ASCE
SRI LANKA SECTION

VISION BIG

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ENGINUITY 1.0: FLOATING CITY DESIGN COMPETITION

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PRESIDENT'S MESSAGE

As the President of the American Society of Civil Engineers – Sri Lanka Section (ASCE-SLS) for the year 2024/2025, I am pleased to present the second issue of our newsletter, "Vision Big," for this term.
I would like to extend my sincere appreciation to our Editor, Eng. Mrs. Dilini Gamage, and her dedicated team for their hard work and commitment in bringing this publication to life.

It brings me great pride and joy to share that we have successfully organized several impactful activities, including social events, CPD programs, charity initiatives, and field visits. These were made possible through the dedication and collaborative efforts of our subcommittee members. Notably, in April, we celebrated the Sinhala and Tamil New Year and conducted our second CPD event. In the month of May, we marked the Vesak season by making a charitable donation to Lady Ridgway Hospital.
These events are primarily aimed at supporting the younger generation undergraduate students and recently graduated members by helping them engage with the Society, familiarize themselves with the industry, and build strong relationships with senior professionals. As such, I warmly encourage their continued participation and support for all upcoming events.
I am also pleased to announce that we have recently established a Student Chapter at NSBM Green University. Our next step is to expand this initiative to the Sir John Kothalawala Defence University, as we continue to strengthen our outreach to future civil engineers.

I believe that our newsletter, "Vision Big," serves as a valuable platform for sharing knowledge and practical experiences across all sectors of civil engineering. Once again, I sincerely thank the editorial team for their exceptional effort in elevating the quality and impact of this publication.

I am confident that with the continued support of our members, we will achieve even greater success in the months ahead. I wish you all the very best for the year 2025, may it be filled with success, growth, and fulfillment.

Thank You

(ENG.) DR. DENZIL R. LOKULIYANA

Ph.D, MSc., BSc. (Eng.) Hons., MBA
C.Eng.MIE(SL),MRICS(UK),MPMI(USA),CPEng.,MASCE(USA),MJSCE(Japan),FICPM(SL)

President - ASCE - Sri Lanka Section

SECRETARY'S MESSAGE

As we wrap up the second quarter of 2025, I am pleased to share the vibrant progress and meaningful engagements our Section has undertaken over the past few months, highlighted in this fifth issue of our official newsletter Vision Big.
Bridging Connections: High Tea with ASCE–successfully completed, fostering fellowship and professional networking among our members.

ENGINUITY 1.0 – Floating City Design Challenge–a remarkable milestone in Sri Lanka's civil engineering education! Organized by the NSBM ASCE Student Chapter – the first ASCE Student Chapter established at a Sri Lankan university in proud collaboration with the ASCE Sri Lanka Section–this event marked the nation's first-ever university-level concept-based Floating City Design Competition. With the enthusiastic participation of 21 university teams, ENGINUITY 1.0 concluded successfully, showcasing the innovation and creativity of our future engineers.

Looking ahead, we are delighted to announce the upcoming Annual ASCE-SLS Dinner Dance 2025, scheduled to be held on 14 November 2025 – a night that blends the elegance of music with the camaraderie of our engineering community. Session 2025/2026 will also formally commence on 01 October 2025, and we warmly invite all members and well-wishers to join us in this special celebration. Further, the Board has granted approval for ASCE-SLS to serve as a Technical Partner for the "Technological Innovations and Digitalization Accompanying Creativity (TIDAC) Research Symposium," to be held under the theme Bridging the Gap: Engineering, Design & Society at NSBM Green University, Homagama, Sri Lanka.

Another significant development this quarter is our dedicated effort to establish ASCE Student Chapters at all major universities across Sri Lanka. This initiative is designed to empower the next generation of civil engineers by providing them with early exposure to ASCE's values, networks, and opportunities.
As the Secretary of ASCE-SLS, I remain deeply grateful for the continued support and enthusiasm of our membership. Let us carry this positive spirit forward as we continue to lead, serve, and inspire.

Warm Regards,

DESHAMANYA. ENG. (DR.) PRAGEETH WIJESEKARA
Secretary - ASCE - Sri Lanka Section

THE EDITORIAL

Warm greetings from the ASCE Sri Lanka Section!

We are delighted to unveil the 5th issue of the Vision Big Newsletter–bringing news to your doorstep and knowledge to your mind.

It gives me great pleasure to see how ASCE-SLS continues to serve as a bridge between senior engineers and students. In this issue, you will find highlights of the activities we have been actively involved in over the past four months, including the Hi-Tea gathering with both senior engineers and student chapter representatives, and the Floating City Design Competition for university students. You will also find thought-provoking articles contributed by both senior engineers and students alike.

In a world where generations often seem divided, I see this as a healthy trend–where maturity meets innovation, experience meets emerging technologies, and seasoned leadership meets new leadership. We warmly encourage our readers to join us in empowering the future leaders of our profession.

We sincerely thank everyone who has shared articles and updates. Publishing this newsletter every four months is a milestone we are proud of, made possible by the continued support of our members and contributors.

Finally, we invite more of you–both professionals and students–to share your experiences, insights, and research. Your stories strengthen our engineering community and inspire others along the way.

Happy reading!

ENG. (MRS.) DILINI GAMAGE
Editor- ASCE - Sri Lanka Section

ENGINUITY 1.0: FLOATING CITY DESIGN COMPETITION

LINAYA GUNAWARDENA
President – ASCE Student Chapter of NSBM Green University

The ASCE Student Chapter of NSBM Green University, in collaboration with the American Society of Civil Engineers - Sri Lanka Section (ASCE-SLS), successfully hosted the inaugural edition of ENGINUITY 1.0: Floating City Design Challenge. This national-level competition invited civil engineering undergraduates from across Sri Lanka to develop practical design solutions for floating urban infrastructure.

