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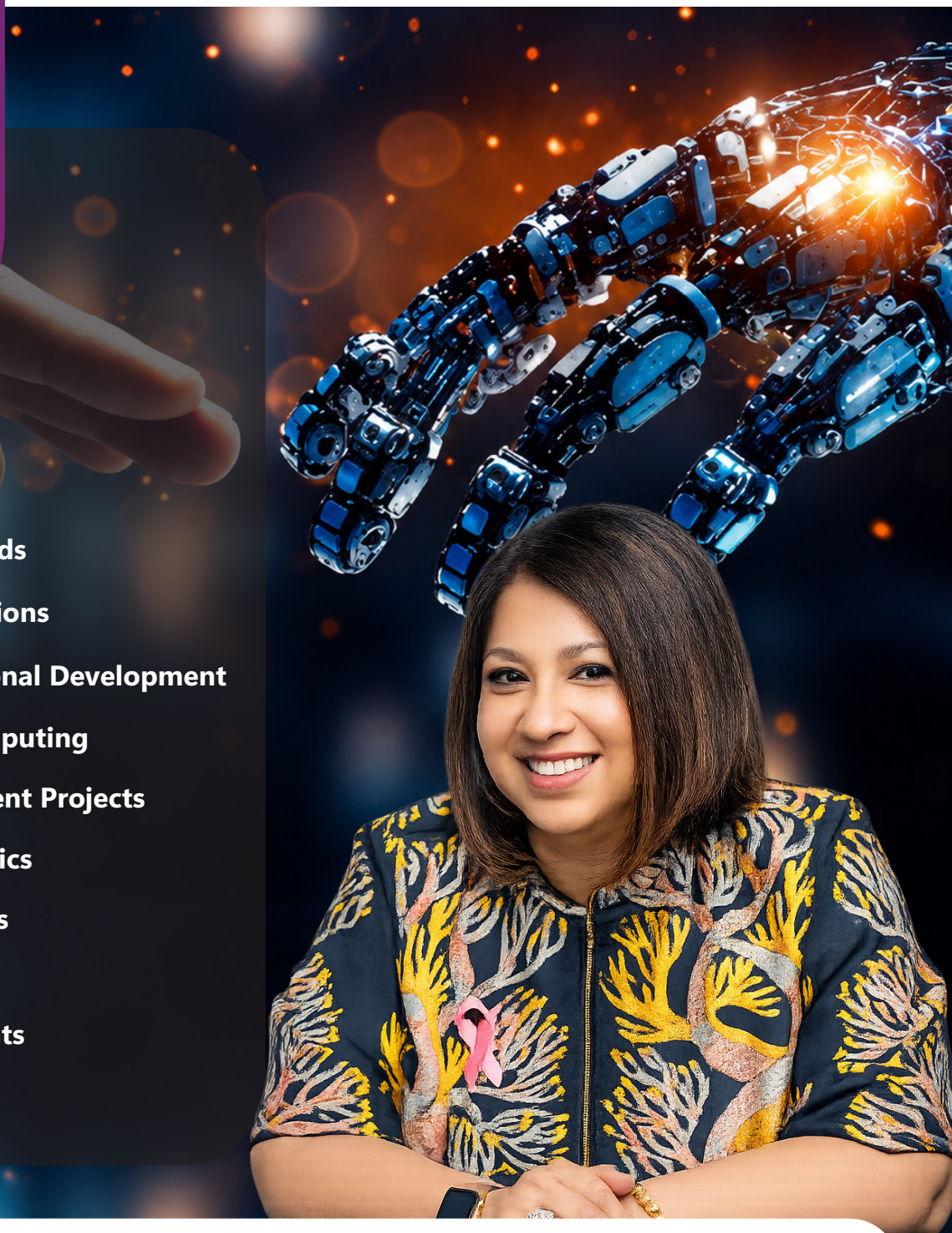
ComSpective

Enlightening perspectives on computing today and tomorrow



- Technologies & Trends
- Research & Applications
- Professional & Personal Development
- Perspectives on Computing
- Software Development Projects
- Interdisciplinary Topics
- Industry Perspectives
- Alumni Views
- News & Achievements

Faculty of Computing
Sabaragamuwa University of Sri Lanka

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IEEE Student Branch

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IEEE COMPUTER SOCIETY

Volume: 05 Issue: 02 March, 2026

With the aim of exploring today's world-changing sciences and technologies in the domain of computing, the Faculty of Computing, Sabaragamuwa University of Sri Lanka takes a step forward to unite with industry professionals and researchers through ComSpective the ICT Technical Magazine.

The magazine provides a brilliant opportunity for individuals who wish to contribute to the knowedge base through submitting articles on technology insights, research investigations and experiences in the domain of computing.

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VOLUME 06 | ISSUE 01

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The magazine also welcomes articles and contributions on various emerging and interdisciplinary topics.

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EDITOR'S NOTE

Dear Reader,

Research and innovation continue to shape our world, helping us overcome challenges and create better lives for people everywhere. It's remarkable to see how far we've come and inspiring to imagine how much further we can go.

I am delighted to present to you Volume 05, Issue 02 of ComSpective, the bi-annual technical magazine of the Faculty of Computing, Sabaragamuwa University of Sri Lanka. Each issue embodies the creativity, curiosity, and commitment of our academic community, and this edition is no exception.

ComSpective is more than a magazine; it is a platform where bright minds share ideas, explore emerging technologies, and inspire one another. Whether you are a student, researcher, or simply a tech enthusiast, we hope these pages spark new insights and fuel your passion for innovation.

As you explore this issue, I encourage you to reflect on the stories and breakthroughs within. May they challenge your perspectives, ignite your curiosity, and remind you of the limitless possibilities in computing.

Thank you for joining us on this journey. Let us continue pushing boundaries together.

Thank you.

Mrs. R.M.K.K. Wijerathna
Editor-in-Chief

FEATURES

CONTENT

The Faculty of Computing is pleased to present the 2nd Issue of the Volume 05 of ComSpective, the bi-annual ICT magazine published by the Faculty of Computing.

We dedicate ourselves to making the world smarter, with each and every Issue of the Magazine, spanning a broad range of computing disciplines.

FOC HIGHLIGHT

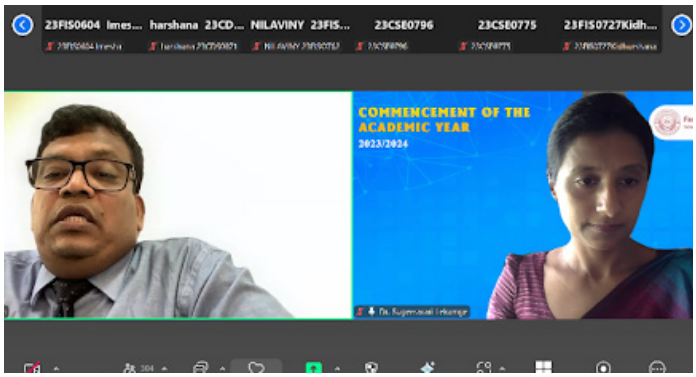
EXCELLENCE IN EDUCATION AND INNOVATION: HIGHLIGHTS OF THE FACULTY OF COMPUTING, SUSL

Composed by Mr. P.G.P. Kumara, Faculty of Computing, Sabaragamuwa University of Sri Lanka

The Faculty of Computing (FoC) was established as the 9th Faculty of the Sabaragamuwa University of Sri Lanka (SUSL) by an Order made under Section 27(1) in the Gazette Extraordinary 2312/14 dated 27th December 2022. In a backdrop where computing has become an essential discipline driving innovation and transformation, the Faculty of Computing is committed to nurturing a new generation of professionals equipped with the knowledge, skills, and vision to meet national and global challenges. The faculty currently comprises three academic departments: the Department of Computing and Information Systems, the Department of Software Engineering, and the Department of Data Science. These departments collectively offer dynamic and industry-relevant undergraduate and postgraduate degree programs, promoting academic excellence, interdisciplinary collaboration, and research-driven innovation.

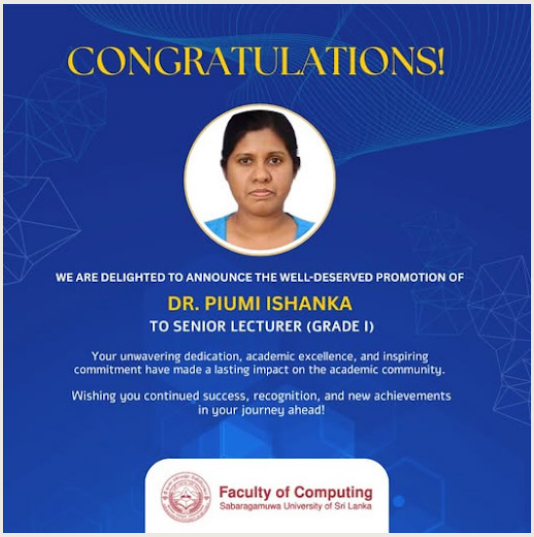
The Faculty of Computing at Sabaragamuwa University of Sri Lanka proudly organized its Faculty Introduction Session to mark the commencement of the Academic Year 2023/2024. This special event was held on Monday, 18th August 2025, via Zoom. The session was designed to warmly welcome our new cohort of students and provide them with essential information, guidance, and inspiration for their academic journey and university life. It also served as a platform to introduce the Faculty's academic culture, available resources, and the vibrant community that awaits them.

The Dean, Heads of Departments, and academic staff joined hands to make this event meaningful, emphasizing the Faculty's vision of excellence in computing education, research, and innovation. Students were encouraged to embrace the opportunities ahead, build strong networks, and uphold the core values of integrity, creativity, and responsibility. The event highlighted the Faculty's commitment to nurturing future-ready graduates equipped with knowledge, skills, and adaptability to thrive in an ever-evolving digital world. This initiative reflects the Faculty's continuous efforts to ensure that every student feels guided, supported, and inspired from the very beginning of their journey at the Faculty of Computing, SUSL.



The Faculty of Computing 2022/23 batch, together with the Student Union of the Faculty of Computing, Sabaragamuwa University of Sri Lanka, proudly presented Kodu Yathra 2025 on the evening of August 26th. This vibrant talent show showcased the hidden talents of students, with captivating performances in singing, acting, dancing, and playing musical instruments. The event filled the auditorium with energy, joy, and applause, making it a truly memorable evening.

More than just a stage performance, Kodu Yathra 2025 was a celebration of creativity, unity, and friendship among the students of the Faculty of Computing. It revealed the artistic side of computing students, strengthened bonds within the batch, and reflected the dynamic spirit of university life at SUSL. The evening left everyone with cherished memories and highlighted the importance of balancing academics with cultural and extracurricular activities.



Celebrating the Well-Deserved Promotion of Dr. Piumi Ishanka

We are delighted to share that Dr. Piumi Ishanka, from the Faculty of Computing, Sabaragamuwa University of Sri Lanka, has been promoted to Senior Lecturer (Grade I).

Currently serving as the Head of the Department of Data Science, Dr. Ishanka has shown exceptional dedication to academic excellence, visionary leadership, and a genuine passion for student development. Her contributions have been instrumental in driving innovation and strengthening the department's academic standing. This well-deserved promotion is a reflection of her continuous commitment to teaching, research, and service to the university community.

We extend our warmest congratulations and wish Dr. Piumi Ishanka continued success in her academic journey. May she be empowered with renewed strength and inspiration to further elevate the academic community and shape future leaders.

Quantum Communications: An Overview

Dr. Samiru Gayan, *(Email: samirug@uom.lk) Department of Electronic and Telecommunication Engineering, University of Moratuwa, Sri Lanka.*

Dr Samiru Gayan is a Senior Lecturer in the Department of Electronic and Telecommunication Engineering at the University of Moratuwa, Sri Lanka. His main research interests are in wireless communications and machine learning for wireless communications.

Imagine a world where messages travel faster than light, are immune to interception, and are secured by the laws of physics. This isn't science fiction. It's the promise of quantum communications, a field poised to revolutionize how we share information.

Understanding Quantum Communication

At the core of quantum communication lies quantum mechanics, the field of physics that governs the behaviour of matter and energy at atomic and subatomic scales. Unlike classical communication, which encodes information using binary bits (0s and 1s), quantum communication employs quantum bits (qubits). Owing to the principle of superposition, qubits can simultaneously exist in multiple states rather than being confined to a single binary value. Furthermore, entanglement causes the state of one qubit to be inherently connected to that of another, no matter how far apart they are.

The most remarkable feature of quantum communication is quantum entanglement, which allows for the instantaneous transfer of information between two entangled particles, a phenomenon that Albert Einstein famously called "spooky action at a distance." This entanglement could theoretically enable real time,ultra-secure communication a cross vast distances, making it nearly impossible for eavesdroppers to intercept or alter the transmitted data.

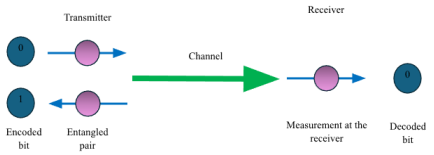


Figure 1: *An illustration of quantum communication setup.*

Unbreakable Security: The Promise of Quantum Encryption

A key strength of quantum communication is its ability to provide unbreakable security. Classical encryption methods, like RSA encryption, rely on complex mathematical

algorithms that are based on the difficulty of certain mathematical problems. However, with the rise of quantum computing, these encryption methods are at risk of being broken in a matter of seconds. Quantum communication solves this problem through a technique known as quantum key distribution (QKD).

