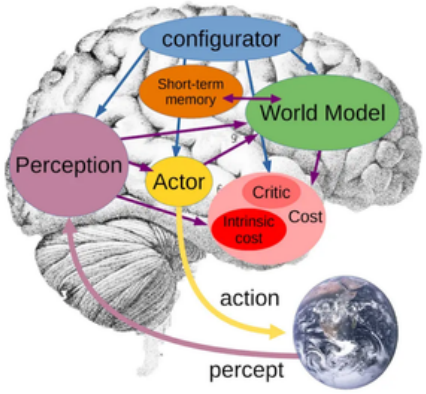

Figure 2 The modular architecture of an objective-driven world model based on LeCun's 2022 framework. It uses an internal simulation layer to predict environment changes and minimize cost before taking action. [1].

Instead of generating an immediate, reactive response, this information passes to the World Model module, which acts as an internal simulator. Guided by a top-level Configurator, the model combines incoming sensory data with short-term memory to predict future states of the environment [1].

Before the system commits to a physical movement, the Actor module can propose multiple action sequences. The World Model simulates the results of these actions internally, while a Critic module evaluates their cost, safety, and efficiency [1]. This allows the agent to practice tasks and weigh consequences thousands of times inside its own “dreamed” reality before ever moving a physical motor in the real world. This task driven prediction loop makes world models well-suited for complex autonomous systems and robotics.

Why Are LLMs Still Dominant?

If world models are more capable at understanding physics, why are LLMs still used for almost everything? Why are world models not as popular yet? The answer is generalizability. LLMs are excellent foundation models. We can use a generic text model to write a Python script, translate a document or summarize an essay without changing its underlying architecture. But early world models were highly specialized. For instance, the foundational framework designed by Ha and Schmidhuber was built specifically to master isolated tasks such as navigating a simple 2D driving track [2]. A model trained to steer a virtual car along a racetrack (Figure 3) could not transfer its knowledge to a robotic arm picking up items in a warehouse.

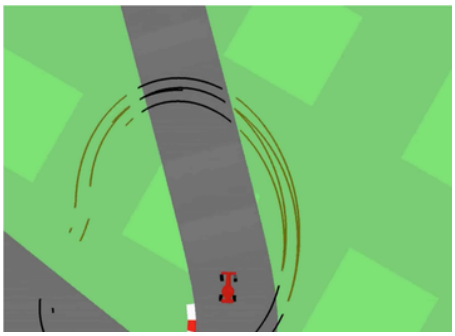

Figure 3 The CarRacing-v0 environment from the 2018 World Models paper by Ha and Schmidhuber, an early highly effective but domain-restricted simulation. [2].

Also developers have been working on using multimodal networks and Vision-Language-Action (VLA) frameworks to overcome limitations in LLM. Instead of isolating the simulation, modern setups like π_0 combine a pre-trained vision-language backbone with an action expert to create generalist robot control sequences (Figure 4) [3].

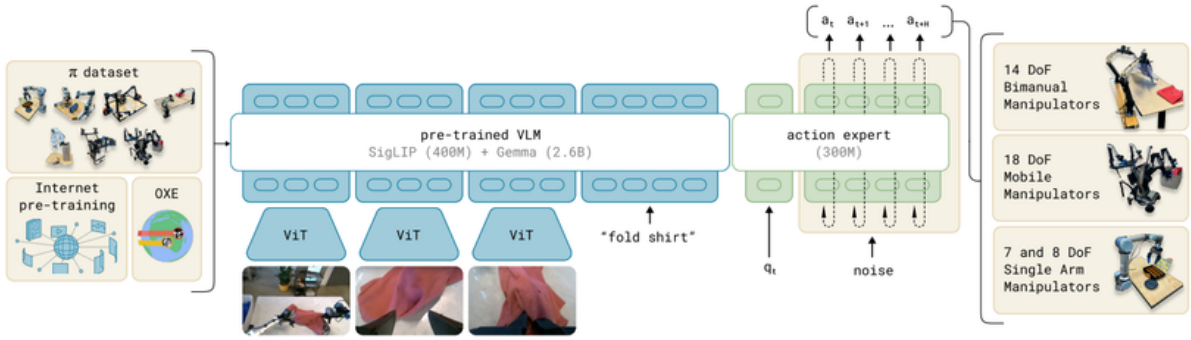

Figure 4 The architecture of π0, a generalist Vision-Language-Action model that uses web-scale text/image data and robot datasets to directly output physical actions [3].

These frameworks allow models to process raw video frames alongside natural language commands, such as “fold shirt,'' and map that input directly to real-time motor commands across different types of hardware manipulators. Even with these advancements, critics point out that many modern VLA systems still process actions sequentially, much like text strings. They are still unable to learn from the feedback of their actions.

The New Generation of Generalized World Models

Seeing the potential, several tech giants and startups are actively developing generalizable world models capable of operating across diverse, multi-task scenarios.

Figure 5 A physically aware interactive environment generated by Google DeepMind's Genie 3.

Google DeepMind has introduced platforms like Genie 3 and SIMA 2 to establish a training engine for world models. Genie 3 serves as a real-time world generator, producing interactive, physically accurate 3D environments from basic text or image descriptions (Figure 5) [4]. Then agents like SIMA 2 (Scalable Instructable Multiworld Agent) can be deployed into these generated environments to explore, execute tasks and learn (Figure 6) [5]. This allows virtual agents to safely train across different environment variations without needing expensive real-world data.

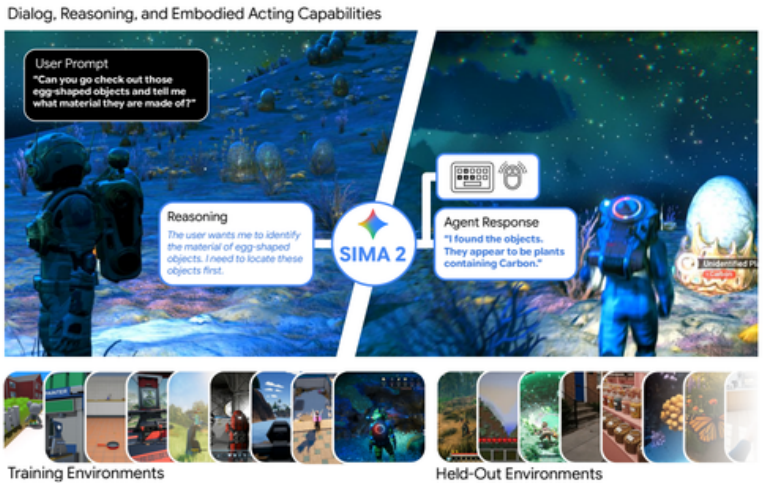

Figure 6 Google DeepMind's SIMA 2 platform, an embodied agent capable of reasoning and acting across multiple virtual environments.

There are other companies approaching the physical intelligence problem from alternative angles. Dr. Fei-Fei Li's startup World Labs, released its Marble platform. It uses Gaussian splatting to generate dense, highly detailed 3D spatial reconstructions. While visually impressive, critics point out that Marble focuses mainly on visual mapping and lacks a functional ``controller'' layer. To address this gap, companies like General Intuition are designing world models where the internal engine directly calculates and reacts to physics rules of games and simulations.

On the infrastructure side, NVIDIA has launched Cosmos, a foundational world model platform designed to accelerate Physical AI development (Figure7). Cosmos provides pre-trained models for developers to generate highly realistic, physically aware video data and simulated environments. This provides robotics, factory automation, and autonomous vehicles with a safe sandbox to learn the physical world before deploying to actual hardware.

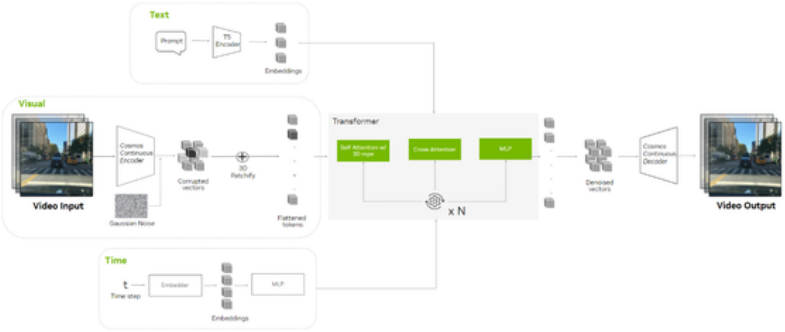

Figure 7 The core network architecture of the NVIDIA Cosmos, a platform for generating physically consistent synthetic data.

Will World Models Replace LLMs?

Does the rise of world models mean text-based systems will disappear? Most probably not. The future of artificial intelligence will likely be a combination of both architectures working together.
Human language remains our best tool for abstract thinking, logic, and communication. However, navigating a physical space safely demands a model that understands physics. Tomorrow's autonomous systems will likely deploy a dual architecture. An LLM-based cognitive head will understand text instructions and break down tasks, paired with a world model that acts as the physical engine, making sure those actions are executed safely and predictably in the real world.

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From Spatial FFT to Super-Resolution Radar Angle Estimation

by Maneth Perera

Introduction

Radar has long been able to tell us how far an object is and how fast it moves. These core measurements flow naturally from the fundamental physics of wave propagation and the Doppler shift, resolved through 2D FFT processing of a frequency-modulated signal. However, determining the exact angular coordinates of a target object in 3D space is a harder problem. It requires comparing subtle phase differences across a physical array of receiving antennas. The precision of that estimate is constrained by the size of the array, the wavelength, and the algorithms used to estimate the angles. This article explores the progression from the intuitive spatial FFT approach, through adaptive beamforming, to the subspace-based super-resolution algorithms that define modern high-resolution radar, and their practical derivatives [1,2].