The first round, held on 15th July 2025, saw 21 teams from eight universities register and submit detailed proposals for conceptual floating cities. Each team of five students addressed key engineering aspects, including buoyancy, spatial layout, structural feasibility, and sustainability. Submissions were evaluated by a panel of esteemed engineers: Eng (Dr) Denzil R. Lokuliyana, Eng (Dr) R. B. M. Gunawardena, Eng (Mrs) Kamala Gunawardana, Eng Prabod Jinasena, and Eng Niyas A Samad, who served as judges throughout both rounds.

Following the evaluation, the 15 shortlisted teams advanced to the final round, held on 26th July 2025 at NSBM Green University premises. Participants were provided with materials and tasked with constructing physical models of their proposed designs under timed conditions. Each model was assessed not only on design quality, but also on performance, including buoyancy and structural behavior while adhering to the guidelines, and tested in a controlled water bath setup. The event brought together students from leading institutions, highlighting teamwork, technical skill, and real-time problem-solving.
The top three teams were awarded cash prizes in recognition of their excellence:

FIRST PLACE

AQUA NEST
General Sir John Kotelawala Defence University

SECOND PLACE

HYRO GENIUS
University of Moratuwa

THIRD PLACE

CIVILIANS
NSBM Green University

Participating universities included the University of Moratuwa, University of Peradeniya, University of Ruhuna, University of Sri Jayewardenepura, BCAS Campus (Jaffna), NSBM Green University, Sri Lanka Institute of Information Technology (SLIIT), and General Sir John Kotelawala Defence University (KDU).

ENGINUITY 1.0 demonstrated the value of student-led initiatives in bridging academic learning with practical application. This was not merely a competition; it was a platform that connected civil engineering undergraduates across Sri Lanka. Through competitions like this, the ASCE Student Chapter of NSBM Green University continues to promote technical excellence, professional development, and collaborative engagement among future civil engineers.


In collaboration with the
American Society of Civil Engineers - Sri Lan


ENGINUITY 1.0
FLOATING CITY DESIGN
COMPETITION
In collaboration with the
American Society of Civil Engineers - Sri Lanka Section

WHY ENGINEERS SHOULD LEARN BIM ?

ENG. ISHARA RANASINGHE
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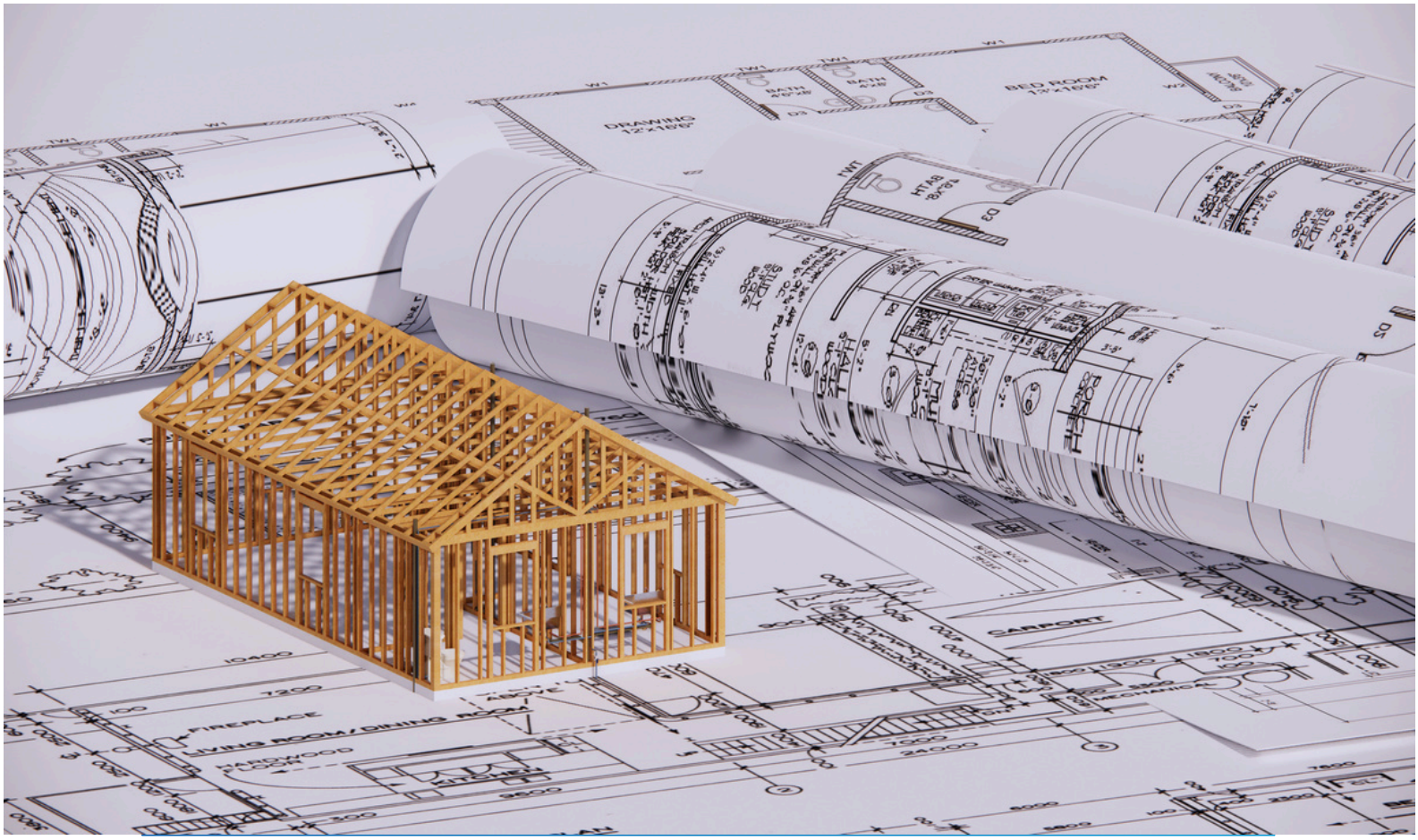
The Global Rise of BIM