In QKD, quantum particles are used to exchange cryptographic keys between parties. The security of QKD lies in the fact that any attempt to intercept the quantum particles would disturb their quantum states, thereby alerting the communicating parties to the presence of an eavesdropper. This concept is known as the no-cloning theorem, which states that quantum information cannot be copied without altering the state of the original particle. As a result, quantum communication systems offer an unprecedented level of security, as any attempt at hacking would be immediately detectable.

Challenges

Quantum signals degrade over distance, requiring ultra-cold environments or flawless materials to maintain coherence. Hardware is expensive, and scaling up demands innovation. However, as quantum technology continues to advance, the costs are expected to decrease, making quantum communication more accessible to industries worldwide.

The Road Ahead

Quantum communication is still in its infancy, but its potential is vast. While the technology is not yet ready for widespread deployment, it has already shown great promise in laboratory experiments and early-stage commercial applications. In the coming decades, quantum communication systems could redefine our digital landscape, offering both secure communication channels and the foundation for next-generation technologies.

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[1]. L. Hanzo et al., "Quantum Information Processing, Sensing, and Communications: Their Myths, Realities, and Futures," in Proceedings of the IEEE.

Celebrating Excellence: Dr. Sugeeswari Lekamge Promoted to Senior Lecturer (Grade I)

We are proud and delighted to announce that Dr. Sugeeswari Lekamge, from the Faculty of Computing, Sabaragamuwa University of Sri Lanka, has been promoted to the position of Senior Lecturer (Grade I).

Dr. Lekamge currently serves as the Head of the Department of Computing and Information Systems, where she has consistently demonstrated exemplary leadership, a deep commitment to academic excellence, and a strong dedication to student development. Her ability to lead with integrity, inspire her peers, and foster a nurturing learning environment has earned her widespread respect within the faculty and beyond.

This well-deserved promotion is a reflection of her remarkable contributions to teaching, research, and service to the university's development. It is a testament to her unwavering efforts to uplift the academic standards of the department and her passion for shaping the next generation of computing professionals.

We extend our heartfelt congratulations and wish Dr. Lekamge continued success as she advances in her career. May she have the strength, vision, and inspiration to continue making impactful contributions to the academic world and to the broader educational landscape.

ICARC 2026

6TH INTERNATIONAL CONFERENCE ON ADVANCED RESEARCH IN COMPUTING 2026 - ICARC 2026 RESPONSIBLE AGI: BALANCING INTELLIGENCE, RESPONSIBILITY, AND SUSTAINABILITY

Composed by Mrs. W.T. Saranga Somaweera

As Artificial General Intelligence (AGI) rapidly evolves, it presents both transformative opportunities and profound ethical challenges. Responsible AGI development must prioritize not just technical excellence, but also moral responsibility and long-term sustainability. The 6th International Conference on Advanced Research in Computing 2026 is organized by the Faculty of Computing at Sabaragamuwa University of Sri Lanka, under the theme ***"Responsible AGI: Balancing Intelligence, Responsibility, and Sustainability"****.*

The Faculty of Computing at Sabaragamuwa University of Sri Lanka proudly announces the 6th International Conference on Advanced Research in Computing (ICARC 2026), to be held on 18th and 19th February 2026. The conference will feature a formal inauguration, followed by a diverse array of academic and professional events, including technical sessions, keynote addresses, an industrial product showcase, and networking opportunities. Participants can engage in plenary talks delivered by renowned scholars and industry leaders, oral research presentations, pre-conference workshops, technical tutorials, and public discussions. These sessions aim to foster insightful dialogue and facilitate the dissemination of cutting-edge knowledge across a wide range of computing domains.

The journey toward ICARC 2026 commenced with the official launch of its website on 21st August 2025, organized by the Faculty of Computing at Sabaragamuwa University of Sri Lanka. The event was distinguished by the participation of Professor M. Sunil Shantha, Vice Chancellor of the Sabaragamuwa University of Sri Lanka, and Professor S. Vasanthapriyan, Dean of the Faculty of Computing, along with a notable assembly of esteemed guests from both Sri Lanka and across the world.

The conference will comprise eight thematic tracks open for scholarly contributions, encompassing Artificial Intelligence and Machine Learning, Text Analytics and Natural Language Processing, Computer Networks and the Internet of Things, Software Engineering and Knowledge Engineering, Generative AI in Education: Emerging Paradigms, Practices, and Possibilities, Digital Transformation and Industry 5.0, Digital Transformation in Healthcare, and an Open Track on Emerging Topics in Computing. Researchers and practitioners are encouraged to engage with these diverse focus areas and contribute original, impactful work that advances the frontiers of knowledge within the computing community.

The 6th International Conference on Advanced Research in Computing (ICARC 2026) is honored to receive technical co-sponsorship from globally recognized organizations, including IEEE Global, IEEE Sri Lanka Section, IEEE Computer Society Sri Lanka Chapter, IEEE Engineering in Medicine and Biology Society (EMBS) Sri Lanka Chapter, IEEE Industry Applications Society (IAS) Sri Lanka Chapter, IEEE Communications Society Sri Lanka Chapter, IEEE Signal Processing Society Sri Lanka Chapter, and IEEE Geoscience and Remote Sensing Society (GRSS) Sri Lanka Chapter.

Now in its sixth consecutive year, ICARC 2026, with a Google Scholar h5-index of 11, serves as a leading academic platform for presenting cutting-edge research and fostering collaboration in the field of computing. All accepted and presented papers will be submitted for inclusion in IEEE Xplore, subject to IEEE Xplore's scope and quality requirements. The conference invites researchers and professionals to engage with emerging innovations and contribute to shaping the future of the discipline.

ALUMINI VIEW

Kasuni Kariyawasam
Senior QA Lead
CodeGen International

With gratitude to Sabaragamuwa University of Sri Lanka, I am proud to have been a member of its first batch of Computing and Information Systems graduates, where I achieved a Second Class Upper Division. This strong foundation has been instrumental in shaping my professional journey.

Over the past 12+ years, I have built a dynamic career as a Senior QA Lead at CodeGen International, gaining expertise in Agile SDLC, test automation, and global client management, including leading on-site knowledge-sharing engagements in France. Throughout my career, I have implemented innovative testing strategies, promoted automation-first approaches, and mentored QA teams to achieve excellence.

My passion for knowledge extends beyond the industry, as I lecture on Software Quality Assurance at the University of Sri Jayewardenepura. I also contribute to academic development by supporting the University of Ruhuna's curriculum design and facilitating industrial visits for Sabaragamuwa University students to CodeGen, helping bridge the gap between academia and industry while nurturing future computing professionals.

Introduction to Web Services for Absolute Beginners

Mr. Dumindu Patabandi, *(dppatabandi@gmail.com), Department of Computing and Information Systems, Faculty of Computing, Sabaragamuwa University of Sri Lanka.*

Mr. Dumindu Patabandi is a Lecturer (Temporary) at Sabaragamuwa University of Sri Lanka. To get to know him better, you can visit his professional blog on www.gooodwriter.com

What is a Web Service? Is it a website? Not quite true if I say yes. A web service is not essentially a website. It's a **Web + Service** (a service provided through the Internet) [1].

A **website** is meant to deal with humans (at least for now). But a **web service** is for applications (to deal with another application or a program).

Think of a web service like a waiter at a restaurant. You (the client) place an order, the waiter (the web service) delivers it to the kitchen (the server). Then he brings back your food (the response) without you ever knowing how it was cooked. Just like that, the web service will deal with the requests we provide and provide necessary responses to the client-end of the application to serve us.

What happened before Web Services?

Before web services, if you wanted to create a new website using existing data from another site, you had to copy the entire method (code) as a .jar file to your server, and it didn't work simply by completing that task.

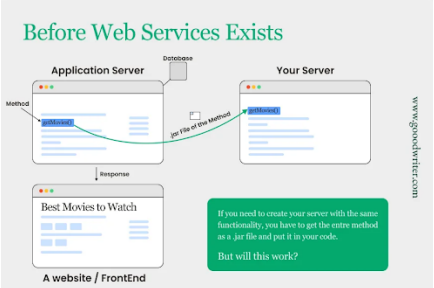

Figure 1: *What happened before web services!*

You also needed to create the same database. Moreover, when something changed in the original source, the updated code structure had to be recompiled and sent back to your server, along with updating the database as well.

With that experience, some kind of communication method was in dire need. A method that applications could use to communicate without replicating the same code again and again.

Web Services was the answer to that problem.

With the introduction of web services, developers have had a great chance to make applications communicate with each other rather than replicating the code. Now, only the response needed can be obtained as an output and can be used anywhere with any technology. More and more applications have been introduced to the internet.

There are two major ways to create web services:

1. SOAP
2. REST

Conclusion

Web services revolutionized how applications communicate across the internet. Instead of copying and maintaining entire codebases, developers can now simply send and receive data between systems efficiently, securely, and in real time. Whether using SOAP for structured, enterprise-level integrations or REST for lightweight, web-friendly interactions, web services remain the back bone of modern connected applications.

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Congratulation!

*Congratulations to **Kalpani Ariyawansa**, a final year undergraduate from the Faculty of Computing, for being honored with the prestigious **Impact Award** at the **STEMUP Volunteer Summit 2025**, held on March 15th at the National Library Auditorium. This award recognizes her outstanding dedication and meaningful contributions to advancing STEM education in Sri Lanka. Kalpani's efforts in mentoring, organizing outreach activities, and inspiring young learners have created a lasting impact on the community, particularly in promoting tech education among school students. We are proud to celebrate this remarkable achievement and applaud her continued passion for making a difference in the world of STEM.*

Congratulation!

*We are proud to announce that **Team Idea Igniters**, comprising a talented group of undergraduates from the Faculty of Computing, **Jithmi Wickramasinghe, Hiruni Yasoda, Thisara Chethani, Kithmi Githara, and Sashika Hansani**, emerged as the **1st Runner-Up** at the prestigious **SHECODRESS V6.0**, held at the Uva Wellassa University premises. Organized by the IEEE Women in Engineering Student Branch of Uva Wellassa University, the competition brought together teams from various universities, and our students truly stood out with their exceptional performance and innovation. Congratulations on this remarkable achievement! Your innovation, teamwork, and excellence have made us all proud.*

IEEE STUDENT BRANCH – SUSL

EMPOWERING INNOVATION AND COMMUNITY: IEEE STUDENT BRANCH – SABARAGAMUWA UNIVERSITY OF SRI LANKA

The Institute of Electrical and Electronics Engineers (IEEE) is the world's largest technical professional organization dedicated to advancing technology for humanity. With a global network of professionals, academics, and students, IEEE inspires innovation and drives progress in fields ranging from computing to engineering and beyond. At its heart lies a mission to improve human life through technology, empowering individuals and communities worldwide.

Carrying this vision forward, the IEEE Student Branch of Sabaragamuwa University of Sri Lanka (SUSL), established in 2016, has emerged as a hub of creativity, leadership, and technical excellence. Since its inception, the branch has been committed to creating opportunities for students to explore cutting-edge technology while also contributing to the betterment of society. Its initiatives have not only cultivated strong technical skills among undergraduates but also strengthened the spirit of teamwork and community service. Over the years, the branch has been recognized for its impactful contributions, including being awarded the Best Industry Collaborative Project by the IEEE Sri Lanka Section.

Continuing this legacy, the Student Branch has recently organized a series of impactful programs that inspired students and enhanced their professional development. Among the highlighted initiatives were CareerForge Phase 02, a platform to prepare undergraduates for industry expectations and career opportunities; InspireIEEE v2.0, which created awareness on volunteering and leadership pathways within IEEE; and GeekZone v2.0, a space where students explored innovation and collaboration through expert sessions and interactive activities.

In addition, the branch proudly hosted the IndustriX Hacktoberfest Awa Awareness Session, encouraging students to engage with the global open-source community; the SabraXtreme v2.0 session, which prepared undergraduates for the world-renowned IEEEXtreme coding competition; and the exciting CodeQuest v1.0, a high-energy hackathon that tested participants' problem-solving and programming skills under competitive conditions.

These highlighted events stand as milestones in the journey of the IEEE Student Branch of SUSL, reflecting its dedication to advancing knowledge, building confidence, and creating opportunities for students to shine on both local

and global platforms. Each initiative is a step toward nurturing the next generation of innovators and leaders who will continue to advance technology for humanity.

The continued success of any club relies on the group of people who lead it. Therefore, the tireless efforts of the Executive Committee of IEEE Student Branch for the years 2024/2025 must be acknowledged. The activities of the branch were led by, Mrs. Lohara Chathumini as Counsellor, Mr. Dushyantha Thilakarathne as Chairperson, Mr. Ashan Vimodh as Vice Chairperson, Ms. Nethmini Dilshara as Secretary, Ms. Dulari Wathsala as Vice Secretary, Mr. Ravindu Lakshan as Treasurer, Ms. Nipuni Nadeeshani as Content Coordinator, Mr. Sahan Viranga as Event Coordinator, Mr. Kanchana Wishwajith as Volunteer Coordinator and Mr. Lasindu Maduranga as Webmaster. These remarkable individuals ensured that the student branch remained an active and enthusiastic hub of innovation and collaboration in Sabaragamuwa University of Sri Lanka.