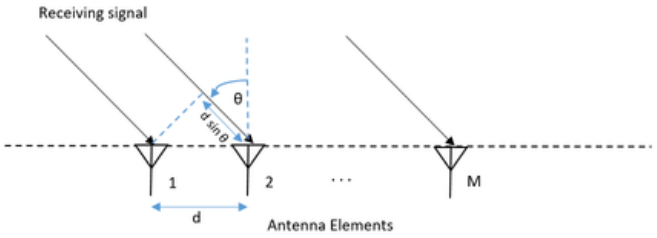

Figure 1 – Antenna-array phase geometry for Uniform Linear Array

Distance and velocity are scalar measurements that provide a one-dimensional value per target. Angle is what places a target in space. Without sufficient angular resolution, two objects at the same range and velocity appear as one. For example, two cars driving in adjacent lanes, or a drone and a bird at the same altitude, might be detected as a single object. The fundamental question is: can we resolve two closely spaced targets in angle without simply building a larger antenna array? The answer lies in going beyond standard Fourier-based techniques.

Conventional Spatial FFT

The most intuitive approach to estimating a target's angle is to capture the phase delays received across a multi-antenna receiver array. As shown in Figure 1, angle estimation begins as a simple geometric problem. The phase difference ϕ between adjacent antennas is related to the direction of arrival θ,

$$\phi = \frac{2\pi d \sin\theta}{\lambda}. \tag{1}$$

However, measuring the phase difference across just two antennas causes broad angular ambiguity and spectral leakage, which makes multi-target tracking difficult. Modern systems therefore deploy antenna arrays and analyze the spatial spectrum to estimate angles more accurately.

Taking the discrete Fourier transform (DFT) across these spatial samples is equivalent to finding the correlation between the received signal vector

$$\boldsymbol{x}(t) = [x_1(t), x_2(t), \ldots, x_M(t)] \tag{2}$$

and

$$[1, e^{j\phi}, e^{2j\phi}, e^{3j\phi}, e^{4j\phi}, \ldots, e^{(M-1)j\phi}], \tag{3}$$

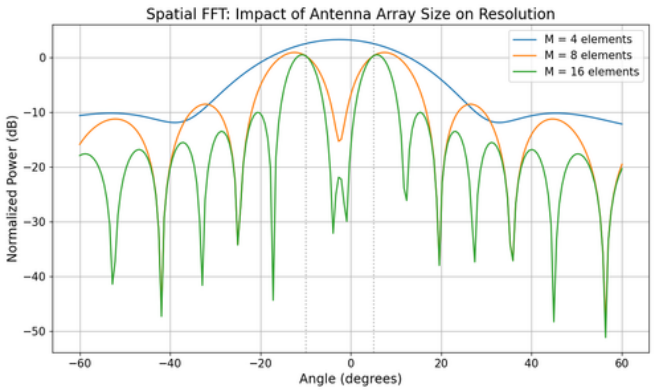

Figure 2 – Spatial FFT main lobes and sidelobes

When the vectors in (2) and (3) align, a peak occurs for that particular θ and ϕ and x(t) corresponds to the received signal from a target at angle θ. This method is known as conventional beamforming. As M increases, the angular response localizes around targets. For small M, the widened main lobes created by multiple targets can blend into a single peak (see Figure 2). This imposes a criterion on angle resolution, known as the Rayleigh criterion, based on overlapping main lobes: $\Delta\theta \approx \lambda/(Md)$. Furthermore, if a highly reflective target sits near a weak target, the strong target's sidelobes can overwhelm the weaker target's radar return.

Capon Beamforming

The previous calculation treated all directions equally, exposing the estimate to interference from unwanted angles. Capon beamforming was developed to focus on a target from a specific direction by adaptively adjusting the weights applied to the antenna elements [2].
Suppose the received signal is $\boldsymbol{x} = [x_1(t), x_2(t), \ldots, x_M(t)]^T$. Here x could be isolated from a specific range-Doppler cell after 2D FFT processing. If the target is at angle θ, then x can be modeled as

$$\boldsymbol{x} = s[1, e^{j\phi}, e^{j2\phi}, \ldots, e^{j(M-1)\phi}]^T = s \cdot \boldsymbol{a}(\theta). \tag{4}$$

where s denotes the strength of the radar return, determined by the target's reflective properties and distance from the sensor.

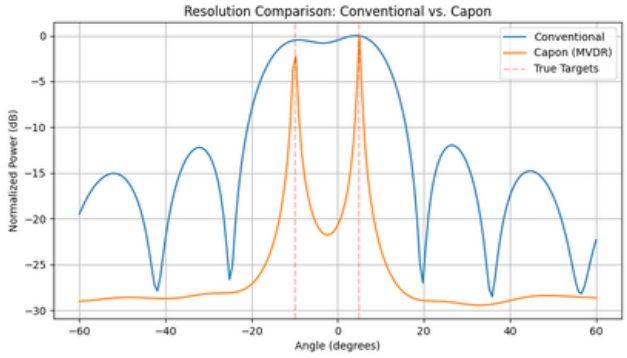

Figure 3 – Conventional method vs Capon angular resolution comparison

The optimization problem is framed as finding w so that $\boldsymbol{w}^H \boldsymbol{a}(\theta) = 1$ while minimizing $E[|\boldsymbol{w}^H \boldsymbol{x}|^2]$, mitigating the average impact from the unwanted angles. By solving this using Lagrange multipliers, the filtered power received from angle θ simplifies to

$$P_{\text{Capon}}(\theta) = \frac{1}{\boldsymbol{a}^H(\theta) \boldsymbol{R}_{xx}^{-1} \boldsymbol{a}(\theta)}, \tag{5}$$

where the covariance matrix R_{xx} is calculated from multiple snapshots of x across M antenna elements, at different timestamps. Figure 3 highlights how the Capon method improves robustness against clutter and strong multi-target sidelobes.

Subspace Super-Resolution

Super-resolution looks at this problem from a different perspective. Instead of using only raw received data, it exploits the statistical uncorrelatedness between signal sources and noise [1] to extract structure from the data, overcoming the Rayleigh limitation.

Multiple Signal Classification (MUSIC) and Estimation of Signal Parameters via Rotational Invariance Technique (ESPRIT)

Suppose there are N targets. Then the M-dimensional snapshot x across M antenna elements can be modeled as

$$\boldsymbol{x} = \boldsymbol{A}\boldsymbol{s} + \boldsymbol{n}, \quad \boldsymbol{A} = [\boldsymbol{a}(\theta_1), \boldsymbol{a}(\theta_2), \ldots, \boldsymbol{a}(\theta_N)]_{M \times N}. \tag{6}$$

Here n is the noise. The goal is to recover $\theta_1, \theta_2, \ldots, \theta_N$, but the value of N may be unknown in practice. We proceed under the assumption that N < M and rank(A) = N. Thus, the subspace of A is N-dimensional, and the received signal x is perturbed outside this subspace into the remaining (M − N) dimensions by the noise n.
Since n is a random process, the signal and noise powers are characterized by calculating the covariance matrix

$$\boldsymbol{R}_{xx} = \boldsymbol{A}\boldsymbol{S}\boldsymbol{A}^H + \sigma^2 \boldsymbol{I}, \quad \boldsymbol{S} = E[\boldsymbol{s}\boldsymbol{s}^H]. \tag{7}$$

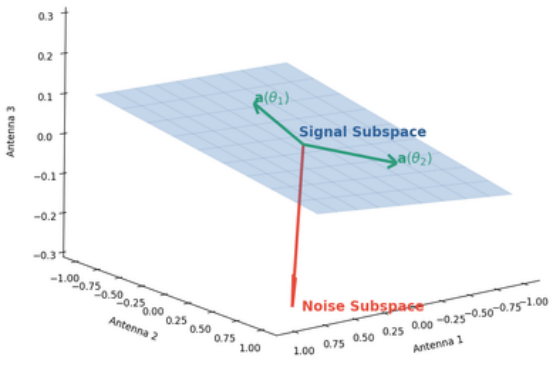

Figure 4 – Signal and noise subspace geometry

Under standard assumptions, we can deduce that rank (ASA^H) = rank(A), which corresponds to the number of targets. This determines how R_{xx} behaves in (7). The dimensions with large scaling, more precisely large eigenvalues, correspond to the ASA^H subspace, while the remaining dimensions correspond to $\sigma^2 I$. This naturally leads to eigenvalue decomposition of R_{xx}. By observing the diagonal elements of Λ where

$$\boldsymbol{R}_{xx} = \boldsymbol{U}\boldsymbol{\Lambda}\boldsymbol{U}^H = \boldsymbol{U}_s\boldsymbol{\Lambda}_s\boldsymbol{U}_s^H + \boldsymbol{U}_n\boldsymbol{\Lambda}_n\boldsymbol{U}_n^H, \tag{8}$$

the signal and noise subspaces can be separated (see Figure 4). Small eigenvalues represent noise, while large eigenvalues correspond to the signal subspace. This separation is the key idea behind subspace super-resolution: a steering vector from a real target lies in the signal subspace and is orthogonal to the noise subspace.
MUSIC and root-MUSIC: Exploit the orthogonality between the steering vectors a(θ) and the noise subspace U_n [3].
ESPRIT: Exploits rotational invariance between two overlapping subarrays and estimates angles using structural properties of U_s [4].

This super-resolution idea can be extended by changing the array geometry itself. Coprime arrays are such designs, where a small number of sensor placements produces a larger effective aperture and supports finer direction estimation [9,10].

Practical Deployment

The eigenvalue decomposition operation is computationally costly, so production systems rarely run direct MUSIC or ESPRIT algorithms over the entire radar cube. Practical radar systems combine CFAR (Constant False Alarm Rate) with other modern methods such as compressed sensing and iterative or adaptive super-resolution methods to improve target detection and resolution while keeping computation manageable [7].
Applications include automotive ADAS and ISAR imaging in military and civilian areas [8]. Automotive 4D imaging radar at 77 GHz combines range, velocity, azimuth, and elevation, making it suitable for perception in rain, fog, and darkness where camera-based sensing can be degraded [1,5] (see Figure 5).

