



*“Your guide to exploring how technology is revolutionizing sustainability through innovation, smart practices, and impactful solutions.”*

*Technology's Path to a Greener World*

# DIGITALLY 24th Edition - YOURS'

MARCH 2025



# Message from Editorial Team



**Ms. Sushma Margaret A - Ms. Shirley Sheeba S  
Kruthi V - Sayeda Rafana Jalal**

We are delighted to present the latest developments and achievements of our department, encapsulating the essence of innovation, creativity, and dedication throughout the academic year 2024-25. With great enthusiasm, we unveil the theme of this year's newsletter: "DIGITALLY YOURS : Technology's Path to a Greener World". Heartfelt gratitude goes out to all the contributors for their exceptional and insightful articles. We trust that readers will find these pieces both informative and entertaining, especially as they engage with puzzles and riddles included within. Our participation in the editorial board has been a rewarding journey, brimming with new experiences and learning opportunities.

# Message



## **SR. ALBINA** DIRECTOR

With heart filled with gratitude I congratulate the Department of Computer Science on the successful launch of your annual newsletter, Technology's Path to a Greener World, which explores how technology is driving sustainability through innovation, smart practices, and impactful solutions. Your commitment to fostering knowledge in these crucial fields is highly commendable. In today's world, integrating sustainability with innovation plays a pivotal role in addressing global challenges and shaping a resilient, progressive future.

## **DR. GEORGE LEKHA** PRINCIPAL

I extend my heartfelt congratulations to the Department of Computer Science on the successful release of the annual newsletter. Your commitment to imparting knowledge and causing good change is very admirable. In today's era, the fusion of sustainability, innovation, and technology plays a crucial role in shaping a future where responsible practices and cutting-edge solutions work together to create a more resilient and sustainable progressive world.



# Message



**DR. LAKSHMI SK**  
DEAN OF SCIENCE

I extend my sincere congratulations to the Department of Computer Science on the successful launch of the Annual Newsletter, which highlights the important role of innovation and sustainability. In today's world, the integration of sustainability, innovation, and technology is essential, fostering a more resilient and interconnected society where responsible practices and advanced solutions drive meaningful progress.

**MS. RENJU K**  
HOD & ASSISTANT PROFESSOR

As the world moves towards a more sustainable future, technology is emerging as the strongest catalyst for positive environmental change. The rapid advancements in digital innovation are not only transforming the way we live and work but also redefining how we protect our planet. As young tech enthusiasts, you have unique opportunity to be at the forefront of this green revolution. The future is in your hands! Technology holds the power to tackle the world's greatest environmental challenges, and your expertise can be a driving force for change. From AI-powered climate solutions to energy-efficient coding and sustainable tech innovations, every line of code and every idea you develop can drive positive change. Think green, code smart, and build solutions that help the planet thrive. The world needs tech-driven sustainability—are you ready to lead the way?



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# THE FUTURE OF TECH: WHEN AI MEETS SUSTAINABILITY



## Bridging Tech and Nature: AI's Role in Green Tech

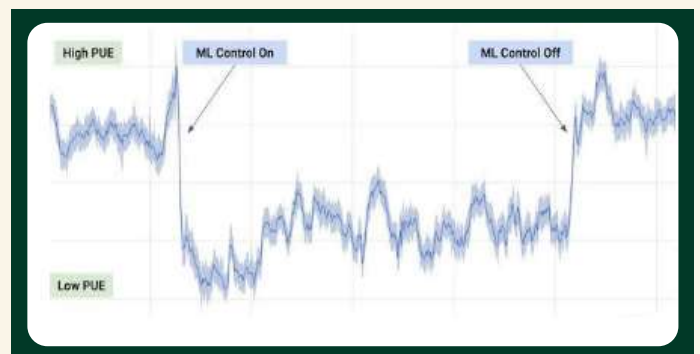
*"Sustainability breakthroughs will emerge from intelligent algorithms."*

—Dr. Andrew Ng

Green tech now integrates AI and IoT to optimize energy systems.

## AI: Catalyst for Renewable Efficiency

- **Predictive Modeling:** Forecasts solar/wind output using weather data.
- **Real-Time Optimization:** Adjusts panels/turbines for maximum efficiency.
- **Grid Balancing:** Stabilizes supply-demand, reducing waste.