Not long ago, Building Information Modeling (BIM) was considered an optional upgrade for progressive companies. Today, it is a global expectation. Around the world, governments and private developers are mandating BIM for everything from small infrastructure upgrades to multi-billion-dollar megaprojects.

The UK pioneered this trend when it made BIM Level 2 mandatory for all public-sector projects in 2016. Singapore and Australia soon followed with their own national roadmaps, and now Middle Eastern nations like the UAE and Saudi Arabia have made BIM a key pillar of their national development strategies. Consider Saudi Arabia's NEOM city – one of the world's most ambitious projects – where BIM is used to coordinate every stage, from master planning to asset management.



This shift is happening because BIM consistently delivers results: better planning accuracy, fewer errors, reduced waste, faster project delivery, and improved sustainability. For governments, it means fewer taxpayer dollars wasted; for developers, it means higher returns; for contractors, it means fewer disputes and smoother construction.

For engineers, this global momentum is both a challenge and an opportunity. BIM is no longer a niche skill reserved for tech-savvy professionals – it's the new baseline. To stay competitive, engineers must embrace BIM just as previous generations had to transition from hand drafting to CAD.

Why Job Security Now Depends on BIM

Engineering has always been about solving problems. But the way we solve them is changing, and digital collaboration is at the center of that change. BIM has become the "common language" of modern construction projects, and employers increasingly expect engineers to speak it.

This has a direct impact on job security. Engineers without BIM skills risk being sidelined when their firms bid for BIM-enabled projects or when companies restructure to align with digital workflows. On the other hand, engineers who can model, coordinate, and manage data digitally become indispensable.

Imagine two engineers with the same years of experience – one who can run clash detection and produce federated models, and another who still relies entirely on 2D drawings. In a competitive job market, which one do you think a project director will choose to keep when budgets are tight? The answer is clear.

BIM skills are also portable. Because BIM standards like ISO 19650 are internationally recognized, an engineer trained in Sri Lanka or India can join projects in the Middle East, Europe, or Australia with minimal re-training. This global mobility is a powerful form of "career insurance."

BIM as a Catalyst for Career Growth

Staying employed is one thing – advancing your career is another. BIM can accelerate your growth in ways that traditional methods cannot.

Engineers with BIM expertise often get fast-tracked to leadership roles such as BIM Coordinator, BIM Manager, or Digital Delivery Lead. These positions involve setting up execution plans, leading cross-discipline coordination meetings, and implementing workflows that save projects millions of dollars. Because they have a holistic view of design, construction, and operations, BIM professionals become trusted advisors to senior management and clients.

Consider a young structural engineer who masters BIM early in their career. Instead of staying confined to producing drawings, they may soon be leading coordination between architects, MEP engineers, and contractors, presenting to clients, and influencing project decisions. This exposure not only accelerates their technical skills but also develops leadership, communication, and strategic thinking.

Some professionals even move beyond engineering roles to take on company-wide positions like Chief BIM Officer or Head of Digital Delivery, shaping the future of their entire organization.

A Gateway to International Opportunities

One of the most exciting aspects of BIM is its role as a passport to global work. With BIM now widely adopted, a skilled BIM professional can contribute to projects in almost any market.

For example, engineers from Asia are frequently recruited to work on massive infrastructure programs in Saudi Arabia, Dubai, and Qatar, where demand for BIM expertise far exceeds the local supply. Similarly, firms in Australia and the UK are hiring international talent to keep up with their infrastructure pipelines.

This global demand allows BIM-trained engineers to explore expatriate roles with attractive salary packages, tax benefits, and the chance to work on some of the world's most iconic projects – from smart cities to airports to high-rise towers.

Competitive Salaries and Better Rewards

BIM skills don't just create opportunities – they pay well. Because BIM has a direct impact on project efficiency and cost savings, companies are willing to offer higher salaries for professionals who can deliver results.

In North America, BIM Coordinators typically earn USD 50,000–70,000 per year, while BIM Managers often exceed USD 120,000.

In Europe, UK-based BIM engineers average £40,000, with managers closer to £60,000.

In the Middle East, salaries can be even more lucrative, often tax-free with housing and transport allowances.

In Asia-Pacific, Singapore, Japan, and Australia are seeing rapid pay growth for BIM professionals as governments push digital mandates.

Even in developing markets, pay is rising as demand grows. And even if your title isn't "BIM Manager," being the BIM-capable engineer on your team often leads to higher raises, faster promotions, and better project assignments.

Relevant to Every Engineering Discipline
Some engineers mistakenly believe BIM is just for architects. In reality, BIM benefits every discipline – civil, structural, mechanical, electrical, plumbing, and even infrastructure and environmental engineering.

Civil and structural engineers can use BIM to model rebar, integrate geotechnical data, and coordinate with MEP systems before construction begins. MEP engineers can design ductwork, piping, and cabling in tight spaces without clashes, avoiding costly rework on site.