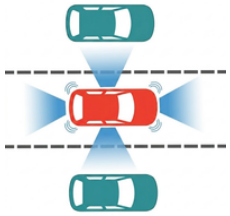

Figure 5 – Automotive radar separates adjacent-lane vehicles

Figure 6 illustrates the integrated signal processing chain for an automotive radar system. Modern vehicles increasingly use distributed radar layouts that stream raw digitized ADC data over high-speed links to a central ECU for multi-sensor fusion [6].

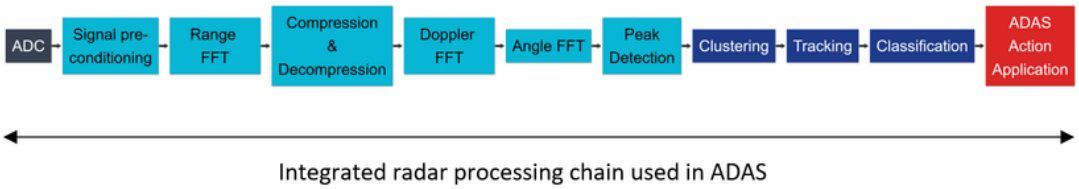

Figure 6 – Radar processing pipeline for practical deployment [6]

Conclusion

Spatial DFT provides the intuitive baseline, Capon adapts the array response to reject interference, and MUSIC/ESPRIT exploit covariance geometry for super-resolution. The practical lesson is not that one method replaces all others, but that modern radar stacks combine these approaches with lightweight algorithms that are better suited for edge deployment.

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Unveiling the Deck | The Magic and Mirth of Abhina ’25

by Dasunmi Gunawardhane

The Department of Electronic and Telecommunication Engineering (ENTC) at the University of Moratuwa is widely recognized as a sanctuary for some of the nation’s most brilliant and dedicated minds. For the vast majority of the year, the students are submerged in a demanding sea of lectures, endless assignments, and grueling academic challenges. Yet, hidden beneath this veil of relentless scholastic pursuit lies a vibrant, pulsating undercurrent of artistic brilliance. Every two years, the heavy books are set aside, and the quiet concentration of the department is replaced by the dazzling glare of theatrical spotlights. This remarkable transformation is the essence of Abhina, a highly anticipated grand drama festival that serves as a glorious, laughter-filled remedy for academically exhausted minds.

Abhina is much more than just a talent show; it is a prestigious ENTC institution that bridges the gap between rigorous academia and pure, unadulterated entertainment. Looking back at its storied history, the most recent iteration, Abhina ’23, set a staggering benchmark. Captivating the audience with its deeply rooted Sri Lankan "Thovil" theme and graced by the esteemed presence of veteran actor Janak Premalal, it was a masterful display of traditional aesthetics. However, instead of simply repeating the past, the organizers of Abhina ’25 decided to deal an entirely new hand. Scheduled for the 8th of October, 2025, at the Civil Engineering Auditorium, this year’s festival was poised to shatter expectations and embrace the enigmatic.

The Grand Illusion: A Theatrical Shuffle

The driving force behind Abhina ’25 was an evocative and mysterious concept: The Deck of Cards. It was a theme that perfectly captured the multifaceted nature of university life, inviting both the cast and the audience to look beyond the surface. As the dramatic pre-event teasers whispered into the minds of the students:

Within the fifty-two cards of every deck, there is a singular, composed face you present to the entire world. But when the lights dim and the theatrical masks are donned, isn't there another, infinitely wilder side waiting to be revealed at the end of it all? Who is the joker pulling the strings of our laughter, and who might be the hidden queen lurking in the shadows of the stage?

This thematic brilliance transformed the auditorium into a realm of grand illusion. Much like the intricate suits of hearts, spades, diamonds, and clubs, the evening promised to shuffle innovation with imagination. The traditional hierarchy of kings, queens, and jokers was mirrored by the sheer diversity of individual talents stepping into the limelight. It was a promise to unveil the mystery of the students themselves, proving that those who spend their days solving complex problems can effortlessly master the art of comedic timing and dramatic flair.

A Symphony of Laughter and Unity

At its core, Abhina ’25 was a masterclass in classical comedy, meticulously designed to help students exhale their everyday worries in roaring, tear-inducing bursts of laughter. But the magic of the night extended far beyond theatrical plays. It was a spectacular, multi-disciplinary showcase that highlighted the phenomenal unity of the department.

Seamlessly blending the creative energies of the 21, 22, 23, and 24 batches, the event became a melting pot of artistic expression. Between the side-splitting comedic acts, the stage erupted with high-energy dance routines, soulful vocal performances, and cleverly choreographed musical mashups.

Each batch brought its own unique rhythm and style to the floor, ensuring that the audience was kept in a state of constant awe and amusement. The collaborative effort was a testament to the bonds forged within the department walls, translating the synergy of their everyday teamwork into a breathtaking onstage performance.

The Final Hand

In the end, Abhina '25 was a triumph of passion over pressure. It was an unforgettable evening where tradition met unrestrained creativity, and where the everyday stress of university life was washed away by timeless, classical comedy. As the final curtain fell and the proverbial cards were laid bare on the table, the ENTC community stood more united than ever. They had successfully proven that the genius minds of Moratuwa possess an extraordinary capacity not just for learning, but for bringing boundless joy, laughter, and artistry to the world around them.

E-CARE ’26 | Where ENTC meets people

by Ineth Didulanga

Sri Lanka was severely affected by Cyclone Ditwah, which caused heavy flooding and landslides, resulting in the deaths of nearly 600 people and economic losses exceeding US$4.1 billion. It is considered the deadliest natural disaster in the country since the 2004 tsunami. As a result, many people across the country were left helpless without basic necessities such as food, shelter, and clothing, while also losing their properties.

The disaster had a significant impact on the education sector as well. Many school students lost their textbooks and faced major disruptions to their studies. According to available statistics, a total of 1,382 schools were directly affected by Cyclone Ditwah, highlighting the severity of the damage caused at the end of 2025.

Giriulla–Haddamulla, located in the Kurunegala District of the North Western Province, was one of the areas severely affected due to the overflow of Deduru Oya. Among the impacted institutions was Mahinda Primary College – Giriulla, where students lost their classrooms and faced uncertainty about their future.

To restore hope and bring back the smiles of these young learners, the “E-Care 2026” initiative was launched by the Electronic Club of the Department of Electronic and Telecommunication Engineering, University of Moratuwa, on 24th January 2026 at Mahinda Primary College – Giriulla.

When the Electronic Club members visited the school, they observed that the walls of the buildings had been damaged and discolored due to the flood. They repainted the walls, creating a fresh and pleasant environment for students to restart their educational journey with renewed hope.

In addition, essential educational materials such as exercise books, library books, and stationery were distributed. These items were generously donated by lecturers, past pupils and undergraduates of the University of Moratuwa to support the students in continuing their studies without interruption.

A special introductory session on robotics was also conducted to inspire students and introduce them to the fascinating world of technology. This session encouraged creative and technical thinking, opening new pathways for their future careers and opportunities they may not have previously imagined.

Furthermore, a leadership program was organized, including activities such as drawing, singing, dancing, and group-based tasks. These activities helped students develop teamwork, leadership, decision-making skills, mutual respect, and creativity.

“On behalf of the school, I sincerely appreciate the efforts of the students of the Faculty of Engineering at the University of Moratuwa for providing a novel educational opportunity for the students of Mahinda Primary College, Giriulla,” stated the principal, expressing her gratitude to the Electronic Club.

Education is the most powerful tool to thrive in today’s competitive digital world. No student’s educational journey should be interrupted due to temporary challenges such as natural disasters, financial difficulties, or lack of facilities. Through initiatives like E-Care 2026, the Electronic Club aims to brighten the future of young minds by providing new hope and meaningful pathways for their growth.

Opening Industry Frontiers for Graduating Minds | ENTC Career Fair 2026

by Mokshan Colombage

The Career Fair of the Department of Electronic and Telecommunication Engineering continues to play a pivotal role in shaping the professional journeys of its undergraduates. Continuing the annual tradition of connecting students with the industry, **ENTC Career Fair 2026**, organized by the Electronic Club, was successfully held at the ENTC premises with the participation of many leading companies from the technology and engineering sectors.

This year's event welcomed the participation of several prominent industry partners, including Verox Labs, RAD, Thakshana, LSEG, Axiata Digital Labs, Octave, Yaala Labs, WSO2, Inivos Global, RENAI, Huawei, Sri Lanka Telecom, MIT, and Zero Beta. These companies came together to meet the talented undergraduates of the department, introduce their work culture, present career pathways, and share the opportunities available for young engineers entering the industry.

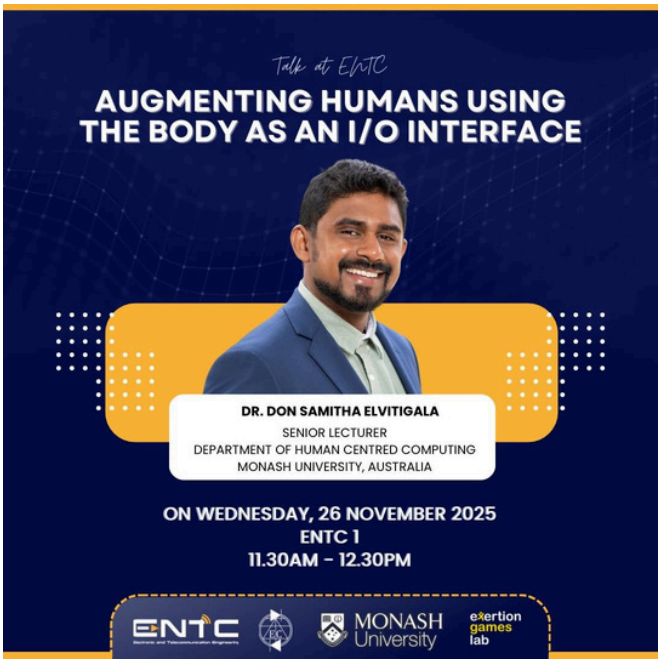
The event created a highly valuable platform for final-year students to take their first firm steps into their professional careers. Throughout the day, company representatives interacted with students, reviewed their CVs, discussed their technical skills, and provided guidance on career opportunities. Many students also had the chance to face interviews directly at the fair, turning the event into more than just an industry networking session, making it a highly successful and impactful occasion for the graduating batch.