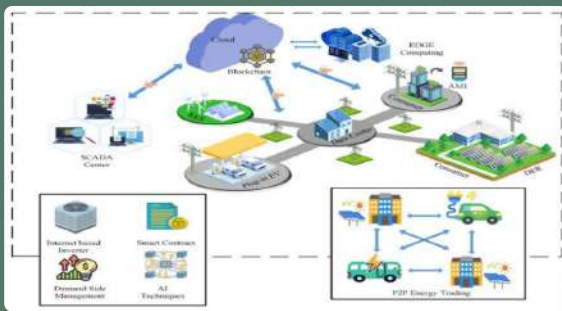


**Case Study:** Google's DeepMind cut data centre cooling costs by **40%** using reinforcement learning.

## Smart Grids: The Digital Nervous System

- **Anomaly Detection:** Instant identification of grid issues.
- **Self-Healing:** Auto-reroutes energy during outages.
- **Renewable Integration:** Manages diverse energy sources seamlessly.

*Did You Know? Smart grids reduce outages by 75%.*

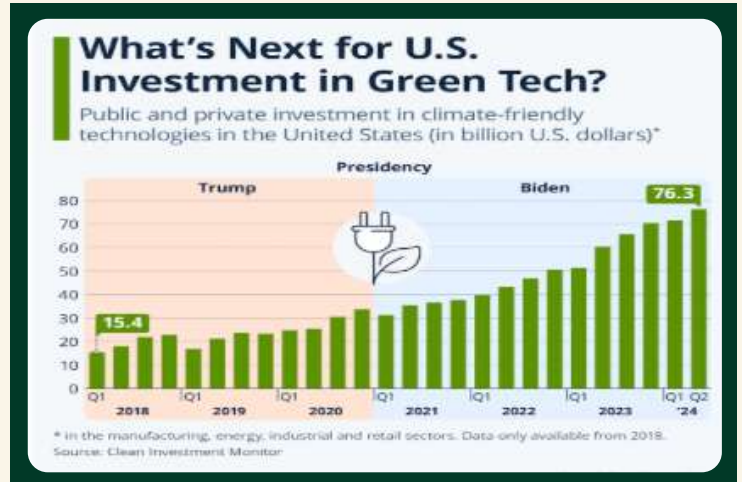


### QUICK FACTS

- AI boosts wind farm yields by **20%**.
- Smart buildings cut energy use by **15–30%**.
- Green tech market to hit **\$48.36B** by **2027**.

#### About the Author:

Pradeep Arjun Samuel -  
ML enthusiast, sustainability advocate.



## Beyond Energy: Sustainable Computing

- **Quantum Computing:** Models climate systems with precision.
- **Circular E-Waste:** AI achieves **95%** component recycling accuracy.
- **Efficient Data Centres:** AI optimizes cooling/server workloads.

**Community Spotlight:** University Research Park's AI micro grid reduced costs by 22%.

## Challenges Ahead

- **Funding:** Requires public-private collaboration.
- **Security:** Protect sensitive energy data.
- **Equity:** Ensure universal access to innovations.

## How You Can Contribute?

- Join sustainability-focused hackathons or open-source projects.
- Optimize code for energy efficiency.
- Advocate for green practices in workplaces

# GREEN GAMING: THE FUTURE OF SUSTAINABLE PLAY

Video games have evolved beyond entertainment into a global force shaping culture, technology, and the environment. Yet, behind immersive worlds and high-speed graphics lies a pressing concern: gaming's carbon footprint. From energy-intensive consoles to data-hungry online play, the industry contributes significantly to electricity consumption and electronic waste. However, a shift toward Green Gaming is gaining momentum, with developers, manufacturers, and players driving sustainable change.

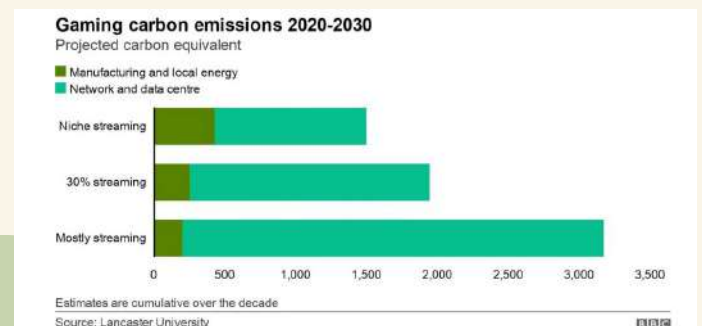
## Gaming's Hidden Footprint: The Environmental Cost of Consoles

The gaming industry, which began with Pong in 1972, now entertains over 3 billion players worldwide. Modern consoles rely on materials like gold, copper, lithium, and cobalt—resources extracted through energy-intensive mining that causes deforestation, water pollution, and toxic waste. Many, including tin, tungsten, and tantalum, are conflict minerals mined in war zones with severe human rights abuses.