As their time as the executive committee came to an end, a new set of leaders were appointed in the following Annual General Meeting. The Annual General Meeting of IEEE Student Branch of Sabaragamuwa University of Sri Lanka was held on 16th of September, 2025 to celebrate the events of the past year and to appoint the new leader who would take this club to new heights.

During this meeting the past accomplishments of the club were celebrated, the financial report was read and most importantly the Executive committee for the IEEE Student Branch, IEEE WIE Affinity group and IEEE Computer Society Student Chapter were appointed along with a committee of representative from each year form each faculty. The event came to an end on a hopeful tone, looking forward to the next step under the guidance of the newly appointed executive committee.

With a strong foundation and a clear vision, the IEEE Student Branch of Sabaragamuwa University of Sri Lanka is well on its way to achieving even greater heights, empowering students, driving inno-

Zero Trust Architecture: The Future of Cyber Security

Mr. A.M.M. Aasik,*(aasikcs@gmail.com) Department of Information Technology, ICST University Park, Punanai*

Mr. A.M.M. Aasik completed his Bachelor's in Computer Science and Technology at Uva Wellassa University and is currently pursuing a Master's in Information Technology at the University of Moratuwa. He is affiliated with the Department of Information Technology, ICST University Park, Punanai, and has a keen interest in DevOps, Cybersecurity, and Cloud Computing, focusing on how these fields drive modern technology solutions.

Never trust, always verify. This phrase sums up the core of Zero Trust Architecture (ZTA), a modern security model designed for today's borderless, cloud-driven world. As cyberattacks become more sophisticated and organizations move beyond traditional perimeters, the need for a security approach that assumes no user or device can be trusted by default has never been greater.

What is Zero Trust?

Traditional security models operate on the principle of trust but verify, granting users access based on their location within the network (e.g., inside the corporate firewall). Zero Trust flips this concept.

It requires every user and device—whether inside or outside the organization—to be authenticated, authorized, and continuously validated before they can access applications or data.

Zero Trust assumes there is no traditional network edge. Whether resources are on-premises, in the cloud, or across hybrid environments, the same strict security policies apply everywhere.

Why Zero Trust?

Rising Threats: Ransomware, phishing, and supply chain attacks are increasing.

Remote work & BYOD: Users now access corporate resources from personal devices and multiple locations.

Cloud Adoption: Data and applications are no longer confined to a single corporate network.

Zero Trust is designed to meet these challenges by removing implicit trust and replacing it with continuous verification.

Key Principles of Zero Trust

Default Deny: Assume every request is untrusted until verified.

Verify Every Time: Authenticate users and devices on every access attempt.

Monitor Everything: Log and analyze all activity to detect anomalies.

Least Privilege: Grant only the minimum access necessary for a user's role.

How to build a Zero Trust Architecture

Zero Trust isn't a single product—it's a framework and strategy. Building it requires planning, policies, and the right tools. Here's a simplified roadmap:

1. Assess Your Organization

- Identify sensitive data, applications, and critical assets.
- Audit all user accounts, including service and privileged accounts.
- Review authentication policies and eliminate weak or outdated protocols.

2. Map Your Assets and Data Flows

- Create an inventory of all devices, applications, and data locations.
- Understand how users interact with these resources.
- Segment identities and enforce strict access controls.

3. Apply Preventive Measures

- Multi-Factor Authentication (MFA): Add extra layers of security for all logins.
- Least Privilege Access: Give users only the permissions they need.
- Identity Segmentation: Use micro-perimeters to contain lateral movement.

4. Monitor and Respond

- Continuously inspect and log all network traffic.
- Detect and contain suspicious activity quickly.
- Implement automated responses to high-risk behaviors.

Real-World Examples

- Google's BeyondCorp: One of the earliest large-scale Zero Trust implementations, BeyondCorp eliminated traditional VPN reliance by verifying each user and device at every access request.
- U.S. Federal Government: In 2021, the White House issued an executive order requiring federal agencies to adopt Zero Trust, signaling its importance in national cybersecurity.
- Microsoft: The company has integrated Zero Trust principles across Azure and Microsoft 365, helping enterprises protect cloud workloads from identity-based attacks.

Benefits of Zero Trust

Improved Visibility: Know who is accessing what, and when.

Reduced Risk: Harder for attackers to move laterally within the network.

Better User Experience: Seamless access with Single Sign-On (SSO) and adaptive MFA.

Cloud-Ready: Works across local, cloud, and hybrid environments.

Supports BYOD: Security doesn't depend on who owns the device, only on verification.

Conclusion

Zero Trust Architecture is more than a cybersecurity strategy—it is a necessity for thriving in the digital age. By eliminating assumptions of trust and enforcing continuous verification, organizations can build resilience against even the most advanced threats. Its principles are already shaping global security standards, proving that Zero Trust is not a passing trend but the foundation of the future. The message is simple: in a world where trust can be exploited, security must be earned at every step. The future belongs to those who embrace Zero Trust today.

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SOCS - SUSL

SOCIETY OF COMPUTER SCIENCE (SOCS), SABARAGAMUWA UNIVERSITY OF SRI LANKA

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A Hub for Aspiring Technologists

The Society of Computer Science (SOCS) at Sabaragamuwa University of Sri Lanka functions as a critical link between the academic world and the IT industry. Through its comprehensive range of workshops, hackathons, and guest lectures with industry professionals, SOCS equips students with the practical skills and insights needed to thrive in their careers. The society ensures students are not only learning theory but also gaining real-world exposure to the latest technological trends.

What Does SOCS Do?

SOCS empowers students to become innovators and leaders in the IT field. The society's events, such as innovation challenges and leadership forums, encourage students to think creatively and take initiative. By providing a platform for members to showcase their talents and lead projects, SOCS plays a key role in developing the next generation of tech-savvy leaders.

1. Virtual Rival E-Sports Competition

Virtual Rival is a gaming event that transforms the university into a digital battlefield, where students team up to test their strategic thinking and quick reflexes in popular video games.

The Virtual Rival: Definitive Edition was a university-wide gaming competition organized to promote the Faculty of Computing and strengthen community bonds. The event successfully provided a platform for students to enhance their strategic thinking, leadership, and teamwork skills while engaging in a fun and competitive environment.

2. Fortnight Meetup Sessions

SOCS facilitates interactive skill-building sessions every two weeks. These popular meetups are focused on practical learning and professional development. With topics ranging from cutting-edge AI to crucial project management techniques, the sessions are designed to give students the tools they need to succeed. They provide a hands-on approach to gaining valuable skills for a career in technology.

3. Tech Talk Series

Previous TechTalk sessions have provided students with key industry knowledge. TechTalk V1.0, in partnership with Econlabs, focused on current tech trends and preparing for the workplace. TechTalk V2.0, with EN2H Global as its Knowledge Partner, gave students insights into future IT directions and essential skills for emerging technologies, effectively connecting academic studies with industry needs.

4. "Vidunena" Webinar Series

Vidunena is a special program that empowers students preparing for their G.C.E. (A/L) ICT exam. Through webinars, it covers key curriculum content, offers insights into IT careers, and helps prepare the next generation of IT leaders. Following the successful Vidunena V4.0, the program is set to continue its mission with a new version.

Why SOCS Matters

SOCS (Society of Computing Students) is a platform for students at Sabaragamuwa University of Sri Lanka to grow both personally and professionally. It helps members develop leadership skills, share knowledge, and build professional connections. Through its events, SOCS empowers students with the confidence and expertise needed for their future careers, regardless of their specific interest in technology, such as coding or e-sports.

Talking to Machines: The Art of Prompt Engineering

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Have you ever talked to a robot? As we all know , some of the most popular AI assistants today are ChatGPT, Bard, and Perplexity. Have you ever been dissatisfied with the answer you received while using one of these and replied back, "Wait... that's not what I meant"? Then you rephrased your question by adding a few more details, changing the tone, and suddenly you got the perfect answer, right? That's prompt engineering in action.

Prompt engineering is becoming one of the most exciting and important skills in today's computing world. It's no longer enough for us to just learn coding or algorithms; it's also valuable to learn how to talk to machines. Artificial intelligence (AI) is now being used in search engines, chatbots, classrooms, vehicles, and even toys. So, knowing how to create the right prompts to interact with AI is just as valuable as knowing how to code.

But before we learn how prompt engineering works, let's take a step back and understand the technologies that make it possible. They are known as generative AI and Large Language Models (LLMs).

What are Generative AI and LLMs?

Traditional software usually works by following pre-given rules step by step. But Generative AI is not like that. Think of Generative AI as a highly creative digital assistant. It can create various things like codes, music, images, text, etc. After identifying patterns and structures in the original data, generative AI models produce new data with comparable features.

Most of this generative AI operates on Large Language Models (LLMs). Think of how we type using our phone's keyboard to guess the next word. This is how LLMs work, running the same system trained on billions of pages of text from books, websites, research papers, and con-

versations. Instead of guessing the next word, it can generate entire essays, conversations, or programs. A large language model is one that is notable for its capacity to carry out additional tasks related to natural language processing, like general-purpose language creation and classification. Through a computationally demanding supervised and semi-supervised training process, LLMs learn statistical connections from text sources to achieve these capabilities.

Models like OpenAI's GPT, Google's Gemini, Meta's LLaMA, or Anthropic's Claude are all examples of LLMs. They don't think like humans do, but they are extremely adept at predicting and producing language based on patterns. The quality of the output depends on the input you give them. That input is called a prompt.

What Exactly is Prompt Engineering?

In its simplest form, prompt engineering is the art and science of properly questioning AI by giving clear instructions.

Consider AI as a chef. Simply saying, "Cook something," could result in a meal that isn't particularly appealing. However, the chef knows exactly what to do if you ask him to prepare a "medium burger" with chili chicken and fried potatoes in less than half an hour. Prompt Engineering is about presenting unclear requests in a way that AI can follow.

Prompts aren't just simple instructions. They're like conversations that shape how the AI responds. The outcome can be completely different depending on how you ask a question.

For example, asking "Tell me about the history of computers" gives you a standard explanation, while asking "Explain the history of computers in different time periods in a way that a 10-year-old can understand" creates a fun, easy-to-understand story. The topic is the same, but the answers are completely different. That's the power of prompts.

AI is already a part of our daily lives. We often turn to it to simplify notes, generate questions, or get explanations about tricky topics. Developers are using tools like GitHub Copilot to speed up coding, and designers are creating their designs with platforms like Midjourney. However, it's important to remember that the quality of the output is greatly influenced by the quality of the input.

How to Create Effective Prompts

Good prompts are clear, specific, and often creative. When writing a prompt, always think about what kind of response you want. Instead of saying, "Give me a picture of a car," try asking, "Give me a picture of a blue BMW car speeding down a beautiful yellow-green forest road." Your first attempt may not be perfect. So, refine it until you get the result you want. It's a time to test your creativity.

Where is Prompt Engineering Used?

Prompt engineering isn't just for students experimenting with AI models like ChatGPT. It's used as an educational tool in schools and universities, in software development, in the short film industry, in the graphic design industry, and even in healthcare to summarize patient records. Researchers also use triggers to explore data and test hypotheses

Of course, prompt engineering faces many challenges. Poorly written prompts can lead to biased or misleading answers. People skip learning the basics because AI gives them shortcuts. Ethical practice is not just about knowing how to ask questions, but also knowing how to question the answers.

The Future of Prompt Engineering

While some experts believe AI will soon understand us without prompts, others think prompts will always play a role, just in a more natural, conversational way. What's clear is that today, prompt engineering is a vital skill. It's less about technology and more about communication. The future belongs not to those who know all the answers, but to those who know how to ask the right questions.

Ultimately, Prompt Engineering is the art of communicating with technology. The future is not just about those who know all the answers, but also those who know how to ask the right questions.

WIE

ADVANCING FUTURE TECH THROUGH WOMEN'S VISION: FROM IDEAS TO IMPACT WITH IEEE WIE SUSL

The IEEE Women in Engineering (WIE) Affinity Group at Sabaragamuwa University of Sri Lanka leads this mission by fostering a space where women are inspired and empowered to craft visions for the future of technology. The IEEE Women in Engineering (WIE) Affinity Group at Sabaragamuwa University of Sri Lanka leads this mission by fostering a space where women are inspired and empowered to craft visions for the future of technology. The vision of IEEE WIE SUSL is to empower women in the STEM fields, build meaningful connections through volunteering, and create opportunities for personal and professional growth. By supporting one another, we aim to shine in our careers while uplifting others. Through these efforts, the group strives to cultivate leadership, innovation, and inclusivity within the academic and professional community.

In line with this vision, the group is thrilled to announce the launch of its very first digital magazine, a milestone achievement that celebrates creativity, knowledge sharing, and technological inspiration. One of the most impactful initiatives behind this magazine is ***VisionX****, the flagship competition organized by IEEE WIE SUSL. More than just a contest, VisionX serves as a* ***call to action for undergraduates*** *to explore* ***Artificial Intelligence, the Internet of Things (IoT), and emerging technologies****, while addressing pressing real-world challenges. It encourages participants not only to innovate but also to* ***envision how future technologies can bridge gaps, uplift communities, and create opportunities for women in technology.***

As part of VisionX, the best submissions were then featured in the official digital magazine, giving participants a platform to showcase their ideas, inspire others, and contribute to the knowledge-sharing community of IEEE WIE SUSL.