Beyond the final-year students, junior students of the department also gained important exposure to the expectations of the modern industry. By observing company stalls, interacting with representatives, and understanding current career trends, they were able to gain a clearer view of the skills and experiences they should develop in the coming years.

The event concluded with appreciation for the companies that extended their support to the department and its students. ENTC Career Fair 2026 not only strengthened the relationship between the department and the industry, but also opened new doors for students to begin their careers with confidence. It stood as another successful milestone in the continuing bond between the Department of Electronic and Telecommunication Engineering and the growing technology industry.

Talk at ENTC | An insightful session by Dr. Don Samitha Elvitigala

by Rahul Balakumar



Electronic Club of the Department of Electronic and Telecommunication Engineering, University of Moratuwa welcomed home one of its distinguished alumni, Dr. Don Samitha Elvitigala. He is currently an Assistant Professor in the Department of Human Centered Computing at Monash University, Australia. He delivered a technical session "Augmenting Humans using the Body as an I/O Interface", which explored the cutting edge domain of Human Computer Interaction (HCI). His talk focused on how technology can be transformed from being a mere tool to becoming a biological extension of the human self.

Dr. Samitha's research dives deep into the complex architecture of Cyber-Physical-Human loops, where the human body functions both as a primary sensor and as a feedback system. His memorable works on wearable interfaces are GymSoles++ and TickleFoot, which utilize high-density mechanoreceptor mapping to provide haptic and vibrotactile feedback. He lectured how integrating low-power embedded systems with real time biomechanical data can enable "discrete computing", where technology assists the user without needing constant visual attention from its user. Around 100 students across all 4 batches attended his talk at ENTC1, and gained invaluable insights into HCI.

Beyond his research, Dr. Samitha is deeply committed to nurturing the next generation of engineers at our department. His collaboration with our department still remains steady and robust. He is doing a final year project currently with students from batch 21. Furthermore, he has taken 4 students from batch 21 and 5 students from batch 22 as research interns under his wings back at Monash University. This ongoing partnership sets a testament to the global impact of ENTC alumni and provides a pathway for students to engage in world-class innovation.

The Rhythm of the Rally | Shuttle Fest 2026

by Isira Perera

The sound of shuttlecocks slicing through the air, shoes squeaking against the court, and enthusiastic cheers, this was the stage for this year's Shuttle Fest. More than just a badminton tournament, the event transformed the university gymnasium into a hub of competition, unity, and celebration. Held once every two years, it is a rare opportunity for the ENTC community to showcase its unique spirit.

The event brought students from all batches together, each stepping onto the court with a mix of excitement and determination. Amidst the roar of the crowd, the focused faces of competitors and the intensity of the rallies reflected the pressure behind every serve and every shot. The individual category put raw talent on full display, proving that the students' excellence extends far beyond the library and lecture halls.

In contrast, the Batch Team categories introduced a different dynamic. Here, success depended not only on individual skill but also on strategy and trust among teammates. The courts became a stage for collective pride, with entire batches rallying behind their players and transforming each match into a shared experience.

Beyond the competition, the "fest" aspect of the event truly came alive. Friends gathered around the courts, laughing and joking together. Players who competed fiercely within the lines shared moments of fellowship outside them. With refreshments available and crowds cheering throughout, the tournament became a lively social gathering where students connected and strengthened their bonds as one community.

While the action on the court captured everyone's attention, the success of the event was driven by the E-Club's precise planning. Organized under the leadership of co-chairs Heshan Ranasinghe and Abdul Rahman from batch 23, the organizing team worked tirelessly behind the scenes to ensure everything ran smoothly.

As Shuttle Fest '26 concluded, it left behind more than just trophies; it created unforgettable memories and provided a welcome break from academic rigors. Batch 21 claimed the Batch Team championship, while the doubles events saw the emergence of new champions.

The champion names are now etched into the tournament's history, marking the successful end of another unforgettable Shuttle Fest.

Tronic Eid'26 | A celebration of Unity, Culture and Joy

by Abdul Rahman

The Department of Electronic and Telecommunication Engineering initiated its first-ever Islamic event, Tronic Eid '26, with the support of the Electronic Club Main Branch. It was held on 31st of March 2026 at the ENTC1 hall. The event was organized by the leadership under co-chairs Tharinda Abeywardhane and Abdul Rahman from batch 23, along with the help of the Electronic Club Executive Committee, creating a truly joyful, memorable and splendid experience. The event aimed to celebrate the Islamic festival of Eid-ul-Fitr, which is one of the two main festivals celebrated by the Muslims. It marks the end of the fasting month of Ramadan, while also promoting cultural awareness among the students, lecturers and instructors within the department.

Tronic Eid '26 commenced with the Welcome Speech delivered by Ayoub Umair, followed by the beautiful recitation of the Holy-Quran by Abdul Rahman, with the line-by-line English translation by Shaahid Ahmedh. The Quran recitation offered the audience an insight into the meaning and message of the Quran, allowing even non-Muslim attendees to appreciate its depth and beauty. This was followed by an engaging presentation by Mushab Ahmed on "What is Ramadan? and Why Ramadan?", which highlighted the significance of the holy month, emphasizing values such as self-discipline, empathy and understanding the struggles of the poor.

The highlight of the evening was the dinner, where students, lecturers and instructors came together to enjoy a rich traditional feast which featured Biriyani, Watalappan and Faluda as well. The event was graced by respected lecturers including Dr. Ranga Rodrigo, Dr. Jayathu Samarawichrama and Dr. Kasun Hemachandra, alongside the students from the 21, 22, 23 and 24 batches. Tronic Eid ’26 concluded on a joyful note with a group photograph, leaving behind a sense of unity, appreciation, and cultural harmony within the ENTC family.

Tronic Pongal 2026 | A Celebration of Tradition, Devotion, and Unity

by Rathees Shanmugaraja

The Department of Electronic and Telecommunication Engineering vibrantly celebrated the "Pongal" festival on 12th February 2026. Held at the department premises, the event was a beautiful reflection of gratitude and harmony, honoring the rich heritage of Tamil culture while strengthening the enduring bonds within the ENTC family.

A Morning of Tradition and Devotion

The festivities commenced with students and staff adorned in elegant traditional sarees and white vestis, bringing a timeless aesthetic to the department. The heart of the celebration was the ritual preparation of Pongal rice. As the pot boiled over which symbolised overflowing prosperity, the gathering offered their thanks to the Sun God for a bountiful harvest and the sustenance of life.

In a move toward a more serene and soulful atmosphere, the ritual was followed by the singing of Thevaaram. The chanting of these sacred devotional hymns added a profound spiritual depth to the morning, allowing the ENTC community a moment of collective reflection and peace.

Artistry and Memories

The festive charm was anchored by intricate Kolam decorations and a specially designed commemorative backdrop, both cherished annual rituals. This artistic centerpiece captured the essence of the day, serving as the perfect setting for the ENTC family to gather for photographs and document the smiles and spirit of togetherness that defined the occasion.

Strengthening the ENTC Bond

The event concluded with the sharing of the blessed Pongal rice among all attendees which is a gesture of fellowship that transcends the classroom.

Through ritual, music, and art, Tronic Pongal 2026 was a testament to the department's commitment to cultural harmony. Throughout the occasion, the ENTC family not only paid homage to the essence of Thai Pongal but also reinforced their identity as a unified, supportive community.

The Launch of the E-Connect Mentorship Initiative

by Wageesha Lenmini

Standing on the threshold of a professional career is an exciting yet daunting milestone for any student. In recognition of the need to bridge the space between academic potential and industry reality, we are proud to launch E-Connect, a visionary initiative that pairs ambitious undergraduates with seasoned alumni for targeted, real-world mentorship. At its core, E-Connect centers around a shared purpose, which is to equip emerging engineering talent with the specific career guidance and research insights they need to succeed.

We are incredibly proud of the momentum behind our first launch. Thirty-nine alumni stepped forward to give back to the department, bringing invaluable industry and academic experience to the table. The enthusiasm from the student body was just as remarkable, with eighty mentees selected from a competitive pool of two hundred applicants across the 22, 23, and 24 batches. To keep the guidance relevant, every pairing is tailored to the student's specific ambition, whether that means pursuing academic research, entering the corporate world, or building a startup.

For students aiming for academia, the higher studies pathway provides essential exposure to scholarly work. Mentors in this space guide students through research methodologies and offer them opportunities to collaborate on active, ongoing academic projects.

Meanwhile, the industry pathway focuses on helping students stand out in a competitive job market. Here, alumni draw on their corporate experience to help undergraduates define clear career paths, understand real-world engineering practices, and work toward hands-on technical goals that build industry-ready skills.

Finally, for the innovators looking to build from the ground up, the **entrepreneurship** pathway connects students with mentors who act as vital sounding boards. These seasoned founders and creators help students validate their initial ideas, navigate the early stages of prototyping, and understand what it really takes to develop a viable product.

What makes E-Connect truly unique is that the value flows both ways. For mentees, the programme provides a rare opportunity to cultivate practical skills, gain clarity, and confidently map out their professional direction long before graduation. For our mentors, it is more than just an act of volunteering. It is an opportunity to reconnect with the department, directly influence the quality of graduating engineers, and spot exceptional undergraduate talent. Whether they are looking for capable research assistants, early-stage startup collaborators, or sharp industrial interns, mentors gain a direct line to the university's top minds.