Manufacturing consoles is equally demanding. Producing a single PlayStation 4 has generated 8.9 billion kilograms of CO<sub>2</sub> emissions since its launch. Additionally, online gaming relies on massive data centres, contributing to internet pollution, which accounts for 3.7% of global greenhouse gas emissions. Despite these challenges, companies are making progress by adopting conflict-free supply chains, using recycled materials, and developing energy-efficient technologies.

## Building a Greener Gaming Industry

Gaming giants are taking steps toward sustainability. Sony's PlayStation initiatives focus on energy-efficient hardware, while Ubisoft's Green Game Jam integrates environmental awareness into gameplay. Nintendo has committed to reducing plastic packaging and improving energy efficiency. Microsoft is also making Xbox more sustainable by introducing a carbon-aware setting, optimising updates for lower emissions, and adjusting default power modes. These efforts have collectively prevented over 1.2 million metric tons of CO<sub>2</sub> emissions from 2020 to 2023.



Players, too, can make a difference by using energy-saving settings, supporting eco-conscious developers, and recycling old hardware. Cloud gaming and digital downloads, though energy-intensive, help eliminate plastic waste and reduce emissions from disc manufacturing and packaging.

By 2025, the global gaming population is expected to reach 3.32 billion, led by Asia's 1.48 billion gamers. As gaming continues to expand, sustainability is becoming a core focus. While challenges remain, the industry's shift toward

Green Gaming is undeniable. With innovation, collaboration, and player awareness, the future of gaming can be both immersive and environmentally responsible—one game at a time.

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CHANDANA CHIDAMBARNATH 3MCA

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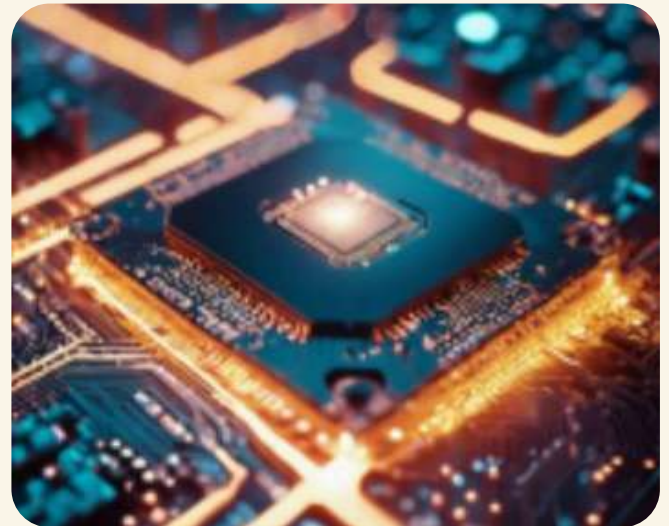
# Huawei's Big Leap in AI Chips: A Game-Changer for Tech and Global Competition

Huawei has just made a huge splash in the world of AI chips, and it's a big deal for the tech industry. Think of AI chips as the brains behind everything from your smartphone to self-driving cars and even futuristic robots. Huawei has figured out how to make these chips better, faster, and cheaper, which is a massive step forward in the race to dominate artificial intelligence.

## The Problem: Making Chips Isn't Easy

Making AI chips is super tricky. One of the biggest challenges is something called "yield"—basically, how many chips actually work after they're made. For a long time, Chinese companies struggled to keep up with global giants like TSMC (Taiwan) and NVIDIA (U.S.).

But Huawei has cracked the code, hitting a 40% yield rate. That means out of 100 chips they make, 40 work perfectly. While that's still lower than the top players, Huawei is aiming for 60%, which would put them in the same league as the best in the world.



## Why This Matters: A Big Win for China

This breakthrough is a big deal because of the ongoing tech rivalry between the U.S. and China. The U.S. has been trying to slow down China's tech progress by limiting access to advanced chip-making tools. But Huawei's success shows that China is getting better at making its own chips, reducing its reliance on foreign companies.