Building on the success of previous outreach initiatives that empowered students through technology and mentorship, ***Hope 2.0*** *marks the next step in nurturing young minds in rural communities.*

Hope 2.0, an outreach initiative by IEEE WIE SUSL, successfully reached out to ***underprivileged rural students****, bringing the transformative power of technology-based education to their classrooms.*

The program combined ***interactive learning sessions, mentorship, and the establishment of school-based tech clubs such as CodeLab,*** *creating an environment where students could actively engage with technology and develop practical skills. Through these initiatives, Hope 2.0* ***fostered IT literacy, enhanced confidence, and inspired a sustained interest in technology*** *among students. By providing guidance, resources, and mentorship, the program opened doors to new opportunities, empowering young minds to envision a brighter future.*

*Through initiatives like **VisionX** and **Hope 2.0**, IEEE WIE SUSL continues to advance its mission: creating a future where women in engineering not only participate in but also lead the technological transformations shaping tomorrow's world. Through unwavering teamwork, hard work, and dedication, the IEEE WIE Affinity Group of Sabaragamuwa University of Sri Lanka has not only organized VisionX and Hope 2.0 but also led numerous other impactful initiatives.*

*A heartfelt **thank you** goes to all the ExCom members for their dedication, to our Student Counselor, **Mrs. W.V.S.K. Wasalthilake**, Probationary Lecturer at Sabaragamuwa University of Sri Lanka, and **Prof. S. Vasanthapriyan**, Dean of the Faculty of Computing, for their invaluable guidance and support throughout this successful journey.*

Congratulation!

*We are honoured to extend our heartfelt congratulations to **Team "UI Girls"** for achieving the prestigious **1st Runner-Up position at DHACK 2025**, a dynamic and highly competitive hackathon held on 01 November 2025 at the Senate Board Room, University of Sri Jayewardenepura.*

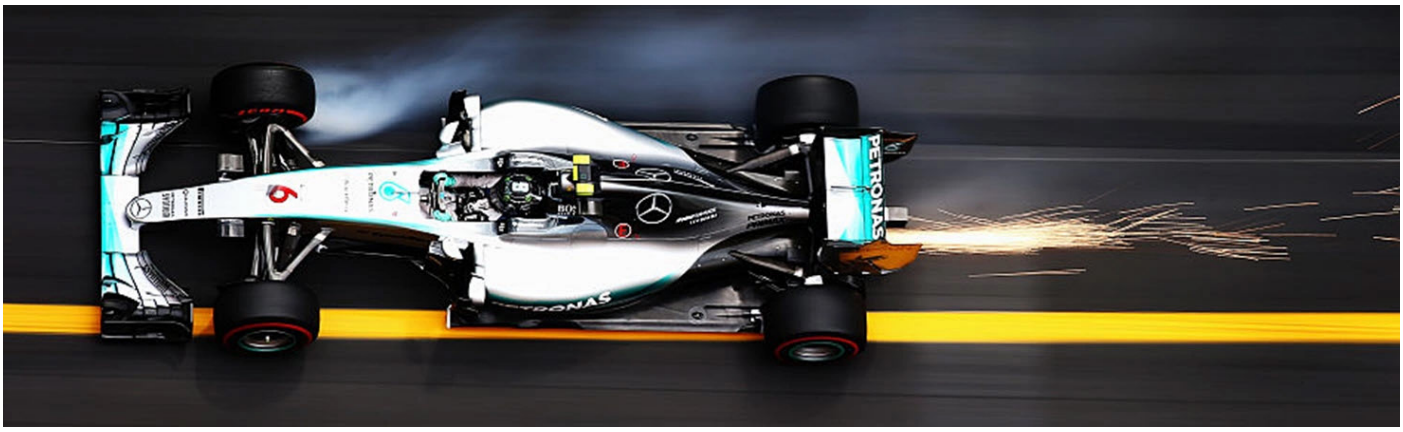
Organised by the Students' Association of the Department of Information Technology, DHACK 2025 brought together some of the most promising young innovators and tech enthusiasts from across the university.

This year's hackathon challenged participants to develop impactful and technology-driven solutions to real-world problems, blending creativity, analytical thinking, and strong technical skills. Amidst fierce competition and numerous outstanding submissions, Team UI Girls stood out with their innovative approach, well-crafted solution, and exceptional teamwork.

The team comprised three talented and dedicated members: Chathurani Nimesha, Sajani Siriwardhana, and Amasha Sithmini. Their remarkable achievement is a testament to their perseverance, problem-solving abilities, and passion for the field of Information Technology. Securing a top position at DHACK 2025 highlights not only their skills but also their potential to excel as future leaders in the tech world.

We are incredibly proud of Team UI Girls and celebrate this significant milestone in their journey. Their success reinforces our commitment to fostering innovation, nurturing talent, and empowering students to take bold steps in emerging technologies.

We look forward to witnessing their continued excellence and future accomplishments in the field of IT and beyond.



From Speed to Strategy. How IT Giants Are Powering the New Era of Formula 1

Mr. Deshan Liyanage, *(deshan.liyanage@gmail.com) Global Process Excellence at Axiata Digital Labs*

Deshan Liyanage is the Senior Manager – Global Process Excellence at Axiata Digital Labs, an Executive Committee Member of the BCS Sri Lanka Section, and a Judge at the National ICT Awards. He is professionally certified with PMP®, CSM®, SAFe® 5 Agilist (SA), and MBCS. With over 17 years of experience in the IT industry, his expertise spans Project and Delivery Management, Organizational Transformation, Process Excellence, CMMI, ISO Standards, Information Security, Business Strategy, and Digital Transformation.

In the electrifying world of Formula 1, every millisecond counts for the pole position.

The roar of engines echoes innovation, and victory is no longer just about raw speed or aerodynamics. In 2025, there will be an estimated 827 million F1 fans around the world. Today's races are won through the power of **data, precision algorithms, artificial intelligence, and real-time strategy**. A web of digital decisions lies behind every sharp corner, pit stop, or overtaking maneuver. Formula 1 has quietly become one of the most advanced places to test technology, and big IT companies around the world have noticed.

From SAP and Oracle to Atlassian, AWS, Salesforce, Chrome, CrowdStrike, and Google, some of the biggest names in technology are now deeply embedded in Formula 1. But they're not just logos on cars or race suits. They're helping teams push the limits of human and machine performance through cutting-edge AI-driven predictions, cybersecurity, data analytics, and more.

So, what's driving this high-octane partnership between big tech and fast cars? Formula 1 is no longer just a sport. It's a global, real-time laboratory where technology and performance meet in the most dramatic way possible. And that makes it the perfect platform for IT companies to demonstrate what their products can do under pressure, in motion, and in front of millions.

Let's take one of the most iconic teams in F1, the Mercedes-AMG Petronas Formula One Team, as a real-world example of how technology drives modern racing. By leveraging F1's AWS-powered analytics for race simulations, CrowdStrike protecting data on and off the track, SAP managing logistics, and Salesforce enhancing fan engagement, the Mercedes F1 team has become as much a digital powerhouse as it is a racing legend.

The Formula One (F1) race calendar is set up like a real global championship. Each season, there are

Grands Prix in cities and countries all over the world, including Europe, Asia, the Americas, the Middle East, and sometimes Africa. Races happen in famous places, like Silverstone in the UK or Monza in Italy, or on one-of-a-kind street tracks like Monaco and Singapore.

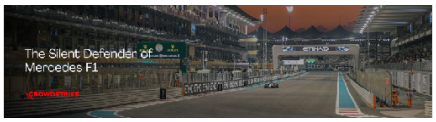
On a race day, it's not just the drivers and pit crew making the decisions; it's also algorithms, dashboards, cloud-powered decisions, and insights. This is no longer just motorsport. It's machine learning in motion, cybersecurity at 300 km/h, and teamwork powered by data. That's exactly why the world's top IT brands are not only watching Formula 1 but also helping shape its future, one race at a time.

In today's Formula 1, a car isn't just built for speed; it's a rolling supercomputer. Each Mercedes F1 car is fitted with over 300 sensors, constantly tracking things like tire temperature, fuel flow, engine vibrations, and even the tiniest changes in wind and weather.

All that data is sent in real-time to race engineers, both at the racetrack and back at team HQ in the UK. That's where AWS (Amazon Web Services) comes into play. F1 leverages AWS to collect, process, and analyze a vast amount of data in real time. Teams like Mercedes AMG Petronas Formula One Team benefit from these insights, running extensive race simulations during a typical race weekend to predict every scenario that could unfold.

- **What happens if it rains mid-race?**
- **Should they switch to a two-stop strategy?**
- **Can they undercut a rival with fresher tires?**

These aren't just guesses; engineers rely on AI and machine learning models (using tools like Amazon SageMaker) to make the smartest possible decisions at lightning speed. What makes AWS so valuable is its reliability. Formula 1 allows no room for delay or downtime. The cloud systems must run securely, globally, and continuously, because in this sport, even one second of hesitation can cost a championship. Through F1's partnership with AWS, teams like Mercedes can turn vast amounts of raw data into actionable insights that make race-day performance even more precise.



While the Mercedes F1 cars chase milliseconds on the track, CrowdStrike works behind the scenes, protecting something just as critical as speed data. Each race weekend, over 500GB of sensitive information flows between the car, engineers, and team HQ, telemetry, tire data, driver health, and strategic plans. Losing or leaking this data could mean losing a race or even a championship.

That's where CrowdStrike comes in, acting as the team's cybersecurity bodyguard. Using AI-driven tools like CrowdStrike Falcon, it monitors every device, server, and data stream in real-time, detecting threats before they become problems. It learns from every race, adapts like a strategist, and ensures that no hacker or cyberattack can disrupt Mercedes' flow of information.

Because of Formula 1 is global, CrowdStrike has to secure operations across borders, networks, and time zones, protecting mission-critical data from Silverstone to Singapore. In short, CrowdStrike keeps the digital side of the team just as sharp, fast, and reliable as the car itself.

Conclusion

In Formula 1, the data now determines the winner rather than the driver's skill or the car's raw power. Today, every race's outcome is determined by millions of data points that are streamed from the car, analyzed in real time, and converted into snap decisions.

Beyond the pit wall, behind the scenes, lies a high-stakes battleground of enterprise intelligence, cloud computing, cybersecurity, and algorithms. Just as important as what happens on the track is what happens in the data analyzing and digital command rooms.

Tech giants like AWS, CrowdStrike, and SAP are ingrained in the team's culture and are more than just logos. One byte at a time, these partners are redefining the future of motorsport by coordinating global logistics, protecting mission-critical data, and running predictive race simulations.

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ALUMINI VIEW

Hello Readers,

I am Thamira Lakmal, currently serving as an Associate Director of Engineering and Software Architect at Uzabase Sri Lanka, where I focus on software architecture and leading teams to build scalable platforms for SPEEDA Edge. My journey began as a proud member of the sixth batch of the Computing and Information Systems special degree program at Sabaragamuwa University of Sri Lanka, which laid the foundation for both my professional and academic growth

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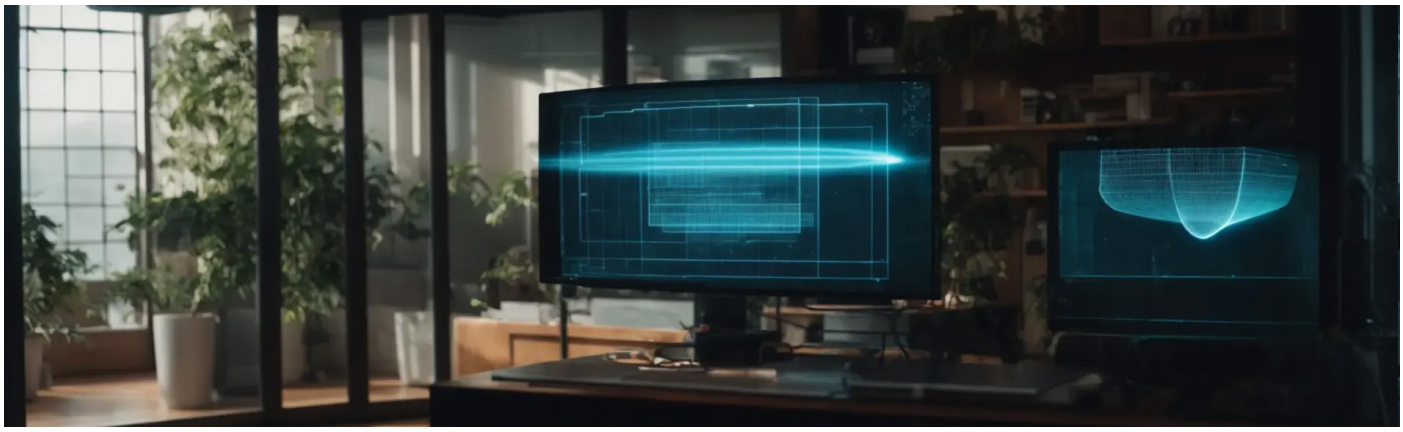
The four-year program opened doors to software engineering, project management, and quality assurance. One of the most valuable experiences was the third-year internship program, during which I joined RS Metrics. There, I had the opportunity to work with cutting-edge technologies such as microservices, CQRS, and event sourcing—technologies that were groundbreaking at the time, much like AI is today. This exposure gave me the industry insights needed to shape my award-winning final year research, which focused on cloud computing, CQRS, and event sourcing.