As the initial phase kicks off, the cornerstone of E-Connect's success will rest on professional communication, meticulous organization, and mutual respect for time. Yet, the broader vision is where the real impact lies. By fostering meaningful relationships that outlast graduation, we are shaping a culture where alumni consistently lift up the next generation, strengthening the future of our engineering community from the inside out.

SLRC Grand Finale 2026 | A Celebration of Robotics, Innovation, and Competition

by Nethmi Amasha

The SLRC Grand Finale 2026 was held on 29th March at the Faculty of Engineering Auditorium, University of Moratuwa, marking the 14th edition of SLRC and its most expanded and impactful execution to date. The event featured 8 university teams and 16 school teams as finalists, bringing together the top-performing teams selected through the elimination rounds. It was also open to the public, attracting a diverse audience including students, academics, industry representatives, and robotics enthusiasts. Running alongside the main competition, the SLRC Innovators Exhibition further enriched the experience by showcasing engineering and innovation projects developed by students. Dialog 5G Ultra served as the Title Partner, with support from partners across industry, academia, and media contributing to different aspects of the event.

Alongside the main robotics matches, the event included several engaging sessions that enriched the overall event experience. The keynote session by Mr. Malinda Alahakoon set the tone for the day, followed by a dedicated session by CA Sri Lanka and the Robotic Dog demonstration session, which added further engagement to the event.

These segments brought a strong sense of inspiration and excitement, making the event more than just a robotics tournament.

The competition was highly competitive across both school and university categories, with teams delivering strong technical performance and innovation throughout the rounds. In the school category, Future Tech secured the championship, followed by Moir Robotics as first runner-up and Operation Overdrive as second runner-up. In the university category, Kaetha Karuwo claimed the championship title, followed by Botato as first runner-up and Autonix as second runner-up, reflecting the high level of consistency and performance demonstrated by all finalists.

The closing ceremony was graced by distinguished guests including Prof. Suranga Nanayakkara as the Guest of Honour, along with partner representatives, judges, academic staff, students, and the public. The event included recognition of winners and appreciation of contributors throughout the event. The SLRC Grand Finale 2026 marked yet another successful milestone for SLRC as the largest robotics competition in Sri Lanka.

Capacity Building and Mentorship Program of the Spark Challenge 2025/2026

by Thiviru Malitha

The Spark Challenge 2025/2026 provided participants with a comprehensive entrepreneurial learning experience through a series of capacity-building and mentorship sessions designed to transform innovative ideas into sustainable ventures. The program combined entrepreneurship training, sustainability awareness, and commercialization strategies, equipping participants with the skills required to address real-world challenges through innovation.

SquareHub Session Series

A key component of the program was the five-session entrepreneurship training series conducted by Mr. Kanishka Weeramunda, Co-Founder and Director of SquareHub, together with Ms. Chamathka Jayasekara, Operations Executive at SquareHub.

The series commenced on 29 September 2025 with an introductory session on entrepreneurship and innovation. Participants explored the entrepreneurial mindset, the importance of resilience and adaptability, and effective team-building through the Belbin Team Roles framework. Interactive activities demonstrated the importance of balancing planning and execution, while teams were guided to identify climate-related challenges and develop problem statements using structured analytical techniques.

The second session, held on 20 October 2025, focused on ideation and problem validation. Participants learned how to transform identified problems into innovative business opportunities aligned with climate action and the Sustainable Development Goals (SDGs). The session introduced the Base Canvas Model and emphasized the importance of validating problems and generating ideas through research, surveys, and creative ideation techniques.

On 20 November 2025, participants attended a session on idea assessment and validation, conducted by Ms. Chamathka Jayasekara together with Ms. Maleesha Perera, Chief Marketing Officer of PayMedia. Teams learned to evaluate business concepts using the Idea Canvas, resource mapping, market segmentation, customer demand analysis, TAM-SAM-SOM market assessment, and SWOT analysis. These tools enabled participants to identify the most viable concepts for further development.

The fourth session, conducted on 28 February 2026, focused on strategic business development through the Baseboard Model. Participants explored key areas including vision and mission development, value proposition design, marketing and sales strategies, operations management, financial planning, stakeholder analysis, growth strategies, and risk management. The Business Model Canvas (BMC) was introduced as a comprehensive framework for consolidating business strategies and preparing for the competition's final stages.

The final session, held on 25 March 2026, concentrated on business pitching and presentation skills. Participants were guided through a structured six-step pitching framework covering the hook, problem statement, solution, market opportunity, business model, and future vision. The session emphasized storytelling, effective communication, and investor-focused presentations, enabling teams to confidently showcase their innovations.

Collectively, the SquareHub sessions provided participants with a structured pathway from problem identification and ideation to business development, validation, and pitching.

Sustainable Development Goals (SDG) Awareness Session

On 3 January 2026, participants attended an SDG Awareness Session conducted by Ms. Nadeeka Amarasinghe, Assistant Director of the Sustainable Development Council of Sri Lanka. The session introduced the United Nations 2030 Agenda and the 17 Sustainable Development Goals, highlighting the importance of balancing environmental, social, and economic dimensions of development.

Participants gained insights into Sri Lanka's progress toward achieving the SDGs and explored how innovation, technology, and research can contribute to addressing sustainability challenges. The session encouraged teams to align their projects with global development priorities and create solutions that generate meaningful social and environmental impact.

Go-To-Market Strategy Session

On 11 February 2026, Mr. Gayantha De Zoysa conducted a Go-To-Market Strategy Session, focusing on the importance of successfully bringing innovations to market. Participants learned how to identify target customers, validate market demand, understand customer segments, and distinguish between users, buyers, and customers.

The session emphasized customer discovery, early-stage market validation, and achieving product-market fit through direct engagement with potential customers. Participants also gained practical insights into customer acquisition, competitive positioning, and commercialization strategies.

Through the SquareHub Session Series, the SDG Awareness Session, and the Go-To-Market Strategy Session, the Spark Challenge 2025/2026 provided participants with a holistic understanding of entrepreneurship, sustainability, and commercialization. The program successfully empowered participants to develop innovative, impactful, and sustainable solutions while strengthening their leadership, business, and problem solving capabilities.

SPARK Raspberry Pi Distribution Ceremony

by Thiviru Malitha

The SPARK Raspberry Pi Distribution Ceremony was held on April 7 at ENTC1. The ceremony was organized to hand over Raspberry Pi kits to the teams selected for the video submission stage of the SPARK challenge. The event started with Mr. Lasitha Amarasinghe, Vice President of SPARK Branch delivering the welcome speech. He spoke about the purpose of the program and appreciated the effort taken by the students who submitted their project proposals. Dr. Ajith Pasqual and Dr. Ranga Rodrigo also addressed the gathering. Their speeches were mainly focused on encouraging the selected teams to make good use of the opportunity. They reminded the students that receiving the kits was only the beginning, and that the real challenge would be to turn their ideas into working projects. A total of 50 teams were selected from the proposal submission stage to receive Raspberry Pi kits each worth around Rs. 50000. During the ceremony, six teams were invited to the stage as representative teams to receive their kits. The teams were Kyros, HyperSpark, Greenvolt, ByteBandits, ProtoForge, and Nexovate. After receiving the kits, each team gave a short comment about their project idea and what they hoped to do next. Mr. Mavishan Pasira, SPARK Challenge Chairman delivered the vote of thanks. He thanked the speakers, organizers, and all the participants who helped make the event possible. The ceremony ended with a message to all selected teams to start working on their projects and use the Raspberry Pi kits to build something practical and innovative.

SPARK School Workshop at Kegalu Vidyalaya

by Thiviru Malitha

As part of its commitment to inspiring and empowering the next generation of innovators, the SPARK Branch of the Electronic Club, Department of Electronic and Telecommunication Engineering, University of Moratuwa, conducted a school outreach workshop at Kegalu Vidyalaya on 8th January 2026. The workshop was conducted with the objective of introducing emerging technologies and providing hands-on exposure to practical computing platforms to students. Two hundred Advanced Level Science students participated in this workshop.

The workshop centered on the Raspberry Pi, a compact and versatile single-board computer widely used in education, programming, electronics, and embedded systems development. Through interactive demonstrations and practical activities, students were introduced to the fundamentals of programming and gained an understanding of how modern technological solutions are designed and implemented.

The session provided students with an opportunity to explore real-world applications of computing and electronics while engaging directly with hardware and software tools. Students were encouraged to experiment, ask questions, and develop a deeper appreciation for innovation and problem-solving through technology. The hands-on nature of the workshop enabled participants to move beyond theoretical learning and experience the practical aspects of engineering and computing.

A key highlight of the program was the donation of a Raspberry Pi unit, valued at over Rs. 50,000, to Kegalu Vidyalaya. This contribution was made to support the school's future learning activities and to provide students with continued access to a platform for experimentation, programming, and technological exploration. The donation aims to create lasting educational value by enabling students to further develop their skills beyond the workshop itself.

The workshop successfully fostered curiosity and enthusiasm among students while exposing them to the possibilities offered by modern technology. Through initiatives such as this, the SPARK Branch continues to bridge the gap between university-level engineering education and school communities, encouraging young learners to pursue careers in science, technology, engineering, and mathematics (STEM). This workshop reflects the SPARK's ongoing mission to nurture future Sri Lankan tech innovators by providing meaningful learning opportunities, practical experiences, and access to technological resources.