This is a huge step toward China becoming self-sufficient in the semiconductor industry, which has been dominated by the U.S., Taiwan, and South Korea for decades.

Huawei's newest AI chip, the Ascend 910C, is already making waves. It's powerful enough to compete with the best chips out there, and it's expected to play a key role in things like AI research, data centers, and cloud computing. This chip could help Huawei become a major player in the global AI race.

## What's Next: A New Era of Competition

Huawei's progress is shaking up the AI chip industry. By 2025, the company plans to ramp up production, which could lead to faster AI advancements, better tech for consumers, and more competition for Western chipmakers. If Huawei keeps this up, it could change the game, forcing companies like NVIDIA and Intel to step up their game to stay ahead.

This isn't just a win for Huawei—it's a sign that China is catching up in the semiconductor world. Whether this leads to more collaboration or deeper rivalry between tech superpowers is still unclear, but one thing's for sure: the race to dominate AI is getting hotter than ever. And Huawei is now a serious contender.

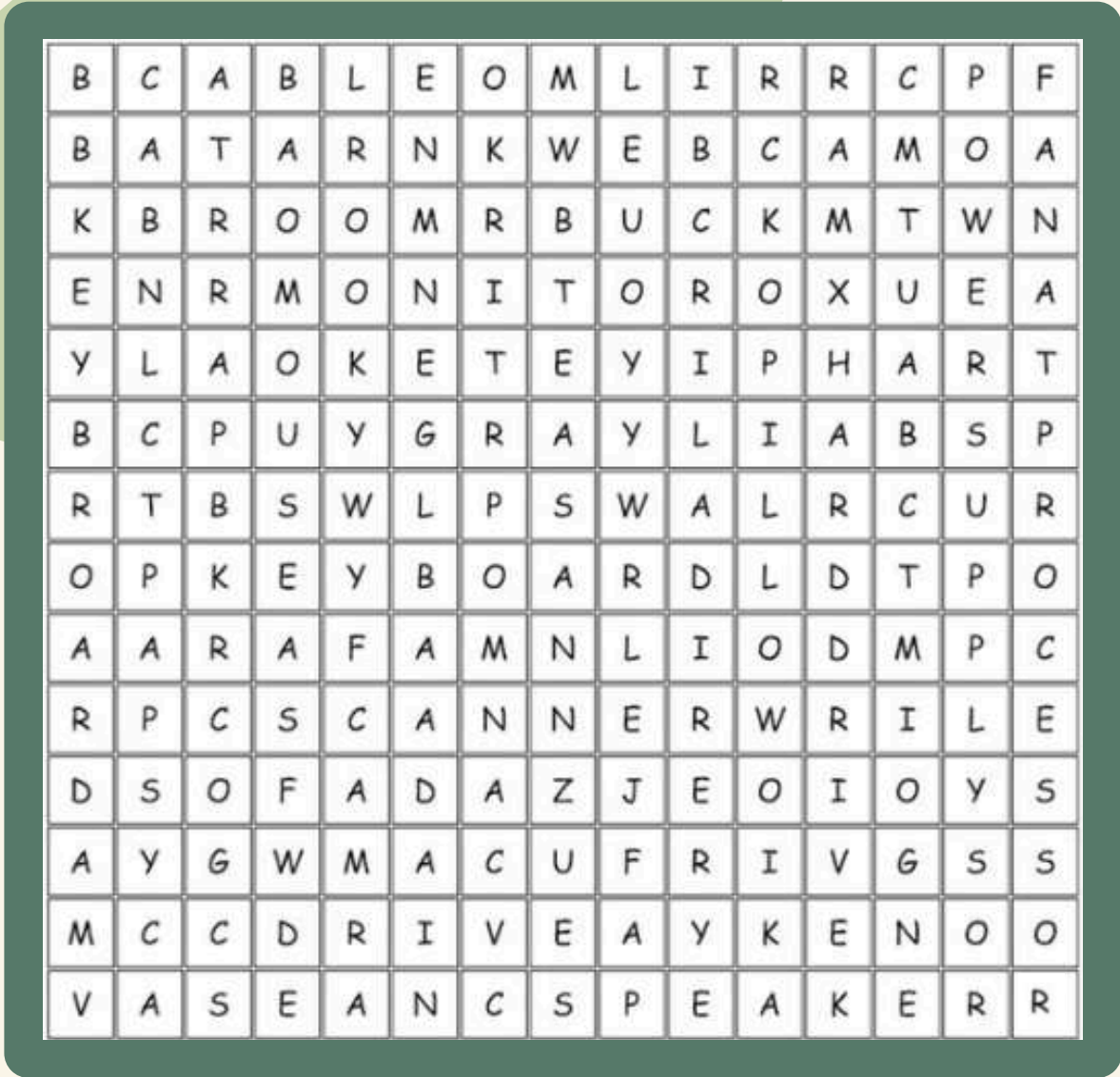
Huawei's breakthrough in AI chip manufacturing marks a significant turning point in the global tech landscape. By improving chip yields and pushing forward with the Ascend 910C, Huawei is proving that China is rapidly closing the gap with industry giants. This development not only fuels competition but also reshapes the balance of power in the semiconductor industry. As Huawei scales production and refines its technology, the world will witness a new era of AI innovation, where dominance is no longer guaranteed for traditional leaders. Whether this leads to greater collaboration or intensifies global rivalries, one thing is certain—Huawei's bold strides are redefining the future of AI.