For young engineers, BIM is an incredible learning tool. By working in a federated model, they see how every discipline connects – how a change in a slab affects duct routing, or how a column shift impacts architectural finishes. This "big picture" understanding develops systems thinking, making them far more valuable than someone who works in isolation.

Entrepreneurship and Niche Expertise
BIM is also creating new career paths for those who want to go beyond employment and build their own businesses. Some engineers specialize in areas like 4D simulation (time), 5D cost estimation, sustainability modeling, or facilities management integration, offering consulting services to multiple clients.

The demand for such niche expertise is growing, and consultants who can deliver specialized BIM services often command premium fees. For entrepreneurial engineers, BIM can be the foundation of a successful independent practice.

The Bigger Picture: Engineering in the Digital Age
Ultimately, learning BIM is about staying relevant in an industry that is changing faster than ever. Just as CAD replaced manual drafting, BIM is replacing disconnected 2D processes. The engineers who thrive in the next decade will be those who embrace data, automation, and collaboration.

BIM is not just a tool – it's a mindset. It encourages engineers to think about the entire lifecycle of a project: design, construction, operations, and even decommissioning. This holistic approach leads to better projects, happier clients, and more sustainable outcomes.

Conclusion
In short, BIM is no longer an optional skill for engineers – it is a career necessity. It safeguards your job, accelerates your growth, opens international opportunities, and increases your earning potential.

The construction industry is moving toward fully digital, integrated workflows. By learning BIM now, you're not just keeping up – you're positioning yourself as a leader for the next era of engineering. The investment you make today in mastering BIM will pay off in job security, professional recognition, and the chance to work on world-class projects.

BIM is where the future of engineering is headed. The question is whether you want to watch from the sidelines – or lead the way.

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THE BEAUTY AND APPLICATIONS OF FIBONACCI NUMBERS: A JOURNEY THROUGHHISTORY AND ENGINEERING

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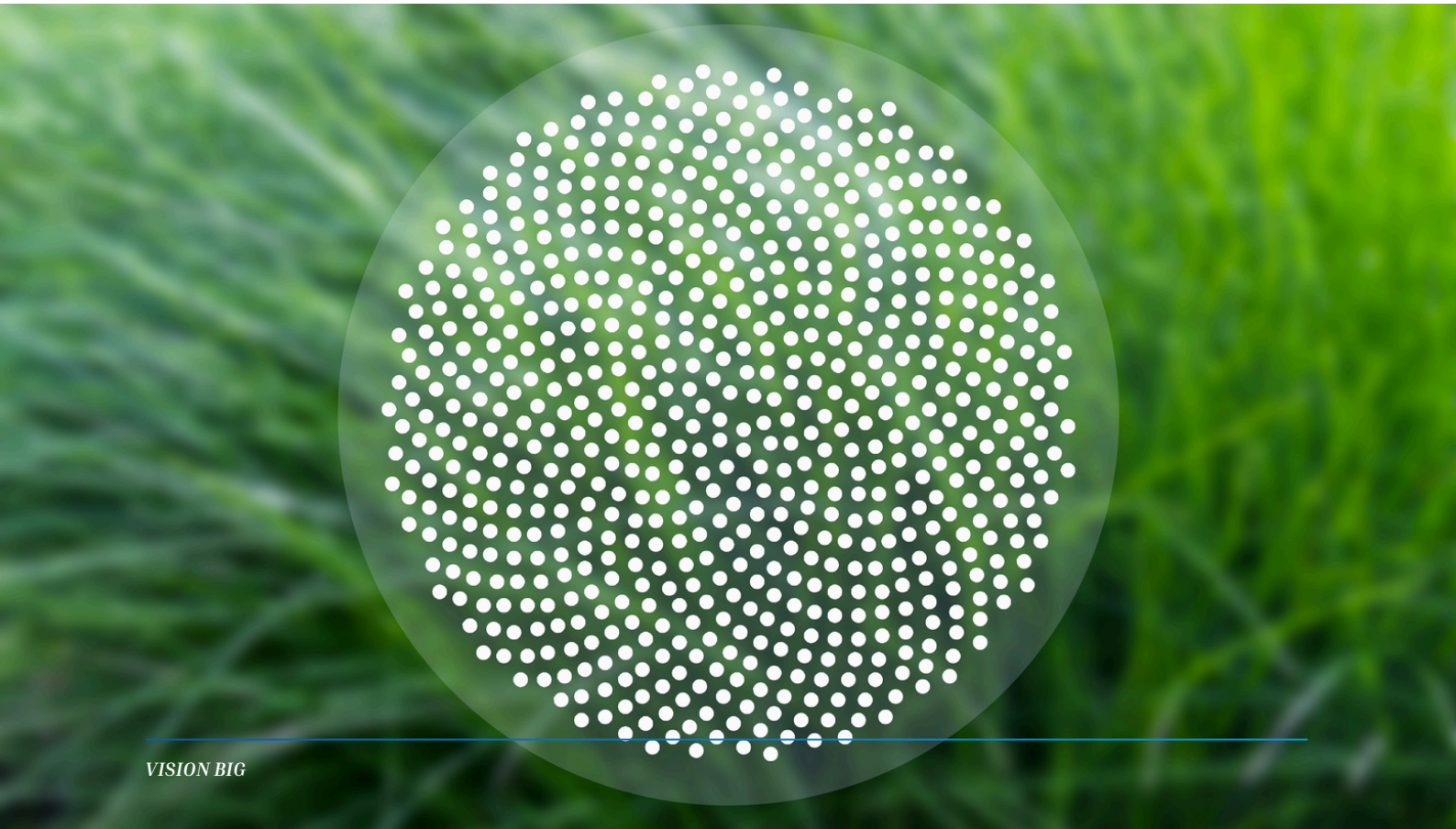
The Fibonacci sequence is one of the most fascinating and ubiquitous mathematical phenomena in nature, art, and engineering. Named after the Italian mathematician Leonardo of Pisa, also known as Fibonacci, this sequence has captivated scholars, artists, and scientists for centuries. Beyond its mathematical elegance, the Fibonacci sequence appears in biological structures, financial markets, computer algorithms, and even civil engineering. This article explores the beauty of Fibonacci numbers, their historical significance, and their practical applications–particularly in civil engineering–where they contributeto efficient and aesthetically pleasing designs.