SPARK Talk Podcast Initiative

by Thiviru Malitha

SPARK launched SPARK Talk, a new podcast series designed to bring SPARK projects closer to students and the wider university community. Rather than showcasing projects solely through reports and final demonstrations, the podcast provides a platform for project teams to share their journey, discuss the motivation behind their work, and explain the technical challenges they encounter throughout the development process. The first episode featured Project Phoenix, a space technology initiative led by the SPARK Branch in collaboration with the SEDS Mora Chapter of the University of Moratuwa, the Department of Meteorology of Sri Lanka, and the STAR Centre of the National University of Singapore. The episode welcomed Mr. Hasitha Gallella, Chairperson of the project, together with Mr. Mihiran Wickramarathne and Mr. Pravindu Goonetilleke, who serve as subsystem leaders. The discussion introduced the project as an effort connected to CubeSat development, high altitude balloon testing, long distance communication, and sensor data collection. The team explained that the work is divided into two main stages. The first stage is a high altitude balloon, while the second stage moves towards ground station development and CubeSat related work. The episode also included a practical demonstration of the balloon payload, showing how telemetry, GPS location, camera feed, and sensor data are sent to a ground station dashboard. The second episode featured the SPARK Micromouse Project, with project Chairpersons Mr. Ruchira Abeywardane and Mr. Danindu Dabare. They explained what a micromouse is, how the competition started, and why it is still challenging even after many years. They discussed how a small autonomous robot explores a maze, builds its own map, and tries to find the fastest path. The episode also explained the team's goal of creating an open source Micromouse platform so that future students can learn from the design instead of starting from zero every time. Both episodes were skillfully moderated by Chaleesha Keerawella. Through these first two episodes, SPARK Talk has started as more than just a podcast. It is becoming a way to document student projects, share technical knowledge, and make ongoing work in the department easier for others to understand. The series also gives project teams a chance to speak about their work in a simple and accessible way, which can encourage more students to get involved in future SPARK activities.

Built on Victories - Milestones from an ENTC Mastermind

By Manuth Kuruppu

In the rapidly evolving fields of microelectronics, integrated circuit design, and autonomous robotics, achieving distinction demands more than technical knowledge; it requires innovation, persistence, and the ability to solve complex real-world engineering challenges. Demonstrating these qualities, **Rajinthan Rameshkumar from ENTC batch 22** has earned multiple prestigious recognitions across international and national competitive platforms during 2025.

Among the most remarkable achievements was securing **3rd place globally** at the **20th Annual International Microelectronics Olympiad**, one of the world's premier competitions dedicated to young engineering talent in microelectronics. Competing against 1088 participants, representing 20 countries, and advancing to the final stage among only 34 international finalists, the achievement demonstrated strong expertise in advanced areas including Analog and Mixed-Signal IC Design, Digital IC Design, and Semiconductor Technology.

Further demonstrating multidisciplinary engineering expertise, Rajinthan and team **Raspi Cap** emerged as **University Category Champions** at **SLIIT Robofest 2025**. The micromouse project required a strong integration of embedded systems, robotics algorithms, control systems, and software engineering principles. Beyond the competition itself, the team took an additional step toward community contribution by open-sourcing the complete project source code, enabling learning and further development within the robotics community.

Adding another milestone to an exceptional year, Rajinthan secured **1st Place** in the **Analog IC Student Design Contest 2025**, organized by the IEEE CASS-CEDA Sri Lanka Joint Chapter in collaboration with Skill Surf. Recognized as a pioneering initiative in Sri Lanka's semiconductor landscape, the competition challenged participants to execute a complete analog integrated circuit design workflow from conceptualization and simulation through final tapeout preparation. By successfully delivering a fully verifiable analog IC solution, the achievement reflects both technical depth and practical readiness in modern semiconductor design methodologies.

Rocket Rangers Soar to First Place at AQUARO 3.0

by Mushab Ahamed

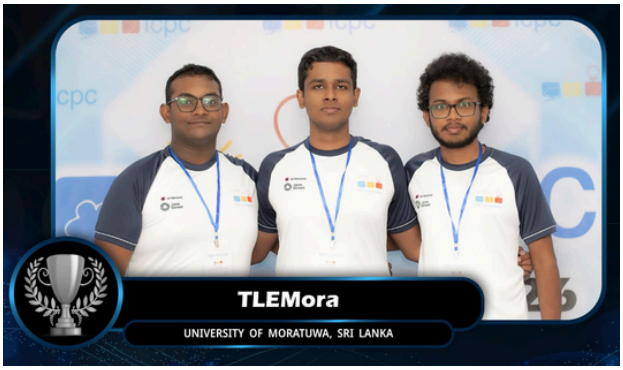
"Rocket Rangers" secured 1st place at the AQUARO Rocketry Competition 2026. Among the members of the victorious team were Lasen Fonseka and Geeth Gunathilaka from Batch 24, who showcased impressive innovation at the event. Organized by the SEDS chapter of the University of Moratuwa, the competition was held on March 21st, 2026, at the University of Moratuwa.

The AQUARO Rocketry Competition challenges students to develop water-propelled rockets focused on high-altitude ascent and safe descent. The team's winning entry, "Hydro Ranger," was custom-developed using PET bottles. It featured custom aerodynamic fins, a specialized nose cone for optimal aerodynamics, an Arduino Nano–based altimeter system, and a reliable parachute recovery mechanism to ensure a safe descent.

TLEMora at ICPC Sri Lanka 2026

by Mushab Ahamed

The Team "TLEMora" consisting of Mindiya Karunasinghe, Chirath Nirodha from Batch 24 secured 2nd Place at ICPC Sri Lanka, earning the prestigious opportunity to represent the country at the upcoming ICPC Regionals. The team competed under the guidance of Dr. Sunimal Rathnayake. Organized by IEEE CodeX Sri Lanka and hosted in collaboration with the IEEE Sri Lanka Section, the national competition was held on January 25th, 2026, at the University of Peradeniya.



Widely recognized as the "Olympics of Programming," the International Collegiate Programming Contest (ICPC) is the oldest and most prestigious algorithmic competition in the world. As the national gateway to this global stage, the event challenges groups of three university students to solve complex, real-world problems using a single computer under a grueling five-hour deadline. The rigorous competition tested the team's skills in advanced data structures, algorithmic efficiency, and collaborative problem-solving, allowing them to shine against the brightest minds from top Sri Lankan universities.

Team Zeven - Engineering Victory at Xbotix '25

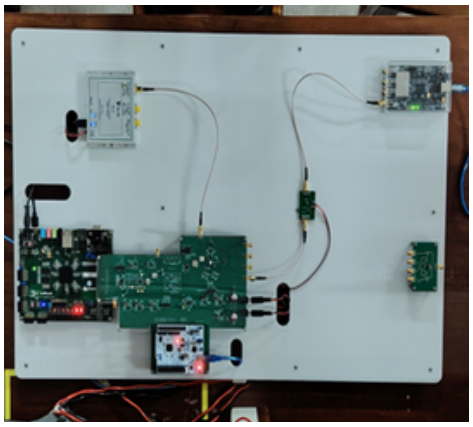
by Gethmin Ranasinghe

Showcasing technical excellence and teamwork, Team "Zeven", comprising Mindiya Karunasinghe, Thisulaka Gunaweera, Chirath Nirodha, and Isath Manvidu, secured First Place at the Xbotix '25 Robotics Competition. The event, organized by the Faculty of Engineering at the University of Ruhuna as a central highlight of the "Rextro '25" exhibition series, serves as one of Sri Lanka's premier national platforms for undergraduates and innovators demonstrate engineering mastery in automation.

The competition pushed teams to their limits, challenging them to design and program autonomous robots capable of complex navigation, real-time sensing, and precision hardware control under high pressure conditions. Competing against top tier teams from across the island, Team Zeven's methodical design separated them from the rest of the field, achieving a spectacular final score of 1,077 points establishing a massive lead over the second place team, who finished with 276 points.

Double Global Triumph in Circuits and Electromagnetics

by Udula Imantha



Batch 21 Undergraduates Shine in Greece and the USA Continuing the Department of Electronic and Telecommunication Engineering's proud tradition of research excellence, a team of four undergraduates from Batch 21 recently achieved a rare double academic milestone on the global stage.

Team members Danidu Dabare, Warren Jayakumar, Linuka Ratnayake, and Sanuja Rupasinghe successfully had their research accepted at the prestigious Applied Computational Electromagnetics Society (ACES) Annual Symposium in Greece. Building directly on that success, the team's extended work was accepted at the IEEE International Midwest Symposium on Circuits and Systems (MWSCAS 2026) in Cincinnati, USA. Developed under the mentorship of Dr. Chamira Edussooriya, Prof. Arjuna Madanayake, and Dr. Dileepa Marasinghe, their research introduces a groundbreaking hardware-coupled neurosymbolic AI framework. This architecture deploys dedicated, intelligent software agents to individual RF receiver components, enabling radio frequency systems to dynamically self-adapt and maintain signal integrity under changing real-world conditions.

By navigating rigorous peer reviews for both forums, premier global platforms for numerical modeling and circuits/systems advancements, these young researchers have powerfully demonstrated the department's cutting-edge capabilities internationally.

Kaetha Karuwo Dominates the Robotics Arena: Double Victory at MazeMaster and SLRC

by Daneesha Dulmith

The Department of Electronic and Telecommunication Engineering has once again proven its prowess in autonomous tech. Among the high achievers are Hiruna Kariyawasam and Lasan Perera from the batch 23, who constitute the team “Kaetha Karuwo.” The team clinched an extraordinary double championship, securing 1st place at both the MazeMaster 2026 competition and the Sri Lanka Robotics Challenge 2026 (SLRC 2026).

While MazeMaster 2026, organized by the IEEE RAS UWU Student Branch Chapter, challenged the team to build a high speed micromouse for flawless, zero interaction maze navigation, SLRC 2026 pushed entirely different boundaries. Organized by our own E Club of UoM, SLRC demanded real time adaptability across two distinct fronts, a competitive physical arena utilizing advanced computer vision alongside a complex virtual arena simulation task. The team's ability to dominate both independent formats showcases the true problem solving spirit of the ENTC family, setting a proud benchmark for the department.

Team BOTATO - Shifting Paradigms in Autonomous Design

by Gethmin Ranasinghe

Securing the Second Place trophy in the fiercely contested University Category, Team "BOTATO" brought an intense display of innovative engineering to the national forefront at the Sri Lankan Robotics Challenge (SLRC) 2026. Organized by the Electronic Club (E-Club) of the Department of Electronic & Telecommunication Engineering at the University of Moratuwa, the Grand Finale served as the ultimate proving ground for the country’s elite undergraduate innovators, holding its crown as one of Sri Lanka’s largest and longest running robotics platforms.