Beyond academics, my university life was enriched by leadership and extracurricular activities. I served as President of the Society of Computer Sciences (SOCS) and Treasurer of the IEEE Student Branch, where we organized LetMeHack 2K18, the university's first inter-university hackathon.

This event was a milestone, bringing together staff and students across faculties to create a collaborative, innovative environment. Such experiences helped me grow not only as a technologist but also as a leader.

After graduating in 2018, I began my career at Arimac, working across diverse domains—from digital payments with VISA to aviation with Etihad and telecommunications with Ooredoo. With the strong foundation built during my undergraduate years, I quickly advanced from Software Engineer to Senior Technical Lead. In 2022, I joined Uzabase, where I now play a key role in designing and architecting enterprise-level solutions while mentoring engineering teams. At Uzabase, our work with SPEEDA Edge supports global businesses in understanding emerging industries and innovations.

Looking back, I believe the Faculty of Computing has become one of the strongest forces in producing highly talented graduates who excel as software engineers, QA engineers, project managers, and business analysts. The combination of a well-designed curriculum, dedicated lecturers, and industry exposure continues to create opportunities for students to thrive in today's competitive IT landscape.



From 2D Memories to 3D Reality: Exploring Neural Radiance Fields in Modern Visualization

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Rukshika Premathilaka is a Lecturer (Temporary) at Uva Wellassa University of Sri Lanka and a Master of Science fellow in Information Systems at the Sri Lanka Institute of Information Technology. Her research focuses on artificial intelligence, machine learning, natural language processing, and data mining in educational and interactive systems.

Imagine a medical student practicing a complex heart surgery on a three-dimentional (3D) model of the patient's actual heart created from two-dimensional (2D) scanning images such as Echocardiography, Computed Tomography (CT), or Magnetic Resonance Imaging (MRI). This is the revolutionary power of Neural Radiance Fields, also known as NeRFs. This neural radiance field is a specific version of a neural network that marks a transformative evolution in volumetric rendering technology. It performs advanced reconstruction of 3D scenes with the help of photometric parameters from a set of 2D images. Through this article, you can explore the processing mechanism of NeRFs, reveal how they're transforming different fields in the real world, and peer into the innovations they could bring in the future.

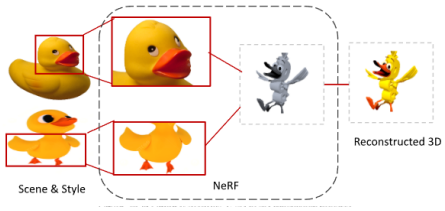

Figure 1: *Visual summary or diagram, to illustrate the transition from 2D to 3D through NeRFs for improved clarity, especially for interdisciplinary readers.*

How it works

Nowadays, we are using a number of graphical tools and technologies to generate computer-rendered 3D images. These tools and technologies utilize various photometric and geometric properties of 2D images, such as light, color, reflection, transparency, orientation, positioning, etc. All these properties play a crucial role in the visual impact of the rendered image.

NeRFs are an AI model that can predict advanced 3D images by using graphical techniques across multiple layers of a neural network architecture to accurately extract and train the aforementioned 2D image's rendering properties. There are several processes involved in the NeRF 3D image rendering process.

Presume that you are tasked with capturing more than simply a snapshot of an ancient statue in a museum. The process begins with what seems like a photoshoot. The monument has to be photographed from-

several vantage points and orientations. These pairs of images and camera poses become the training dataset of our main feature named the NeRFs model. The NeRF procedure begins by evaluating each pixel in the image. A virtual ray from the camera is projected into 3D space for each pixel, representing all possible sites from which light could have arrived. To make it computationally manageable, the system defines near and far boundaries, limiting the search to the area where the chair is most likely to be found.

The model extracts multiple 3D points along each of these rays. Each point is turned into a 5D vector, with three values for spatial coordinates (x, y, z) and two for viewing direction (θ, φ). The model then predicts two essential photometric features called the point's color (RGB) and its density using Multi-Layer Perceptron (MLP). The color property determines the type of light that is emitted, whereas the density (σ) property determines how much light is blocked or transmitted.

Next comes the astonishing phase termed volume rendering. This stage performs a mathematical blending process, which results in the expected color of the entire pixel by merging previously predicted colors and densities. By repeating the preceding steps with the loss calculation and modifying its parameters across the entire dataset, the model develops a sophisticated 3D representation of the 2D scene. Finally, the model produces completely photorealistic 3D photos, as if they were captured by an actual camera.

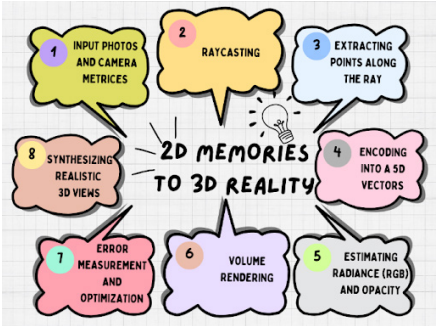

Figure 1: *Visual summary or diagram, to illustrate the transition from 2D to 3D through NeRFs for improved clarity, especially for interdisciplinary readers.*

Use cases of NeRFs

Arts: NeRFs can simulate the entire traditional filmmaking process from stills, and directors would be able to position cameras anywhere within a virtual environment, change lighting on the spot, or even create entirely new scenes that are impossible to do in real life. For example, a film crew can capture photos of an ancient castle for a fantasy film, and NeRFs would make it possible to recreate it digitally, saving costs and allowing artistic license.

Immersive and realistic are phrases used in the gaming community. NeRFs allow game creators to record real-world environments and convert them into 3D worlds to play in. NeRFs can reconstruct entire cities or landscapes from image data, which would require decades of human work to create standard 3D models. This would result in open-world games that reproduce every city block and forest route, providing complete immersion while removing production limitations.

Education and Culture: Natural catastrophes, human activity, and global warming all pose threats to cultural heritage sites around the world. Scientists utilize NeRF to capture photos of places and create long-term digital copies. These copies serve as study materials, teaching resources, and reconstruction models.

NeRF allows for the 3D visualization of a wide range of scientific phenomena, including molecular structure and celestial events. Teachers can present interactive 3D visualizations of planetary orbits or molecules, allowing students to investigate abstract and difficult concepts.

Healthcare: The most likely application of NeRF in medicine is to practice surgeries. Surgeons can practice difficult surgeries on NeRF-based models. A surgeon, for example, can rehearse a complex operation on an immersive 3D simulation after modeling a patient's heart using a sequence of MRI or CT scans. The accuracy increases, the risk is minimized, and the surgeons' confidence grows.

Students of medicine will benefit from 3D reconstructions of organs, tissues, and entire bodily systems. Cadavers and static 3D models can never compete with NeRF's dynamic, photorealistic pictures, which can be accessed from any angle. Students can, for example, observe how light flows through translucent tissue or the density of sick lungs.

In telemedicine, doctors typically deal with 2D scans of patients sent remotely. NeRFs can project images in 3D, giving doctors a greater understanding of the patient's condition. This will significantly enhance diagnosis precision, particularly in developing countries where patients cannot access expert hospitals.

Neural radiation fields (NeRFs),

which bridge the gap between traditional 2D images and 3D models, are a paradigm shift in visual information handling. Although NeRFs are intriguing, they actually are slow, data-hungry, hardware-specific, and hard to implement in dynamic environments. To make NeRFs usable for real-world applications, researchers are attempting to address these problems. This new technology completes the link between what is seen and what isn't through stunning 3D reconstructions.

At a larger level, NeRFs are a shift in paradigm in how we see, build, and engage with digital environments rather than being a technological advance. Future work will probably address reducing processing requirements, enhancing generalizability to large and dynamic settings, and ensuring ethical deployment in terms of privacy and content validity, among other issues.

Exploring 3D reconstruction with NeRF offers new avenues for researchers and innovators in a variety of industries to use these capabilities to reinvent digital experiences.

Congratulation!

*We are proud to share that our student team with their Startup named Meribel (Pvt) Ltd. was recognized at the **SLASSCOM Ingenuity Awards 2025**, held on July 1st at the Taj Samudra Hotel, receiving two prestigious provincial-level awards: **Best Innovative Product – University Category and Best Startup**. This remarkable achievement is a testament to the innovation, dedication, and teamwork demonstrated by Nipuni Marasinghe, Dulshani Samindika, Nayani Abepala, Heshan Navindu, and Saranga Lahiru. Their success brings great pride to the Faculty of Computing and highlights the creative potential of our students. This outstanding achievement reflects the team's creativity, technical excellence, and entrepreneurial spirit. Their innovative efforts have not only brought recognition to themselves but have also added immense value to the reputation of our academic community. We extend our heartfelt congratulations and wish them continued success in all future endeavors!*

Congratulation!

*We are thrilled to announce that Team Meribel, consisting of our talented students from the Faculty of Computing, has secured the **1st Place at the Fast Forward 4.0**, Women Technopreneurs Program, organized by SLASSCOM. The team proudly represented their startup, Meribel (Pvt) Ltd., which is currently being developed around their innovative product, BabyChart. This prestigious program has provided valuable mentorship and startup funding, empowering the team to elevate their idea to the next level. Kudos to Team Meribel for this remarkable achievement and for exemplifying the true spirit of innovation and entrepreneurship!*

Sandra De Zoysa: A Voice of Vision, Defining Leadership in the Digital Age

In an era where technology advances at breakneck speed, Sandra De Zoysa stands as one of the region's most compelling voices in customer experience and digital leadership. As Group Chief Customer Officer of Dialog Axiata PLC, Chairperson of the Digital Customer Experience Expert Working Group for Axiata, and Managing Director of Dialog Business Services, she navigates the intersection of people and technology with clarity, ensuring innovation remains anchored in human value.

With over three decades in ICT, Sandra's journey reflects resilience, foresight, and passion. She broke barriers early, becoming a founding member and the first woman to chair SLASSCOM, Sri Lanka's national chamber for IT and BPM. She went on to establish SLASSCOM WTech and co-found the Women's Chamber for Digital Sri Lanka. Her influence extends globally, from serving on the CX Network's Customer Advisory Board (UK) to her leadership role with the CXPA Asia Regional Council.

Sandra has represented Sri Lanka at more than 500 international conferences, earning recognition for advancing customer experience, women in technology, and progressive leadership. A Fellow of the British Computer Society, she holds a MSc in Digital Transformation Leadership, Executive MBA, and MSc in Human Resource Management. She is also a Certified Lean Six Sigma Black Belt, Certified Scrum Master, and Sri Lanka's only CXPA Certified Customer Experience Professional and accredited Training Provider - credentials reflecting both rigor and vision.

Her impact goes beyond titles, through initiatives such as the Global Mentorship Initiative, EQUALS Champions Leadership Coaching Programme, and her mentorship of women entrepreneurs. As a visiting lecturer at the University of Colombo School of Computing, she shapes the next generation of leaders among others.

Her accolades affirm her influence, but Sandra's story underscores a timeless truth: technology powers progress, yet people define its purpose, and true leadership is measured by the lives it empowers.

ComURS - 2026

THE 3RD COMPUTING UNDERGRADUATE RESEARCH SYMPOSIUM - COMURS2026

Composed by Mrs. W.M.L.S. Abeythunga, Lecturer (probationary) Faculty of Computing, Sabaragamuwa University of Sri Lanka

The Computing Undergraduate Research Symposium 2026 (ComURS 2026), hosted by the Faculty of Computing at Sabaragamuwa University of Sri Lanka, is scheduled for January 28, 2026. This third edition of the symposium continues to provide an essential platform for undergraduate researchers to present their innovative work while cultivating a robust environment of academic inquiry and intellectual collaboration.

The theme for ComURS 2026, "Next-Gen Solutions for a Digitally Connected World," emphasizes the critical role of emerging technologies in shaping our interconnected global society. This focus highlights how computing innovations are transforming digital communication, smart infrastructure, and technological integration across diverse sectors, including education, business, and social services.

Following the remarkable achievements of ComURS 2025, which took place on February 19, 2025, under the theme "Data-Driven Approaches to Global Sustainability," the 2026 symposium builds upon established foundations while exploring new technological frontiers. The previous event demonstrated exceptional student engagement and produced meaningful research contributions that addressed pressing global challenges through computational solutions.

ComURS 2026 will feature comprehensive research presentations across multiple specialized tracks, including the Information Systems Track, the Software Engineering Track, the Data Science Track, and the Open Track. These carefully curated tracks will enable students to demonstrate their research methodologies and findings, showcasing how their innovative approaches tackle contemporary technological challenges and societal needs across diverse computing disciplines.

The symposium represents a vital connection point between academic research and practical industry applications. Distinguished keynote speakers from leading technology companies and research institutions will share insights on current trends, while panel discussions will explore emerging opportunities in the computing landscape. This integration ensures students gain exposure to both theoretical foundations and real-world implementation strategies.