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**DIPNA DEVIAH 4BSC CS-MAT**

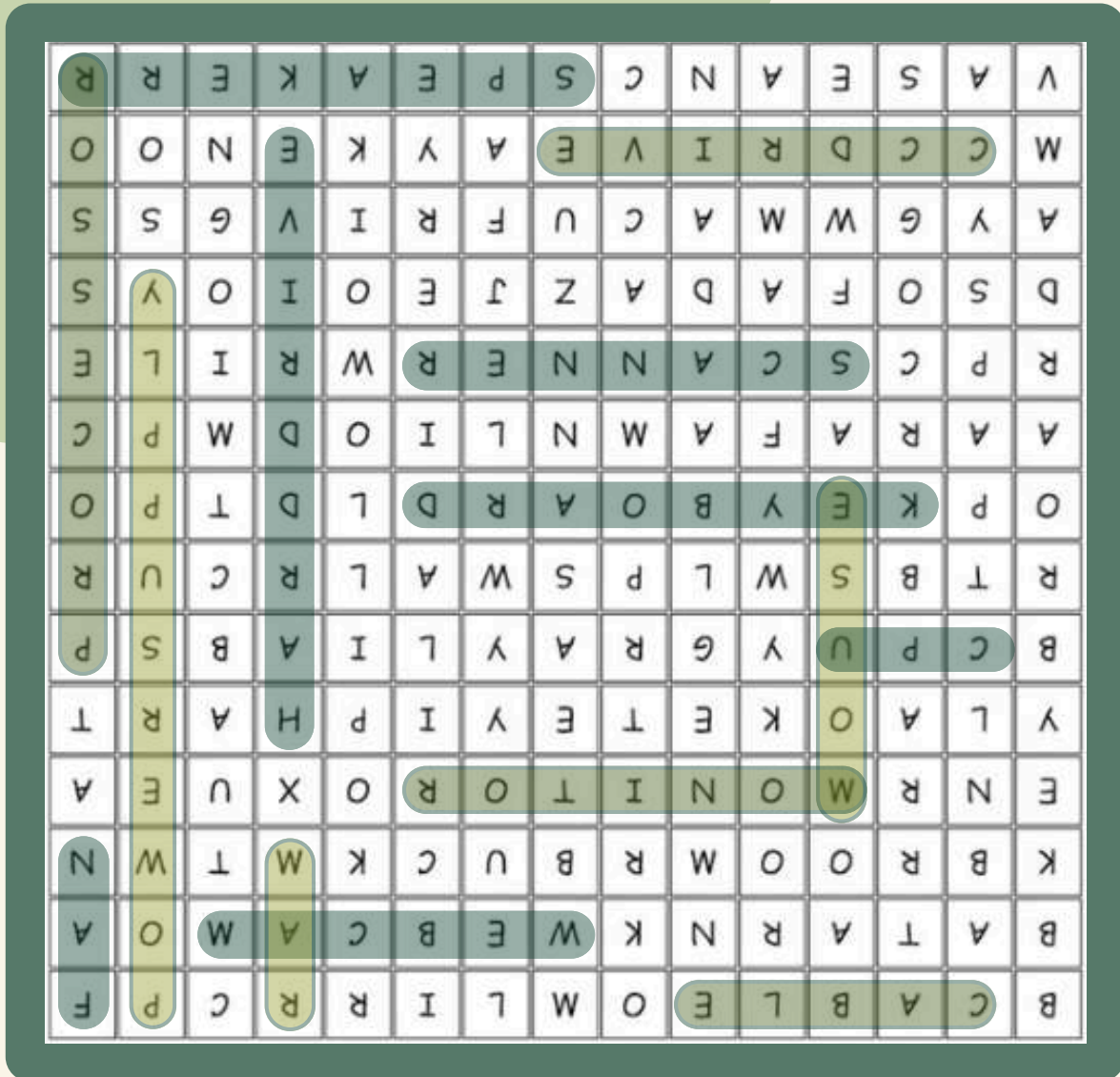
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# CODE BREAKER: FIND THE HIDDEN TECH WORDS