The 2026 arena demanded flawless execution, forcing competitors to rely on highly responsive software algorithms that could handle split second adjustments on the fly. Behind the helm of BOTATO’s success, dual-engineers L.H.Janiru Dewanmith and W.H. Nimith Induwara combined rapid fire troubleshooting with exceptional programming logic. Their system's ability to maintain real-time stability under intense runtime constraints kept the team at the top of the leaderboards throughout the entire elimination bracket, driving them straight to the grand finals for a well-deserved podium finish.

Eluvis Leads the Way at SLIoT 2026

by Upani Gunathunga

The Department of Electronic and Telecommunication Engineering proudly celebrates the achievement of Team “Eluvis”, comprising M.P. Lithira Budvin, I.M.E. Induwara Bandara Ilukkumbura, Amoda Yehen Attanayake, and Kaveen Kalpana Weerasinghe from the Batch 22, who secured 1st place in the University Category of SLIoT 2026. Organized by the Department of Computer Science & Engineering, University of Moratuwa, in collaboration with SLT-MOBITEL and the Institution of Engineers, Sri Lanka (IESL), the competition brought together some of the country’s most promising innovators to present impactful IoT solutions. As one of Sri Lanka’s leading IoT competitions, SLIoT 2026 provided a platform for participants to showcase innovative technologies and practical solutions to real-world challenges. Among a highly competitive field of entries,Team Eluvis distinguished itself with an intelligent monitoring system for shrimp cultivation farms that combines real-time water quality sensing, underwater activity monitoring, and AI-driven disease prediction. By enabling farmers to remotely monitor multiple ponds, receive early warnings, and make informed decisions through a mobile application, the solution offers a practical approach to improving productivity and sustainability in aquaculture. Their success reflects the innovative thinking and engineering excellence fostered within the ENTC community.

Team NeoSense - Shining at SLIoT Challenge

by Bingusara Denagama

Demonstrating exceptional technical skills and creativity, Team "NeoSense", comprising Nadun Deshitha Bandara and Thakshila Nirmani from Batch 23, secured the 1st Runner-Up position at the SLIoT Challenge 2026.

The SLIoT Challenge is the annual IoT competition organized by the Department of Computer Science & Engineering at the University of Moratuwa, in collaboration with SLT-MOBITEL and the Institution of Engineers, Sri Lanka (IESL). The competition provides a platform for innovators of Sri Lanka to showcase their ideas, which are evaluated on creativity, value, impact, and technology, with winners selected based on overall performance on the event finals.

Held on April 25, 2026, at the Department of CSE, the annual competition was a challenging arena for young innovators. Competing against a strong lineup of teams, their milestone victory showcased their ability to solve complex technical problems. For the duo, it proved to be a highly valuable experience that helped them sharply improve both their technical execution and presentation skills under pressure. The team's success marked a significant milestone for the Batch 23 ENTC undergraduates.

Team !403_privileged Claims Three National CTF Championships

by Theniya Linath

The Department of Electronic and Telecommunication Engineering proudly celebrates a monumental achievement by Team "!403_privileged," an inter-batch syndicate that secured First Place across three major national Capture the Flag (CTF) competitions in early 2026. The formidable team comprises Rusiru Sadathana (Batch 22), Jaindu Charindith (Batch 23), Sasith Induwara (Batch 23), and Dhananjaya Wijesiri (Batch 24).

Their unprecedented winning streak began with a victory at "ZERODAY CTF," organized by the SLTC ISACA student group on February 20th. Just two days later, they conquered "CS2CTF," a rigorous challenge hosted by SLIIT's Cyber Security Community. The streak culminated in a decisive win on March 21st and 22nd at "Battle of the Multiverse 26," a grueling event held at the LNBTI campus in collaboration with Legion Offensive Security.

Competing against the nation's top undergraduates, their mastery of network security, real-world vulnerability exploitation, and penetration testing kept them consistently at the top of the leaderboards, setting an incredibly high benchmark for the department.

Team Waveminds - Pioneering the Future of RF Security

by Theniya Linath

Adding to the department's academic excellence, Batch 21 undergraduates Kavishka Abeywardana, Shenal Ranasinghe, and Pramidu Saumyajith, collaborating as Team "Waveminds" have published their research at the prestigious IEEE Applied Computational Electromagnetics Society (ACES) 2026 Conference. This Q1-ranked IEEE conference serves as a premier venue for advanced computational modeling.

Guided by Dr. Sampath Perera, Dr. Chamira Edussooriya, and Prof. Arjuna Madanayake, their paper addresses a critical vulnerability in civilian GNSS receivers, which are highly susceptible to counterfeit signals synthesized by adaptive electronic-warfare platforms. To combat this, the team introduced NEMESIS, an innovative self-supervised framework utilizing joint embedding predictive architectures (JEPA) in the wavelet time-frequency domain.

By learning spoofing-relevant embeddings directly from raw RF signals without requiring manual labels or contrastive data augmentation, their architecture dramatically outperforms traditional spoofing detection methods. This publication highlights the exceptional caliber of research and technological innovation within the graduating batch.

Prof. Dileeka Dias

by Thaveesha Wathudura

With nearly four decades of experience in teaching, research, academic leadership, and industry collaboration, Prof. Dileeka Dias stands as one of Sri Lanka's leading figures in telecommunications engineering. A Professor in the Department of Electronic and Telecommunication Engineering at the University of Moratuwa, she has built a career around a clear and powerful goal: translating research into practical solutions that serve society.

Prof. Dias earned her BSc Engineering degree from the University of Moratuwa before completing her MSc and PhD at the University of California, Davis. Her academic journey has been marked by excellence, including a Presidential Scholarship for postgraduate studies, a University of California Regents' Fellowship, and her election as a Fellow of the National Academy of Sciences, Sri Lanka.

A defining contribution of her career has been her leadership of the Dialog–University of Moratuwa Mobile Communications Research Laboratory, Sri Lanka's first industry-sponsored research laboratory within a university. Established through a partnership between Dialog, the University of Moratuwa, and Uni-Consultancy Services, the laboratory created a strong platform for applied communications research, prototyping, testing, and training. Under her direction, the lab has produced nationally significant innovations, including the Disaster Early Warning Network (DEWN), smart grid and smart metering solutions, industrial IoT systems, an open-source 5G testbed, and AR/VR-based exer-gaming platforms.

Among these contributions, the Disaster Early Warning Network is especially notable. Launched initially in 2007 and later with the Disaster Management Centre in 2014, DEWN is recognized by GSMA as a pioneering use of cell broadcast technology for public warning systems. The work also received national recognition, including awards for multidisciplinary research and software innovation. Prof. Dias has also contributed to socially relevant technologies such as "eleAlert", an electric fence intrusion alert system, and wireless sensing solutions for intelligent transport and public safety.

Her research interests span wireless sensing and positioning, Internet of Things, wireless networks, intelligent transport systems, and communication for disaster mitigation. These areas reflect not only technical depth, but also a consistent concern for public benefit, resilience, and inclusive technological development. Her publication record includes work in mobile communications, wireless sensor networks, disaster warning systems, intelligent transport, indoor positioning, 5G testbeds, and virtual reality applications.

Beyond research, Prof. Dias has played a major role in academic leadership at the University of Moratuwa. She has served as Head of the Department of Electronic and Telecommunication Engineering, Dean of the Faculty of Information Technology and Founder Dean of the Faculty of Graduate Studies. During her tenure as Founder Dean, research degree administration was strengthened, procedures were streamlined, joint PhD programmes were established, and research degree enrollment and completion numbers increased significantly. In January 2026, she took on the role of Deputy Vice Chancellor of the University of Moratuwa.

Her work has received wide recognition, including multiple National Science and Technology Awards, the National Best Quality Software Award Overall Winner, the Zonta Woman of Excellence Award in Engineering, and several University of Moratuwa research excellence awards. She is also a co-inventor on several patents, including those related to disaster early warning, electric fence monitoring, and mobile object tracking.

What makes Prof. Dias's career especially inspiring is the bridge she has built between university research, industry needs, and social impact. Her work shows how telecommunications engineering can go beyond networks and devices to support disaster resilience, safer transport, smarter infrastructure, and new forms of digital experience. Through her teaching, mentoring, research leadership, and commitment to lifelong learning, Prof. Dileeka Dias continues to shape generations of engineers while advancing technologies that respond to real national and societal needs. We wish her continued success in all her future endeavors.

Mrs. Venuri Minipaba Amarasinghe

by Pabasara Maduwage

Mrs. Venuri Minipaba Amarasinghe has placed herself among the finest minds the Department of Electronic and Telecommunication Engineering has produced in recent years. Her story is a testament of lifelong aspirations and dedication.

Her journey began at Maliyadeva Balika Vidyalaya, Kurunegala, where she performed excellently. During her O/Ls, her father tragically passed away while pursuing his PhD. Amidst grief, a profound aspiration grew within her to pursue higher studies one day, a dream that has been guiding her ever since. She passed O/Ls with 9 'A's and performed a greater feat at the G.C.E. A/L Examination ranking 54th in the country. She won a bronze medal in the Sri Lankan Physics Olympiad. Furthermore, she was a President's Guide, an All-Island bronze medallist in aerobics and a good swimmer.

In the university, she chose ENTC, where she placed herself in the Dean's List in most of the semesters. During her internship in embedded engineering at Paraqum Technologies, she worked with FPGA debugging and video processing architecture. In her final years, she focused more on computer vision and machine learning. Beyond academics, she served in the Electronic Club's editorial committee, finally becoming an editor of the main branch and one of the student editors-in-chief for E-carrier magazine 2023 October edition. She also volunteered in the IEEE WIE International Leadership Summit 2023 as a media committee member.