ComURS 2026 promises to enhance the academic profile of undergraduate research within the Faculty of Computing. The event will attract participation from academic supervisors, industry mentors, and technology professionals, creating a dynamic environment for knowledge exchange and professional networking. Students will benefit from constructive feedback on their research while establishing valuable connections for future career development.

The symposium will showcase projects developed by undergraduate students who have dedicated significant effort to addressing complex problems through computational thinking and innovative design. These research initiatives demonstrate the growing capability of undergraduate students to contribute meaningfully to technological advancement and digital transformation initiatives.

Participation in ComURS 2026 offers students invaluable opportunities to develop presentation skills, engage in scholarly discourse, and receive recognition for their academic achievements. The event serves as a stepping stone for students considering graduate studies or seeking to transition into technology-focused careers within the rapidly evolving digital economy.

ComURS 2026 stands as a testament to the Faculty of Computing's commitment to nurturing undergraduate research excellence and preparing students for leadership roles in tomorrow's technology landscape. The symposium continues to evolve as a premier academic event, inspiring the next generation of computing professionals to develop solutions that will define our digitally connected future.

Congratulation!

*We are proud to announce that Team CommQuest, comprising **Pasindi Perera**, **Mevini Silva**, and **Navindu Ramanayaka**, a group of talented 3rd-year undergraduates from the Faculty of Computing, has been selected as one of the Top 10 Finalists at the **ComFix 2025 Communication Ideathon**. The event was held on June 1st, 2025, at the Department of Electronic and Telecommunication Engineering, University of Moratuwa, and was organized by the IEEE Communication Society Student Branch Chapter, University of Moratuwa. Well done, Team CommQuest! Your innovation and teamwork have been truly inspiring.*

Congratulation!

*We are proud to celebrate the remarkable achievement of our student team from the Faculty of Computing, Sabaragamuwa University of Sri Lanka, for their outstanding performance at the **National ICT Awards – NBQSA 2025**. The team's innovative software project, Elefence360, earned a **Merit Award under the Tertiary Student Project (Technology) category**, and they have also been nominated to represent Sri Lanka at the International ICT Innovative Service Awards (InnoServe Award 2025 – Taiwan).*

*The team consists of our talented third-year students; **M. I. Nuhas Ahamed, R. M. Ishan, S. K. A. Sumathipala, C. P. Danthanarayan, and G. W. P. G. M. Gunasekara** whose creativity, teamwork, and dedication have brought great pride to the Faculty. Their success is a testament to the innovative spirit and academic excellence nurtured within our computing community. The award ceremony took place on 10th October 2025 at the Taj Samudra Hotel, Colombo, where our team's project stood out among many strong contenders, earning them this well-deserved recognition.*

Congratulations once again to Team Elefence360 and we look forward to witnessing many more of your achievements in the future.

Celebrating the Success of Our Graduates at the 26th General Convocation 2025!

We are delighted to extend our heartfelt congratulations to the graduates of the Faculty of Computing who were conferred the BSc (Honours) Degree in Computing and Information Systems at the 26th General Convocation of the Sabaragamuwa University of Sri Lanka, held on 22nd October 2025. Dear graduates, this proud moment marks the culmination of your dedication, hard work, and resilience. Your achievements reflect not only your commitment to academic excellence but also your determination to grow and succeed despite challenges along the way.

This remarkable milestone stands as a shared success—made possible through the unwavering support and guidance of many. We express our sincere appreciation to the Vice Chancellor of the Sabaragamuwa University of Sri Lanka, the Dean of the Faculty of Computing, the Deans of other Faculties, Heads of Departments, as well as all academic, visiting, and industry collaborators for their continuous encouragement and mentorship. Our gratitude also goes to the administrative, academic-support, and non-academic staff whose tireless efforts have contributed immensely to this accomplishment.

As you embark on new professional and personal journeys, we wish you every success and fulfillment in the years ahead. May the knowledge, skills, and values you gained at SUSL guide you toward a future filled with purpose, innovation, and meaningful achievements!

Are Undergraduates Becoming Emotionally Dependent on AI Chatbots?

Ms. H.B.I.M. Samarasinghe, *(hbimsamarasinghe@std.appsc.sab.ac.lk) Department of Computing and Information Systems, Faculty of Computing, Sabaragamuwa University of Sri Lanka.* ***Mrs. P.K.D.K. Kaushalya*** *(kaushalya@foc.sab.ac.lk) Department of Computing and Information Systems, Faculty of Computing, Sabaragamuwa University of Sri Lanka*

Ms. HBIM Samarasinghe is an undergraduate of the Department of Computing and Information Systems at the Faculty of Computing, Sabaragamuwa University of Sri Lanka. She is studying on the emotional dynamics between humans and AI in modern life.

Mrs. PKDK Kaushalya is a Lecturer (Probationary) attached to the Department of Computing and Information Systems, Faculty of Computing, Sabaragamuwa University of Sri Lanka. She is an academician passionate about examining how technology, emotion, and society intersect to shape modern human experiences.

Artificial intelligence is no longer a futuristic concept, but it has already become a regular part of our daily lives. For university students in particular, AI chatbots have quickly turned into constant companions. More than professionals in the IT field, students are increasingly dependent on these tools, using them for a wide range of purposes: from completing assignments and clarifying subject-related questions to engaging in casual conversations or even discussing matters they may feel uncomfortable sharing with others [1]. Chatbots are appealing because they provide instant responses, listen without judgment, and are available at any time, making them especially useful for students in Sri Lanka who are juggling academics, family expectations, social pressures, and personal struggles. Yet, this growing reliance comes with concerns. Across the world, younger generations, from millennials to Gen Z, are developing strong emotional bonds with chat bots. For some, these systems serve as friends, complete with nicknames; for others, they even take on the role of partners. While such relationships can offer comfort, they also raise important questions: Are students becoming too dependent on AI for emotional support? A recent interview with a psychologist on a leading television channel revealed troubling insights. Some students reportedly follow chatbot advice without question, and in certain cases, their actions have posed serious risks to both their mental health and overall safety. Signs of dependency may include missing access to a chatbot or preferring conversations with AI over interactions with real people.

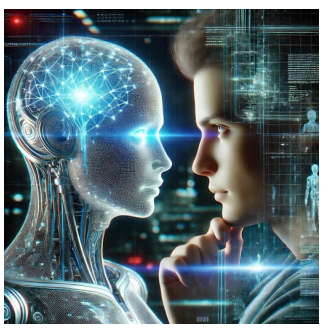

Image Source: *abby.medium.com*

Our research investigates this emerging issue among Sri Lankan undergraduates. We aim to explore which chatbots are most frequently used, the reasons behind their usage, and which features, such as memory, personalization, or emotional tone, encourage students to form attachments. We also examine patterns of usage: whether chatbots are primarily used for academic assistance or for emotional companionship, and what implications these patterns may have for students' social interactions and well-being.

The study involves a survey of undergraduates from both public and private universities. By analyzing responses, we intend to differentiate between students who engage with chatbots for academic tasks and those who seek them out for emotional comfort. Insights from international research suggest that frequent reliance on chatbots for emotional support may increase dependency levels, and we aim to determine whether similar trends can be observed within the Sri Lankan context [3].

This research is significant because while AI has clear benefits that it can improve mood, reduce stress, and support learning, it cannot replace genuine human relationships. Over-dependence on chatbots for emotional needs risks weakening students' mental health, social connections, and resilience. Striking a balance between using AI as a supportive tool and maintaining meaningful human interactions is therefore essential.

As one of the pioneering studies in Sri Lanka on this subject, our work seeks to highlight the importance of digital well-being and raise awareness among both students and educators. By understanding how emotional dependency on chatbots develops, universities can take proactive steps to guide students toward healthier, more balanced use of AI in both their academic and personal lives.

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Congratulation!

*We are delighted to extend our heartfelt congratulations to our brilliant student team, "**Team XOR**", from the Faculty of Computing, Sabaragamuwa University of Sri Lanka, for achieving the prestigious position of **2nd Runner-up at ReviveNation**, a highly competitive tertiary-level competition held under Codefest 2025. The event was organized by SLIIT in collaboration with the Ministry of Digital Economy and the ICTA, bringing together some of the most talented and innovative young minds from universities across the country.*

*Representing SUSL with great pride, **Shanika Dilrukshi**, **Kavindu Praneeth**, **Vishaka Lakmali**, and **Anujika Sasindi** showcased their creativity, technical expertise, and problem-solving ability by addressing real-world challenges faced by the public sector. Their outstanding performance earned them not only recognition as one of the top-performing teams but also a well-deserved cash prize of LKR 50,000.*

The ReviveNation competition served as a remarkable platform for university students to gain exposure, enhance their innovation and teamwork skills, and engage in practical problem-solving. At the same time, it offered the government innovative and actionable ideas to further its mission of driving digital transformation within the country. This achievement is a testament to the dedication and talent of our students, as well as the commitment of the Faculty of Computing to nurturing future-ready graduates who can create meaningful impact in society.

Impact of AI in Entrepreneurship in Sri Lanka

Mr. Mahendrarajah Vasavan, *(email: mahenvas@gmail.com) Faculty of Applied Sciences, Department of Physical Sciences and Technology, Sabaragamuwa University of Sri Lanka.*

Mr. M. Vasavan is a fourth-year undergraduate at the Department of Physical Sciences, Faculty of Applied Sciences, Sabaragamuwa University of Sri Lanka. His research interests include machine learning, artificial intelligence, and robotics.

The business environment in Sri Lanka is facing a radical shift with the help of Artificial Intelligence (AI). In the last ten years, AI technologies have changed their status of a conceptual experimental tool and became viable business tools, which have fundamentally changed the way small startups and large enterprises are run. To the Sri Lankan entrepreneurs, AI is not just a technological development but a way to transcend the limitations of resources, compete internationally, and enhance economic growth to be sustainable. As a country that was recovering in the post-pandemic economic context and aims to achieve the goal of sustainable development, Sri Lanka finds itself at the crossroads. AI implementation in entrepreneurship is not a choice but a working necessity [1]. The AI-based tools are empowering small business owners with data-driven intelligence, intelligent automation opportunities, and complex customer interaction techniques that previously were exclusive to large companies with significant resources.

The collaboration between AI and entrepreneurship is of specific potential to the youth of Sri Lanka and the small-to-medium enterprises (SMEs), who are the de facto of the economic future of the country. This synergy will lead to innovation and investment attraction, as well as make the establishment of scalable businesses able to compete in the local and international markets possible by 2025 [2].

Key Trends in AI and Entrepreneurship in Sri Lanka

By 2025, the following AI trends are redefining Sri Lankan entrepreneurship:

AI-Driven Startups: Sri Lankan startups are making continued efforts to take advantage of AI technologies to provide competitive advantages inthe markets they serve. Predictive analytics will allow enterprises to predict customer behaviour, improve inventory control, and make effective strategic decisions. E-commerce systems are adopting AI-based personalization engines, which examine browsing history,

shopping/purchase history, and preferences of customers to provide customers with personalized shopping experiences. At the same time, artificial customer service technologies such as chatbots with artificial intelligence and virtual assistants are enabling startups to operate 24/7 without commensurate operational expenses [2].

Such AI applications are game changers, especially to a startup with limited resources, where they have democratized features that used to be a huge investment of capital and technical knowledge.

Fintech Revolution Through AI Integration: Fintech in Sri Lanka has become a leading participant in the use of AI. Major banks Hatton National Bank (HNB) and Sampath Bank have introduced AI-based systems that are radically transforming customer relationships and service provision. Creditworthiness based on alternative data sources and advanced algorithms is assessed by AI-driven digital loan approval systems, which allow them to make decisions rapidly and increase financial inclusion for formerly underserved groups.

The chatbots installed by these institutions can answer regular customer questions, make transactions, and give individual customer-based financial advice, which saves the institutions a lot of time on waiting and reduces operational expenses, thus improving customer satisfaction. This technological breakthrough shows that existing organizations can use AI to stay competitive and serve the digital-native generation in a better way [1].

Agri Tech Solutions for Agricultural Optimization: The agricultural sector is also among the Sri Lankan economic pillars, and AI is changing this classical sector. Individual companies like CropIn have introduced AI-based predictive algorithms specifically dedicated to the agriculture of Sri Lanka in relation to the tea and paddy fields. These systems analyze satellite images, weather, soils, and previous yield data to provide constructive information to the farmers on how to produce crops to the maximum.

Artificial intelligence-powered crop monitoring systems can be used to help farmers make informed decisions regarding irrigation, application of fertilizers, and pest management that lead to improved yields and reduced resource wastage. This extreme economic importance in a country where tea exports contribute greatly to the foreign exchange earnings is caused by such interventions brought about by the technology[2].

Tourism and Hospitality Enhancement: The tourism sector is one of the most important sectors of the economy, and Sri Lanka is adopting AI in order to offer its clients customized experiences and increase its market reach. Startup companies are creating AI-based travel recommendation services that assess traveler preferences, trends in the season, and social media to build tailor-made itineraries of such destinations as Kandy, Ella, and Galle.