1. Historical Note

With the dawn of the thirteenth century, Europe began wake from the long sleep of the Middle Ages. By the end of the century, Marco Polo (1254-1324) had journeyed the Great Silk Road to reach China, Giotto di Bondone (1266-1337) had changed the course of painting and freed it from Byzantine conventions, and the mathematician Leonardo Pisano, best known as Fibonacci, changed forever western methods of calculation.

Leonardo Pisano – or Leonardo of Pisa (seeFigure 1), Fibonacci – hisnameas recorded in history,is derived form the Latin "filius Bonacci", or a son of Bonacci. He was born to Guilielmo (William) Bonacci and his wife in the port city of Pisa, Italy, around 1175, shortly after the construction of the famous bell tower, the Leaning Towerof Pisa.

In 1192 Guilielmo Bonaccibecame a public clerk in the customshouse for the Republic of Pisa, which was stationed in the Pisan colony of Bugia (later Bougie,andtoday Bejaia, Algeria)on the Barbary Coast of Africa. Shortly after his arrival he brought his son, Leonardo, to join him so that the boy could learn the skills of calculating and had become a merchant. This ability was significant since each republic had its own units of money and traders had to calculate monies due them. It was in Bugia that Fibonacci first became acquainted with the "nine Indian figures", as he called the Hindu numerals and "the sign 0 which the Arabs call zephyr".

Figure 1: Leonardo of Pisa (Fibonacci)

He declares his fascination for the methods of calculation using these numerals in the only source we have about his life story, the prologue to his most famous book, Liber Abaci – "book on calculation".

2. Introduction

The Fibonacci sequence is an infinite series of numbers where each number is the sum of two preceding ones, starting from 0 and 1. Mathematically

$$F_0 = 0, F_1 = 1, F_n = F_{n-1} + F_{n-2} \quad \text{for } n \geq 2$$

The sequence begins as:

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, . . .

One of the remarkable aspects of the Fibonacci sequence is its connection to the Golden Ratio Φ ≈ 1.6180339887. As the sequence progresses, the ratio of consecutive Fibonacci numbers approaches ϕ:

$$\lim_{n\to\infty} \frac{F_{n+1}}{F_n} = \varphi = \frac{1+\sqrt{5}}{2} \approx 1.6180339887$$

This ratio is considered aesthetically pleasing and appears in are, architecture, and nature – from the spirals of galaxies to the arrangement of leaves and flower petals.

3. Fibonacci Numbers in Nature

Perhaps one must be most surprised to discover that these ubiquitous numbers also appear in the plant world. For example, consider a pineapple. The hexagonal bracts on a pineapple can be seen to from three different direction spirals (see Figure). One can notice that in the three directions there are 5, 8, and 13 spirals appear.

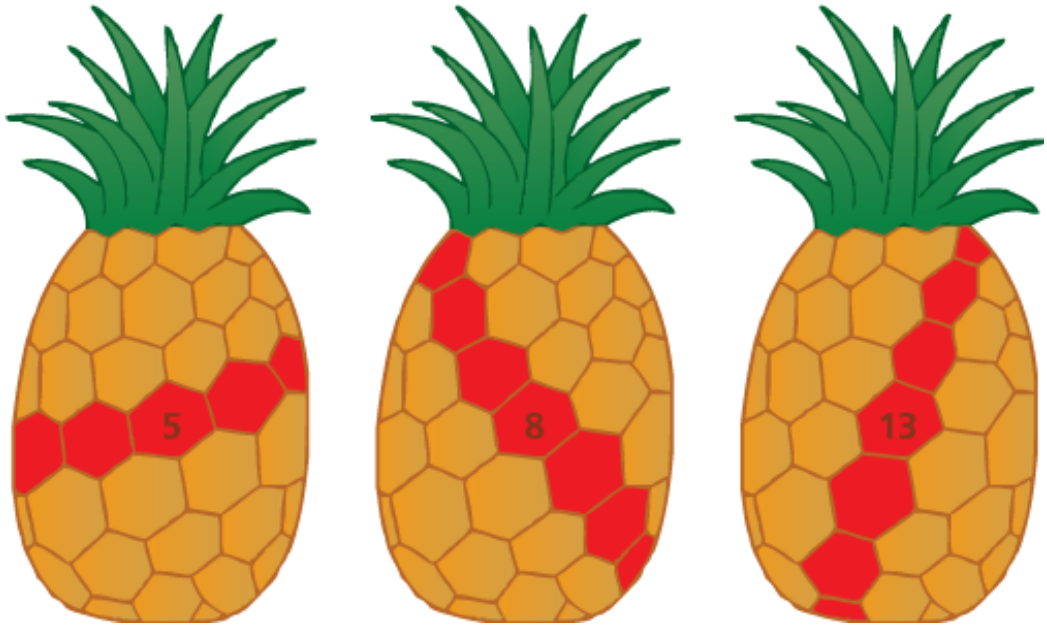


Figure 2: Fibonacci numbers in pineapple

There are various species of pinecones. Most will have two distinct direction spirals. The number of spirals in each direction will be most often two successive Fibonacci numbers.