Venuri's journey is marked by several exceptional achievements. Her teams reached the finals of the Brainstorm challenge 2023, broke into the top 10 at the Spark Challenge 2023, and earned a spot in the Global Top 10 at the IEEE SPS Video and Image Processing Cup. Venuri's most notable achievement is her final year project, Domain-agnostic feature modulation for Semi-Supervised Domain Generalization, being accepted by the CVPR workshop 2026, a prestigious global conference on Computer Vision. Being the first author of the paper, her achievement as an undergraduate was unprecedented at the department.

After graduation, she first worked as a visiting instructor at the department and later on a project at UK-based startup Whizneuro. She then worked on some research projects at Rumi Labs. She was offered a PhD scholarship at Queensland University of Technology, Australia, where she is currently addressing the uncertainty in underwater perception, in line with her passion for computer vision and marine conservation.

In the insights shared with us, she emphasised that anything learnt would not go to waste and encouraged juniors to follow the path they are interested in. She also noted that although learning something from the beginning might be difficult, anything is possible when there is real effort.

Finally, the Department of Electronic and Telecommunication Engineering would like to congratulate Mrs. Venuri Amarasinghe for her remarkable achievements and extend its warmest wishes for a continued journey of excellence.

Mr. Shihab Aaqil Ahamed

by Pabasara Maduwage

Mr. Shihab Aaqil Ahamed has earned a unique place among recent graduates of the Department of Electronic and Telecommunication Engineering through his outstanding research contributions.

Hailing from Zahira College, Kalmunai, he performed well in the G.C.E. Advanced Level Examination, placing 2nd in the Ampara district from the Physical Science stream. For this, he was honoured with the Best Result Award from Zahira College, Kalmunai and the prestigious Jinnah Scholarship, awarded by the High Commission of Pakistan in Colombo. During his school years, he enjoyed playing chess and cricket. He has participated in chess and mathematics competitions at the provincial level.

Entering ENTC, Shihab followed the Computer Vision and Pattern Recognition pathway alongside a minor in Mathematics. His time at the department is not only marked by academic performance but also by his keen interest and active involvement in research, particularly in Computer Vision. Even for his internship, he chose a research assistant position at the Computer Vision Research Department of Mohamed bin Zayed University of Artificial Intelligence in Abu Dhabi, where he conducted independent research on self-supervised learning from videos for downstream tasks.

Afterwards, he joined the Machine Vision Research Group in the department and simultaneously pursued multiple independent research directions, producing three research papers. Notably, his work titled “A-TPT:Angular Diversity Calibration Properties for Test-Time Prompt Tuning of Vision-Language Models” was accepted for the International Conference on Learning Representations (ICLR) 2026. It was the first paper from our department accepted for the highly prestigious conference. He also contributed to another research, which was accepted for the Winter Conference on Applications of Computer Vision (WACV) 2026. The recognition he has earned through these publications at the world’s top AI conferences as an undergraduate researcher is remarkable.

After completing his undergraduate studies, he started working as a part-time research engineer at Jaseci Labs. Within months, he was offered the opportunity to join his former research lab at Mohamed bin Zayed University of Artificial Intelligence in Abu Dhabi as a research student, where he has already produced a paper which is currently under review for CVPR 2026. He was recently offered a researcher conference travel grant by Zayed University.

Shihab’s story is more about dedication to rigorous, impactful research than academic performance. He is a living testament of how far a student can go if they have the will.

While taking pride in him, the Department of Electronic and Telecommunication Engineering would like to extend its warmest wishes to Mr. Shihab Ahamed for a continued journey of success.

Mr. Hansa Marasinghe

by Kethmi Samaranayaka

For Hansa Marasinghe, a distinguished graduate of Department of Electronic and Telecommunication Engineering, Batch 20, success has consistently been driven by a steadfast dedication to learning. He concluded his undergraduate journey at the University of Moratuwa with a CGPA of 3.95/4.00 and a Minor in Mathematics. Maintaining this elite standard throughout his four years, he earned a spot on the Dean's List for all eight consecutive semesters, a remarkable feat that ultimately culminated in his receiving the Convocation Gold Medal for the Highest Overall GPA in Biomedical Engineering.

This track record of exceptional caliber was already well-defined during his school days at Kingswood College, Kandy. Displaying an affinity for competitive analytics, Hansa emerged as a Silver Medalist at the 2019 Sri Lankan Physics Olympiad and a finalist at the 2020 Sri Lankan Chemistry Olympiad, where he ranked 9th island-wide. His extraordinary capabilities were not limited to science; he was a formidable competitor on the chessboard, representing Sri Lanka at the 2016 Asian Youth Chess Championship in Mongolia and claiming the title of National Youth Blitz Chess Under-16 Boys Champion in 2015. He was also an accomplished Kandyan Wes Dancer and part of the championship group at the 2014 All-Island School Dance Competition.

This unrivaled versatility naturally culminated in Hansa being awarded the prestigious Thevdaasan Memorial Challenge Trophy for the Best All-Rounder in 2019. That same year, he anchored his school legacy at the GCE Advanced Level examination, securing a Z-score of 2.8089 to rank 1st in the Kandy District and 36th Islandwide in the Physical Science stream.

True to his reputation as a holistic achiever, Hansa's time at the university was characterized by significant contributions to student leadership alongside his technical pursuits. He served as a batch representative across three semesters(4,5 & 6) and contributed to the IEEE EMBS UoM chapter as its Co-Editor(2023-2024) and Assistant Webmaster(2022-2023). Beyond leadership, Hansa proved to be a formidable competitor in technical arenas, driving innovation in healthcare tech. He secured a Top 5 Finalist spot at the Spark Challenge (2022/23) for a non-invasive hypoglycemia detection device, and later clinched 2nd Runners Up at the Brainstorm 2025 competition for his team's pioneering neonatal seizure prediction system.

Transitioning from university to the professional arena, Hansa has quickly established himself in the industry. He currently serves as an Embedded Systems Engineer at Thakshana Technologies, where he focuses on the design and implementation of DSP modules on FPGA systems. This role builds upon his solid foundation in industry-oriented research, which included a pivotal tenure as a Research Affiliate at the University of Sydney, where he contributed to a research project centered on electro-tactile feedback interface and soft, conductive 3D printing.

Beyond his corporate achievements, his contributions to the global research community are highly distinguished. His work at the University of Sydney led to a co-authored paper at UbiComp / ISWC 2024, which secured the prestigious Best Paper Award (Notes and Briefs) for haptic interface innovation. Demonstrating a remarkable breadth of expertise, he also ventured into integrated circuit design, authoring a paper on a 2.4 GHz LC-VCO Fractional-N Phase Locked Loop Open-Source Design in 130-nm BiCMOS. Accepted for publication at SMACD 2026, this project stands as a historical milestone, representing a first of its kind design from Sri Lanka.

The department congratulates Mr. Hansa on his remarkable achievements and wishes him the very best in all his future professional and academic endeavors.

Ms. Thisari Piyumika Amarasekara

by Kethmi Samaranayaka

Gold Medalist in Biomedical Engineering. A cumulative GPA of 3.95/4.00. Eight consecutive semesters on the Dean's List. These are the marks of Ms. Thisari Piyumika Amarasekara of Batch 20, Department of Electronic and Telecommunication Engineering, University of Moratuwa; a graduate whose time at the university was defined by unwavering diligence and intellectual distinction.

For her Advanced Level studies, she joined Visakha Vidyalaya, Colombo 05, where she swiftly demonstrated the academic excellence that would come to define her. At the 2019 GCE Advanced Level examination, she made her school profoundly proud by securing three As and a Z-score of 2.8496. Alongside achieving the highest result for physics in her grade, her exceptional performance earned her 8th place in the Colombo District and 26th place islandwide.

She carried that same unwavering standard to the University of Moratuwa, where she further solidified her reputation as a scholar of the highest caliber. Beyond maintaining her flawless academic trajectory, she consistently pushed the boundaries of practical engineering on competitive platforms. Demonstrating a keen eye for sustainable innovation, she led her team to secure the Second Runner-Up position at the SPARK Challenge 2022 for developing a Smart Hydrogen Generating Unit using Green Algae. Her research-driven mindset was similarly showcased at Brainstorm 2023, where she advanced as a semi-finalist for a healthcare project dedicated to the early detection and treatment tracking of pulmonary tuberculosis.

Alongside these technical milestones, she also acted as a Department Representative for her final undergraduate year (Semesters 7 and 8), a testament to her versatility as both a visionary researcher and a dedicated leader.

With a firm foundation in Biomedical Engineering, Ms. Thisari Amarasekara pursued an internship as a trainee Biomedical Engineer at Innovation Quotient (Pvt) Ltd., under the supervision of Prof. Rohan Munasinghe. During her tenure, she contributed significantly to the "Fetal Monitoring System Design and Development" project, an initiative aimed at engineering a sophisticated, wearable fetal monitoring system. Her work was central to developing advanced algorithms for fetal heart rate estimation, maternal heart rate differentiation, and the precise detection and localization of fetal kicks and orientation.

For her final year project, Ms. Amarasekara channeled her expertise into addressing a critical bottleneck in local healthcare infrastructure by developing an "Automated System for Digitizing and Classifying Paper-Based ECG Records." Designed specifically to alleviate the challenges of paper-bound diagnostics in resource-limited settings like Sri Lanka, the project introduces an end-to-end pipeline that digitizes and classifies traditional 12-lead ECG images. Her work seamlessly integrates advanced image processing, signal extraction, and machine learning models for precise cardiovascular diagnosis. By embedding explainable AI into the system, the project ensures clinical interpretability, while simultaneously serving as an educational asset for medical students and paving a practical pathway toward digital health record transition.

The department congratulates Ms. Thisari on her exceptional achievements and wishes her the absolute best as she steps forward to shape the global future of biomedical engineering.

ENTC

Electronic and Telecommunication Engineering

Acknowledgment

"The best way to predict the future is to invent it."

-ALAN KAY-

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