The small tourism operators, including local tour guides and small hotels with boutique services, can compete with bigger tourism operators with the help of these intelligence systems, which provide complex, personalized services. Dynamic pricing algorithms built with AI can help these companies to maximize their income at the same time as they stay competitive, and multilingual chatbots using AI can be used to break the language barriers with foreign customers [1].

Generative AI in Business: Generative AI technologies are making creative and marketing services available democratically to resource -limited SMEs. These tools allow small businesses to create marketing content, product descriptions, social media posts, and visual designs at a professional level without the assistance of special agencies. The generative AI will help to prototype new products quickly and create brand identities and customer communication strategies that enable the Sri Lankan SMEs to make a professional image in international markets and speed up their growth curves [2].

Hyper-Automation in SMEs: The automation, Hyper-automation. This is the combination of several automation technologies based on AI and allows SMEs to simplify the workflow, cut expenses, and maximize productivity. Intelligent customer relationship management (CRM) systems, smart accounting systems, automated inventory management and predictive maintenance systems are enabling small businesses to act as large organizations. Through this operational change, especially in the competitive business environment of Sri Lanka, cost efficiency and responsiveness are often the determinants of success and survival [1].

Local Startups & Case Studies

The practical cases demonstrate the emerging tendency towards the use of AI in entrepreneurship in Sri Lanka. Crop monitoring systems that utilize AI are being designed in the agricultural sector to improve the output of tea and paddy products, resulting in efficient utilization of resources and output[2]. HNB and Sampath Bank have rolled out AI chatbots and AI-based digital loan approval systems in the fintech sector that have led to the disruption of customer interaction processes[3]. Small tourism service providers are accessing the global markets with the help of the AI applications being used by tourism startups to deliver personalized experiences to the client[1].

The first area that AI is starting to benefit from in creative sectors and cultural heritage is the digital exhibition and personalized campaigns, which is an AI takeover. These technologies enable the local craftspeople to sell their handicrafts in foreign countries, and AI-based translators assist in addressing the issue of language barriers between Sinhala, Tamil, and English so that entrepreneurs can find customers in various locations[2]. Multilingual AI models can work within regional languages and other local dialects, which further increases market access.

The role of AI in entrepreneurship.

The role of AI in the business world of entrepreneurship has been innovating. It has led to efficiency and productivity by cutting down on manual processes, ensured sustainability via improved management of resources in agriculture, energy, and waste disposal, and facilitated inclusive growth through the provision of loans and digital services to the underserved areas and communities. AI delivers the findings based on data, which makes businesses technologically competitive and generates new postings in AI engineering, digital strategy, and data analytics [1]

To boost this change, the government has come up with various policies and measures. ICTA has a roadmap to digital integration in the Digital Economy Strategy 2024-2030 [3], but the development of a National AI Roadmap is intended to help turn Sri Lanka into an Asian startup hub in AI [2]. The accelerators and innovation laboratories provide foreign partnering, funding, and mentoring to emerging ventures with the help of AI.

The potential developments of the future are to incorporate AI with blockchain to ensure the existence of transparent supply chains of tea, spices, and gems; enhance renewable energy systems; support AI-based health care applications and telemedicine in rural populations; and offer low-cost AI-based Robot-as-a-Service (RaaS) to SMEs [1][2]. Nevertheless, there are still certain challenges, such as how to cope with the problem of job displacement by upskilling the workforce, maintaining transparency and ethical principles in artificial intelligence systems, making AI tools available in rural settings, addressing infrastructural inequality and skills shortages, lowering the price of AI technology, and establishing sufficient regulatory frameworks [3].

Conclusion

Artificial intelligence is a revolutionary period in the entrepreneurship of Sri Lanka. The inclusion of AI technology in industries such as agriculture and tourism, fintech, and the creative industry proves the importance of innovation as the driving force of economic growth and overcoming the problems of the local market. Through the integration of the analytical capabilities of AI, Sri Lankan entrepreneurial innovativeness and cultural diversity, businesses are becoming increasingly competitive, efficient, and globally interconnected [1].

The trip has brought out major opportunities as well as actual challenges. Infrastructure and cost constraints and skill shortfalls are some of the challenges that need integrated solutions[3]. Nevertheless, the local startup progress, the government's dedication to such efforts as the National AI Roadmap, and successful applications in banking, agriculture, and tourism areas show that the challenges are being overcome[2].

In Sri Lanka, the future of AI in entrepreneurship lies in further focus on its ethical application, human resources upskilling, and rural access to AI technologies. These tools will also enable a better generation of entrepreneurs, especially the youth and SMEs, to come up with innovative, sustainable businesses that can help the countries develop [1]. Through a long-term effort of government, investors, and academia, AI-powered entrepreneurship can make Sri Lanka an innovative country, promoting inclusi-

ve development and defining the future of the Sri Lankan economy in the digital era [2][3].

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Congratulation!

*We are delighted to extend our heartfelt congratulations to Team "**UI REBELS**" for securing a place among the **Top 10 Finalists at Hackelite 2.0**, one of Sri Lanka's most anticipated and intellectually stimulating hackathon events. Organised by the IEEE Student Branch of the University of Moratuwa, Hackelite 2.0 brought together some of the brightest young minds and emerging innovators from universities and institutions across the country.*

This year's competition challenged participants to solve real-world problems using creativity, technical knowledge, and innovative thinking. Amidst intense competition and a wide array of impressive solutions, Team UI REBELS stood out for their originality, strong conceptual understanding, and the practical applicability of their project. Their ability to collaborate effectively, think critically under pressure, and deliver a polished and impactful solution earned them a well-deserved position in the top tier of the competition.

Reaching the Top 10 is a testament not only to their technical proficiency but also to their perseverance, passion, and commitment to continuous learning. Their achievement reflects the high calibre of our students and the growing culture of innovation and excellence that we strive to foster.

We are immensely proud of Team UI REBELS for this outstanding accomplishment. Their performance at Hackelite 2.0 serves as an inspiration to all aspiring innovators and further strengthens our belief in the immense potential of our student community.

We look forward to seeing them continue to push boundaries, embrace challenges, and reach even greater heights in the future.

IEEE CS CHAPTER

CONNECT WITH CS — THE FIRST MILESTONE FOR THE IEEE COMPUTER SOCIETY STUDENT BRANCH CHAPTER AT SABARAGAMUWA UNIVERSITY OF SRI LANKA

Composed by Mr. A.G.S.L. Wijekoon (agslwijekoon@std.appsc.sab.ac.lk), Vice Chairperson, and Mrs. W. T. Saranga Somaweera (ssomaweera@foc.sab.ac.lk), Counselor, IEEE Computer Society Student Branch Chapter at Sabaragamuwa University of Sri Lanka.

The IEEE Computer Society (CS) Student Branch Chapter at Sabaragamuwa University of Sri Lanka was formed to kindle genuine interest in computer science and related technologies among undergraduates, and to connect academic learning with practical application. Under the IEEE Student Branch and with the support of the IEEE Sri Lanka Section, the chapter exists to help students understand the vision and mission of the IEEE Computer Society, engage with its opportunities, and pursue professional development through activities that promote learning, leadership, innovation, and collaboration. Within that purpose, the chapter reached a significant early milestone with "Connect with CS – Awareness Session on IEEE Computer Society," conducted via Zoom on 05th of April, 2025.

Designed as an on-ramp for students, the virtual session set out to introduce the breadth of what the IEEE Computer Society offers and to encourage active membership. It invited participants to look beyond the classroom and see how involvement in a professional community can sharpen skills, open networks, and create pathways into future roles. The emphasis was clear and consistent: understanding what the IEEE Computer Society stands for, recognizing how it contributes to the global computing landscape, and identifying the many entry points for student engagement—whether through learning, organizing, or leading.

A focal point of the program was the keynote by Professor Anuradha Jayakody, Senior Member, IEEE; Past Chair of the IEEE Computer Society, Sri Lanka Chapter. His address highlighted the global impact of the IEEE Computer Society and its role in shaping the future of Computing. Equally important, he illustrated how students benefit from involvement by taking up opportunities that foster leadership, innovation, and collaboration. The keynote encouraged participants to explore the IEEE ecosystem with purpose: to learn from established communities, to contribute to shared goals, and to grow both personally and professionally through sustained engagement. The event's focus on vision and mission, its keynote perspective on global impact, the formal introduction of leadership, and the dialogue with students combined to create a coherent first step. It aligned expectations, clarified values, and made participation feel accessible.

As the chapter moves forward, the message remains consistent with what was shared during the session: participation matters, and students have multiple ways to engage. Whether through attending the next workshop, joining a networking activity, or stepping into a volunteer role within the committee structure, there is room for every interested student to be part of what the IEEE Computer Society represents on campus. The chapter's leadership—introduced during the event—provides the structure to carry plans into action, while the emphasis on professional development ensures

that engagement translates into meaningful progress for each participant.

"Connect with CS – Awareness Session on IEEE Computer Society" *fulfilled its purpose as the chapter's* ***first milestone****, bringing students into closer contact with the IEEE Computer Society's vision, highlighting the benefits of involvement, and laying the groundwork for sustained activity. It affirmed the chapter's commitment to creating opportunities for learning and leadership and positioned the IEEE Computer Society Student Branch Chapter at Sabaragamuwa University of Sri Lanka as a place where students can begin, belong, and build.*

Congratulation!

We are thrilled to announce that Team Pixel Mates, representing the Department of Computing and Information Systems (DCIS), has emerged as the ***1st Place Winners*** *at* ***DHack'25 – the annual business idea generation and mobile app design competition*** *organised by the Students Association of Information Technology, Faculty of Management, University of Sri Jayewardenepura.*

DHack is a prestigious platform that challenges undergraduates to tackle real-world problems through innovative design thinking, user research, prototyping, and impactful presentations. This year's final event took place on 1st November 2025 at the Senate Board Room, bringing together some of the brightest design and tech talent from across the university.The Winning Team – Pixel Mates included Dulana Malshan, Savindu Marapana and Hirun Thishakya. All three members are second-year undergraduates from the Department of CIS, and their remarkable performance is a testament to their creativity, teamwork, and technical excellence.

We extend our heartfelt congratulations to the team for this outstanding achievement and for bringing pride to the department and university!

Congratulations to Mr. Ravindu Dharmadasa: Gold Medalist for Best Academic Performance!

We are delighted to extend our heartfelt congratulations to Mr. Ravindu Dharmadasa for being honored with the Thambipillai Thambiratnam (J.P.U.M.) Attorney-at-Law Memorial Gold Medal, presented by Professor S. Vasanthapriyan. This prestigious award is presented to the top-performing student in Computing and Information Systems.

This exceptional accomplishment includes earning a First Class Degree with the highest Final Grade Point Average (FGPA) in the Degree Examinations, recognized during the 26th General Convocation of Sabaragamuwa University of Sri Lanka on 22nd October 2025.

His dedication, perseverance, and excellence have set a remarkable example for the peers as well and may his achievements continue to inspire us all!

STUDENT RESEARCH PUBLICATIONS

JOURNAL

B. Kuhaneswaran, **A. Vadivel**, P.M.A.K. Wijerathne, N. Ravikumar, B. T. G. S. Kumara, A. Sivapalan, et al., "Exploring the Educational Landscape of ChatGPT: A Topic Modeling Approach on Twitter Data," EDITORIAL NOTE, vol. 4, pp. 1-12, 2024.

C. Geekiyanage, **L. Prabodhani**, R.M.K.K. Wijerathna, and L. Lekamge, "Digital Twin Technology as a Catalyst for Sustainable Development in the Construction Sector: A Systematic Literature Review," International Journal of Research Publication and Reviews, vol. Vol 6, pp. 3381-3387, February 2025.

C. Geekiyanage, **L. Prabodhani**, R.M.K.K. Wijerathna, L. Lekamge, and J. Erandi, "Usage of Digital Twin Technology for Sustainable Development in Sri Lanka's Construction Sector," International Journal of Research Publication and Reviews, vol. 6, pp. 2755-2768, 2025.

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EXTENDED ABSTRACTS

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C.K. Kodithuwakku, U.A.P. Ishanka "Curriculum Model for Artificial Intelligence in Early Childhood Education in Sri Lankan Preschools" in Applied Data Science & Artificial Intelligence (ADScAI) Symposium 2025.

Congratulations to Mr. Ishan Randika for Winning the Best Undergraduate Researcher Gold Medal!

We are delighted to extend our heartfelt congratulations to Mr. Ishan Randika for being awarded the Best Undergraduate Researcher of Computing Gold Medal by the Department of Computing and Information Systems at the 26th General Convocation of Sabaragamuwa University of Sri Lanka, held on 22nd October 2025.

His outstanding final-year research, titled "Motion Capturing in Cricket with Bare Minimum Hardware and Optimized Software and Machine Learning to Enhance Performance," conducted under the expert guidance of Professor BTGS Kumara and co-supervision of Mr. GDKV Maduwantha and Mr. DKA Induranga, has been recognized for its excellence and significant impact in the field. The dedication and hard work demonstrated in this project have resulted in several reputable publications and conference presentations, underscoring the importance of his research contributions. As a Faculty committed to fostering a culture of research and innovation, we also extend our sincere appreciation to Dr. Piumi Ishanka, Coordinator of Final Year Research, and Mrs. Adeeba Saleem, Assistant Coordinator, for their invaluable support and guidance.