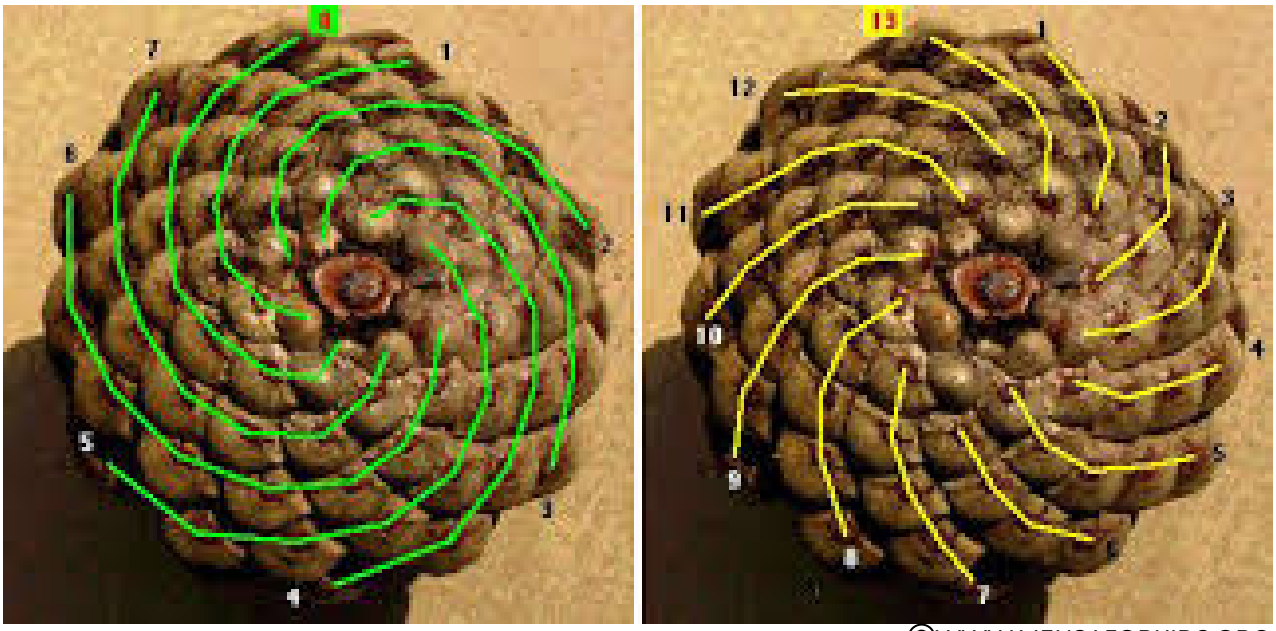


Figure 3: Fibonacci numbers in pinecones

The sunflower, on the other hand, has a variety of different spiral numbers. The older the flowers get, the more spirals they develop. In any case, the number of spirals will be a Fibonacci number. They usually will take on the following pairs of Fibonacci numbers: 13 (left-oriented spirals); 21 (right-oriented spirals), 21:34,34:55, 55:89, 89:44.

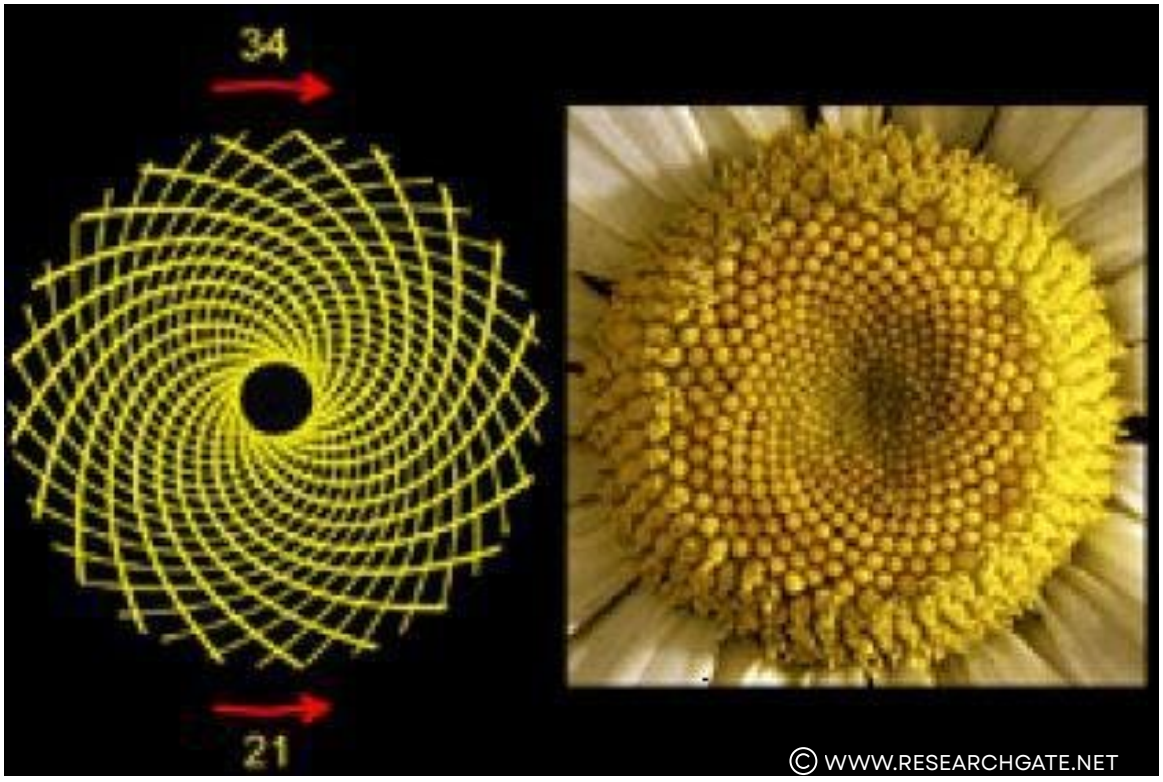


Figure 4: Fibonacci numbers in sunflower

4. Applications in Civil Engineering

Civil engineers harness Fibonacci numbers to create stronger, more efficient, and visually harmonious structures. Below are key applications:

4.1 Structural Optimization

- Truss and Bridge Design:

Engineers use Fibonacci spacing to distribute loads evenly. For example, the Golden Gate Bridge employs a suspension designwhere cable intervals follow ϕ based ratiosfor optimal tension distribution.

- Architectural Columns:

The Parthenon'sDoric columns are spaced accordingto GoldenRatio proportions, enhancing stability and visual balance.

4.2 Material Efficiency

- Honeycomb Structures:

Inspired by beehives (whichfollow hexagonal Fibonacci patterns), engineers design lightweight yet strong composite materials for aerospace and construction.

- Fractal Reinforcement in Concrete:

Adding Fibonacci-patterned microfibers improves crack resistance and durability.

4.3 Seismic and Dynamic Load Resistance

- Earthquake-Resistant Buildings:

Structures like Tokyo's Skytree use Fibonacci spirals in their damping systems to absorb seismic energy.

- Wind Turbine Blades:

Turbine designs based on Fibonacci angles reduce turbulence and increase energy efficiency.

4.4 Urban Planningand Aesthetic Design

- City Layouts:

Barcelona's Eixample district uses grid patterns inspired by ϕ to optimizespace and trafficflow.

- Park and Landscape Architecture:

Central Park's pathways and the Alhambra's tessellations incorporate Fibonacci curves for natural flow.

5. Beyond Engineering: Fibonacciin Modern Technology

5.1 Algorithm Design

- Fibonacci Heaps:

A data structure usedin Dijkstra'salgorithm for efficientpath-finding inGPS navigation.

- Dynamic Programming:

Fibonaccisequences modeloptimal resource allocation in operationsresearch.

5.2 Financial Markets

- Fibonacci Retracement:

Traders use key Fibonacci levels (23.6%, 38.2%, 61.8%) to predict stock market reversals.

5.3 Computer Graphicsand AI

- Procedural Generation:

Video games use Fibonacci spirals to create natural-looking terrains and textures.

- Neural Networks:

Fibonacci-based activation functions improve machine learning efficiency.

6. Conclusion

The Fibonacci sequence is more than a mathematical oddity—it is a universal language of efficiency and beauty. From ancient temples to earthquake-resistant skyscrapers, from sunflower seeds to AI algorithms, its influence spans disciplines and millennia. As we continue to explore its depths, Fibonacci numbers remind us that the most profound innovations often arise from nature's simplest patterns.

The Fibonacci sequenceis deeply linked to the Golden Ratio,exponential growth, and algebraic identities. Historically, from Pingala to da Vinci, the Fibonacci numbers have shaped art, architecture, and science. In the emergingfields like nanotechnology and quantum computingmay uncover new Fibonacci-based principles.

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MY INDUSTRIAL EXPOSURE IN "THE COLOMBO BORDER"

ASHEN SHAMINDA
Student Member of ASCE

The Colombo Border is a residential building project which consists of 3 high-rise buildings. They are Amari, Brielle and Cosmos. For convenience, they are called block A, B and C. Block B is a 27-floor building including the ground floor and it consists of 180 units to sell. The other two are 23-floor buildings including the ground floor and there are 150 apartments in each building. The approximate area of this site is about 3 acres. The project commencement date was 4th November 2024, and the expected date of completion is 5th May 2027.

Project stakeholders

Mainly there are 3 parties involved in this project: the employer, the engineer and the contractor. Prime Lands Residencies are the employer of this project, and the engineer's role is done by Prime Consultants (Pvt.) Ltd. However, the entire 3 buildings are not done by the same company. Therefore, block B building is constructed by Sanken Construction (Pvt.) Ltd. and the other two apartment buildings are constructed by Prime Construction (Pvt.) Ltd. In addition to that, Eng. Laksiri Cooray is the Chief structural engineer and Mr. Anil Kumarage is the chief architect forthe project. NJ Consultants is contributing as MEP consultant,to this project, and finally the piling contractor is San-Piling.

Figure 2 - stakeholders in projects

Challenges

Initially, we had 300 piles for all three buildings. But approximately the cost of one pile is about 1 million. Therefore, we needed 300 million rupees only for the pile foundation stage. That cost was not aligned with our total project cost. Therefore, we had to go through a structural peer review process to optimize the cost. After that, we were able to reduce the number of piles to 184. Thus, what we did was increase the diameter of the piles and increase the rock socket into the metamorphic rock.

Excavation

Before commencing the excavation work, the survey gang came and marked the coordinates of each pile cap according to the setting-out drawings. Next, the existing ground level was recorded using a level machine, and any ground cracks, settlement movement, water seepage or distortion were observed. Next, using an excavator, excavation works were started such that excavated walls were sloped at appropriate angles before workers entered the pit.