We congratulate Mr. Ishan Randika once again on t his remarkable achievement. Your success serves as a true inspiration to all aspiring young researchers.

Can Machines Read Feelings? Exploring the Rise of Emotion Aware AI

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Artificial Intelligence is learning to do more than crunch numbers or follow commands. It's beginning to feel, not in the human sense, but through advanced sensing and interpretation AI systems are now capable of detecting and responding to emotions. This emerging field, often called Affective Computing or Emotion Aware AI, is reshaping how we interact with machines, offering both incredible promise and complex ethical challenges. In this article, We explore how technology is learning to recognize emotions, what it could mean for industries from healthcare to marketing, and where we need to draw the line between helpful and harmful emotional AI.

Beyond Words. Reading the Unspoken

Human emotions are rarely expressed through words alone. A subtle shift in tone, a fleeting micro expression, or a quickened heartbeat can say more than a thousand sentences. Emotion Aware AI is an AI that is designed to pick up on these signals.

Through facial recognition, AI can analyze microexpressions. For using them, it can detect happiness, anger, or sadness. Voice analysis can capture stress levels, confidence, or excitement based on pitch, tempo, and pauses. In more advanced research, even physiological data such as heart rate variability or skin conductance helps machines "sense" how we feel in real time.

The result? Machines that respond more naturally, intuitively, and empathetically than ever before.

Empathy in Action. Where It's Already Making a Difference

Emotion Aware AI is not just a lab experiment. It's already stepping into classrooms, hospitals, and workplaces. In education, platforms are being developed to adjust lesson plans based on student frustration or boredom. It is making learning more adaptive and engaging. In healthcare, AI companions are being tested to monitor emotional well-being, detecting early signs of stress, anxiety, or potentially alerting caregivers before a crisis develops.

Even in customer service, chatbots capable of sensing frustration can escalate conversations to human agents sooner, preventing problems from turning into complaints

Marketing with Mood Personalization Like Never Before

For businesses, understanding emotion is a powerful tool. Emotion Aware AI could tailor advertisements, product recommendations. Even the tone of a website is based on a customer's mood at the moment of interaction. A stressed shopper might see calming offers. An excited one might be guided to bold, adventurous choices.

But with power comes responsibility, and the potential for manipulation grows. If emotional data is exploited, the line between personalized service and psychological pressure could vanish.

The Ethical Frontier: Privacy, Consent, and Control

Collecting emotional data is more personal than tracking clicks or purchases. It touches on a person's inner state often without their conscious input. Who owns that data? How should it be stored, used, or shared?

Policymakers and technologists must define clear boundaries. Emotional AI should enhance human life, not exploit vulnerability. Consent, transparency, and strict safeguards will be essential if society is to embrace machines that "feel" us out.

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A Future That Feels Different

Emotion Aware AI represents a shift in how we relate to technology. From emotionless tools to empathetic partners, the journey is just beginning. Done right, this technology could improve mental health care, enhance learning, and make digital experiences feel more human. Done wrong, it risks turning our most private feelings into just another layer of data to be mined.

One thing is certain: the age of emotionally intelligent machines is coming. The question is not whether machines will read feelings, but how we'll ensure that when they do, it's in the service of humanity, not control over it.

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Beyond the Hype: Vibe Coding's Fast Wins and Hidden Costs

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Vibe coding, building software by conversing with an AI instead of hand-crafting every line, has surged because it accelerates prototypes, reduces syntax overhead, and turns intent into code quickly, especially for exploratory work and early testing. Yet the very speed that makes it attractive can mask gaps in understanding, turning short-term wins into long-term fragility and security debt if teams skip fundamentals like design review, tests, and threat modeling.

- Faster prototyping and iteration: Teams report material productivity gains when assistants are used to scaffold routines, boilerplate, and tests, with large field studies showing roughly 26% increases in shipped pull requests across thousands of developers.
- Lower activation energy: Natural-language prompts reduce context switching and syntax friction, letting developers focus on shaping product behavior over mechanical editing.
- Onramp for discovery: Conversational coding helps explore unfamiliar libraries and patterns quickly before investing in full designs.

The hidden costs in practice

- Fragile logic and tech debt: Accepting large, unreviewed AI blocks can embed copy-paste patterns and unclear dependencies that are hard to reason about later, compounding maintenance risk.
- Context mismatches: Models can produce workable but unsuitable solutions which technically correct yet misaligned with domain rules, performance needs, or internal policies.
- Data exposure risks: Poorly configured assistants can transmit sensitive code or secrets to external services during prompt context sharing.

Security: the biggest red flag

- Elevated vulnerability rates: A 2025 multi-model assessment reported critical security flaws in 45% of AI-generated solutions across 80 tasks, with Java exceeding 70% failure on security criteria, and common misses included XSS and log injection defenses.
- Empirical weakness in the wild: Analyses of Copilot-generated code in live GitHub projects found high likelihoods of security weaknesses across dozens of CWE categories, including several from the CWE Top-25.
- Detection gaps in AI review: Evaluations of AI code review features show frequent failure to catch critical vulnerabilities like SQLi and XSS, focusing instead on low-severity issues such as style.
- Systemic issue, not just model size: Studies note larger models don't consistently reduce security failures, pointing to structural limitations without rigorous process controls and specialized scanning.

Typical production failure modes

- Missing authorization and input validation, leading to privilege escalation and injection risks.
- Weak or default configurations and unpinned dependencies, enabling supply-chain compromise.
- Hard-coded secrets and insecure error handling that leak sensitive information.

Governance that works

Treat AI as a junior partner, which is great for drafts, never the final authority, and enforce the same engineering gates used for human code.

- Guardrails, not bans: Publish "no blind paste," require architecture fit, and mandate basic threat thinking for any AI-assisted change.
- Shift-left security: Enforce linters, SAST, dependency, and SBOM scans, and CI policies that block unpinned or vulnerable packages at PR time.
- Test-first clarity: Ask the assistant to generate unit/property/fuzz tests that define expected behavior before merging.
- Provenance and privacy: Never paste secrets; record AI assistance in PR templates for auditability and later refactoring.
- Skills maintenance: Mix AI-assisted sprints with "read-the-code" drills, design reviews, and post-mortems to keep fundamentals sharp.

A practical workflow

- Keep prompts small and specific; request explanations and threat considerations alongside code.
- Require tests with edge cases, error paths, and negative scenarios; prefer defense-in-depth templates.
- Pin dependencies, review transitive trees, and track known CVEs; fail CI on policy violations.
- Use specialized security tooling (SAST/DAST/IAST, secrets scanning, code review checklists) rather than relying on AI review alone.

Balanced evidence on outcomes

AI assistance can speed delivery but often increases rework and review volume, reflecting a double-edged effect: more output, more maintenance. Across studies, assistants boost throughput and perceived focus, but security remains an independent concern requiring explicit controls.

Vibe coding is excellent for prototypes and discovery, but production demands understanding, tests, and accountability. Speed does not replace engineering discipline. Use AI to move faster while maintaining the responsibility to design, review, and secure what ships.

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STUDENT PROJECT

BRIDGING COMMUNICATION GAPS WITH A MOBILE APP – UNITYBRIDGE

Supervisor: *Mrs. Subodhi Wasalthilaka, Lecturer (probationary), Department of Software Engineering, Faculty of Computing, Sabaragamuwa University of Sri Lanka.*

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Introduction

In today's technology-driven world, communication is essential for social, educational, and professional participation. However, differently-abled individuals, especially those with hearing, speech, or visual impairments, face persistent challenges in accessing modern communication tools. Existing apps such as instant messengers or virtual assistants often overlook these unique accessibility needs, leaving a large segment of society digitally excluded.

Recognizing this pressing issue, our team of undergraduate developers has created UnityBridge, a revolutionary multi-modal mobile application that integrates sign language detection, speech-to-text, text-to-speech, and a virtual assistant into a unified platform. Designed specifically for the Sri Lankan context with support for Sinhala Sign Language, UnityBridge aims to empower differently-abled individuals and promote inclusivity in digital communication.

The Modern Accessibility Struggle

Differently-abled individuals face multiple barriers when interacting with existing communication technologies:

- **Hearing-Impaired Users** – *Struggle to engage in voice-based communication platforms.*
- **Speech-Impaired Users** – *Find it difficult to express themselves in real-time conversations.*
- **Visually-Impaired Users** – *Cannot rely solely on text-based platforms without screen reader support.*

Most current tools are fragmented, forcing users to switch between apps (one for sign language, one for speech-to-text, another for messaging). This fragmented approach is inefficient and discouraging. UnityBridge eliminates this gap by providing all features in a single, user-friendly mobile app.

Science Behind UnityBridge

UnityBridge integrates state-of-the-art AI and accessibility technologies to create an inclusive platform:

1. **Sign Language Detection**
    - *Uses MediaPipe and TensorFlow Lite with custom-trained models to recognize Sinhala sign gestures.*
    - *Converts recognized gestures into text or speech for real-time communication.*

2. ***Speech-to-Text Conversion (STT)***

   - *Powered by advanced voice recognition libraries, UnityBridge transcribes spoken language into text with ~80% accuracy in quiet environments.*
   - *This helps users with hearing impairments to follow conversations.*

3. ***Text-to-Speech Conversion (TTS)***

   - *Converts written text into natural speech using Expo Speech libraries.*
   - *Especially useful for visually-impaired users, making digital communication accessible.*

4. ***Virtual Assistant***

   - *Provides voice navigation and screen reading to assist visually-impaired users.*
   - *Handles tasks such as reading messages, sending commands, and guiding users through the app.*

By combining these features with a real-time chat system, UnityBridge offers a seamless multi-modal communication experience unmatched by traditional apps.

Key Features That Power Unity Bridge

Real-Time Messaging - *Enables one-to-one and group communication. Users can send text, voice, or sign-recognized messages instantly with Firebase real-time database support.*

Sign-to-Text & Sign-to-Speech - *Through the device's camera, UnityBridge captures Sinhala sign language gestures and translates them into either text messages or audible speech — bridging communication between deaf and non-signing individuals.*

Speech-to-Text & Text-to-Speech - *Allows speech-impaired and visually-impaired users to interact effectively. A spoken message can be converted to text for hearing-impaired users, while text messages can be read aloud for visually-impaired users.*

Accessibility Settings

- *Adjustable text sizes.*
- *High-contrast themes.*
- *Full compatibility with screen readers.*

Virtual Assistant

A lightweight AI-driven assistant that guides users with voice commands and screen reading, making the app intuitive for first-time users and those with visual disabilities.

Novelty of UnityBridge

What makes UnityBridge truly special is its integration of multiple assistive technologies into a single mobile application:

- *Unlike WhatsApp or Messenger, which only provide basic text/voice messaging, UnityBridge supports sign language recognition.*
- *Unlike standalone sign recognition systems (usually based on ASL), UnityBridge uniquely supports Sinhala Sign Language, making it culturally and locally relevant.*

- *Unlike Siri or Google Assistant, UnityBridge integrates virtual assistant features directly with accessible communication modules (sign, speech, text)*

This multi-modal design positions UnityBridge not just as a messaging app, but as a comprehensive assistive communication ecosystem.

How to Use UnityBridge Effectively

UnityBridge is designed for seamless usability across different abilities:

1. **Start by creating a profile -** *Users can register securely with Firebase Authentication and set accessibility preferences.*
2. **Choose your preferred mode -** *Text, sign, or voice. The app adapts to the user's input method.*
3. **Enable sign language recognition -** *The app uses the camera to recognize gestures and display text instantly.*
4. **Use speech-to-text -** *Speak into the app, and it will generate real-time text messages for hearing-impaired recipients.*
5. **Activate text-to-speech -** *Written messages can be read aloud, useful for visually-impaired users.*
5. **Rely on the virtual assistant -** *Navigate, send commands, and read notifications hands-free.*

Achievements and Results

- ***Sign Language Detection:*** *75% accuracy (target 85%), high for basic gestures.*
- ***Speech-to-Text:*** *80% accuracy in quiet environments, ~70% in noisy ones.*
- ***Text-to-Speech:*** *Clear, natural speech with only minor pronunciation errors.*
- ***Virtual Assistant:*** *75% accuracy in handling general queries.*
- ***User Feedback:*** *Overwhelmingly positive, highlighting inclusivity and ease of use.*

Limitations and Future Enhancements`

- *Current sign vocabulary is limited to basic Sinhala gestures. Future versions will expand datasets and support more gestures.*
- *Performance drops in noisy environments for speech recognition. Noise cancellation integration is planned.*
- *Currently requires an internet connection; future work will include offline edge-computing support.*
- *Virtual assistant has limited contextual understanding; future iterations will use advanced NLP for better conversational ability.*

Conclusion

UnityBridge represents a milestone in Sri Lankan assistive technology, providing an inclusive and accessible digital platform for individuals with hearing, speech, and visual disabilities. By integrating sign language detection, speech

processing, accessibility features, and real-time messaging, UnityBridge goes beyond traditional apps — creating a unified communication solution for differently-abled communities.

This project not only demonstrates the power of technology to solve real-world challenges but also emphasizes the importance of equity and inclusivity in the digital era. With continued research, dataset expansion, and feature upgrades, UnityBridge has the potential to become a benchmark platform in global assistive communication solutions.

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