Figure 3 -excavation

Figure 4 - make bore holes using shoring tool

Shoring

For the earth support, H-irons with timber planks were used. Using a simple boring tool, the workers made a borehole to insert the H-iron. Next, the H-iron was checked to ensure that it was vertical via a theodolite, spirit level or plumb bob. Meanwhile, 2-inch-thick timber planks were inserted manually parallel to the H-girder line. Welders fixed corner supports and waler bars to make the earth supports more robust.

Backfilling

Excavated soil itself was used for the backfilling process. First, a 150mm-thick soil layer was filled and compacted using a roller. Adequate water was applied and compaction was done until it reached its maximum dry density. Then, the next soil layer was applied and the same process was repeated.

Figure 5 - compacting the soil using roller

Anti-termite treatment

When the building is functioning, a termite attack is one of the critical issues for furniture. Therefore, before commencing the concrete screed (within 12 hours), termiticide was applied. Bifenthrin is the name of the chemical that we used. First, we made small holes at every 150mm interval along horizontal and vertical directions and injected the chemical into the soil. Then, 1000-gauge polythene was laid down before screed concreting.

Figure 6 - insert termite chemical into soil

Figure 7 - pile cap screed concreting

Screed concrete

Generally, screed concrete does not provide structural support to the structure, but it makes our life easier to continue the work because rebars do not touch the soil and mud, and setting-out lines can be drawn very easily on screed concrete. Grade 15 concrete was used for screed concrete with 50mm thickness. When concreting was in progress, the ground floor level was checked by the survey gang.

Rebar works

According to structural drawings, a bar schedule was prepared and sent to the bar bending yard, and according to cut lengths and shapes, rebars were bent and sent to the construction site.

Generally, lap length is 50d (d = min(d1,d2)) for any case and crank length can be obtained using this equation:

Crank length (CL) = (d1 + d2 + 5) × 10 mm

Lap length (LL) = 50 × d ; (d = min(d1,d2))

According to the structural drawings and bar schedules, I had to give instructions to laborers to fix the rebars at required intervals and check whether adequate cover was provided for each structural component.

Formwork

From the pile cap stage to the ground floor works, system formworks were used, and from the ground floor onwards conventional formwork was used. After placing the side boards, separators were inserted at the required intervals to lock the board tightly. Next, the verticality of the side boards was checked using a plumb bob. When the carpenters were doing the beam bottom formworks, I had to check whether the elevation levels of beam bottoms were correct and whether these beam bottoms were aligned with shop drawings.

Figure 9 - applying demold agent to the side boards

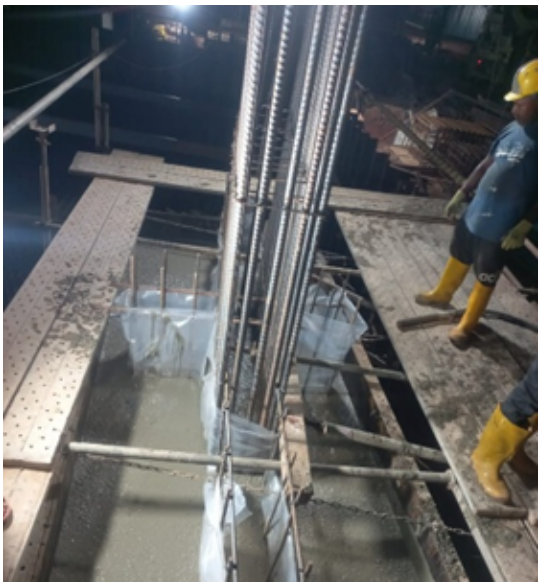

Figure 10 - pile cap concreting

Concrete work

After the rebar and formwork inspections, the concreting process began. The grade of the concrete from the pile cap stage to the transfer floor was C40. Using poker vibrators and shutter vibrators, concrete was compacted efficiently. The concrete was poured in 500mm-thick layers, and the poker vibrator was inserted every 500mm interval. Concrete was placed without allowing cold joints to occur.

Conclusion

As a civil engineering practitioner, I believe adopting time-saving approaches like the top-down construction method and lift-build technology can save both time and money. Equally important is site safety–regular awareness sessions and encouraging labourers and staff to stay alert can go a long way in preventing risks. Simple things, like storing materials properly and managing the site efficiently, also make a big difference in keeping the project on track.

Looking back, the 24-week industrial training period has been one of the most rewarding milestones in my undergraduate journey. It gave me the chance to turn classroom knowledge into hands-on experience and grow as a young engineer. I'm truly grateful to the staff of Sanken Construction and the Industrial Training Division of the University of Moratuwa for their guidance and support throughout this journey.

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EVENTS FROM LAST QUARTER

BRIDGING CONNECTIONS: HIGH TEA WITH ASCE

The American Society of Civil Engineers – Sri Lanka Section hosted “High Tea with ASCE” on July 17, 2025 at the Members' Lounge of IESL, Wijerama Mawatha, Colombo 07. The event brought together a vibrant mix of industry professionals and academics for an evening of fellowship.

Over cups of tea and delightful snacks, participants exchanged memorable experiences from their professional journeys while forming new connections. The gathering was not only engaging and entertaining but also strengthened bonds within the civil engineering community.

UPCOMING EVENTS

SAVE *the* DATE

ANNUAL ASCE-SLS DINNER DANCE - 2025

14TH NOVEMBER

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We value your constructive feed back too!

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THANK YOU!
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