- Processor
- CCDrive
- Cable
- Mouse
- Monitor
- Fan
- Power Supply
- Speakers
- Scanner
- Webcam
- RAM
- CPU
- Keyboard
- Harddrive

# ANSWERS



- Processor
- CCDrive
- Cable
- Mouse
- Monitor
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# DeepSeek

## A Pinnacle of Innovation and Ingenuity in AI Development

### Introduction

In the rapidly evolving world of artificial intelligence (AI), where tech giants and well-funded startups often dominate the headlines, DeepSeek stands out as an impressive example of how innovation, determination, and resourcefulness can lead to groundbreaking achievements. DeepSeek is an AI-driven platform designed to democratize access to advanced machine learning tools, allowing individuals and small organizations to leverage AI for various applications. What makes DeepSeek truly unique is not just its mission but also the story behind its creation—a tale of overcoming limited resources to build something extraordinary.



### The Genesis of DeepSeek

The idea for DeepSeek emerged from the recognition of inequities in the AI landscape, where large corporations and well-funded institutions had access to advanced tools while smaller entities were left behind.

DeepSeek's success also reflects the impact of US export controls, which have limited Chinese tech firms' ability to compete using traditional methods. Consequently, many have focused on downstream applications instead of developing models.

However, DeepSeek's latest release showcases an alternative strategy: optimizing the foundational structure of AI models to use resources more efficiently.

Founded by Liang Wenfeng, a Chinese quant hedge fund founder, DeepSeek has quickly established itself in just two years. The company assembled a team of PhD students from China's top universities who were eager to prove themselves and acquired 10,000 Nvidia chips to support its operations. According to a paper published by the company, DeepSeek-R1 outperforms leading industry models, including those developed by OpenAI, on various math and reasoning benchmarks. In key areas such as capability, cost, and openness, DeepSeek is effectively challenging the dominance of Western AI giants.

### Building DeepSeek on Limited Resources

The creation of DeepSeek is a testament to the power of ingenuity and collaboration. With limited advanced chips, the team had to rely on a combination of open-source technologies, cloud-based solutions, and creative problem-solving to bring their vision to life.

- **Leveraging Open-Source Tools:** DeepSeek was developed with minimal funds by leveraging open-source software. The team utilized frameworks like TensorFlow and PyTorch, allowing them to concentrate on creating a user-friendly interface and unique features instead of starting from scratch.

- **Cloud-Based Infrastructure:** The team chose cloud computing services like AWS instead of expensive hardware. These platforms provided scalable and cost-effective solutions for hosting AI models, enabling DeepSeek to offer services without significant upfront capital.
- **Community-Driven Development:** The DeepSeek team embraced collaboration by engaging with the AI and developer communities. They incorporated feedback from early users and invited contributors to enhance the platform, fostering a sense of ownership among users.
- **Minimal Viable Product (MVP) Approach:** To conserve resources, the team adopted an MVP approach, developing core features for immediate user value. This enabled a quick launch of DeepSeek, allowing them to gather feedback and iteratively improve the platform.
- **Bootstrapping:** DeepSeek needed to develop more efficient methods for training its models. They optimized their model architecture by implementing various engineering techniques, including custom communication schemes between chips, reducing field sizes to save memory, and innovatively applying a mix-of-models approach.
- **Strategic Partnerships:** DeepSeek formed strategic partnerships with organizations that shared similar goals, which provided valuable resources and exposure, allowing DeepSeek to expand without requiring significant external investment.

### **The Impact of DeepSeek**

Despite its humble beginnings, DeepSeek has made a significant impact in the AI community. The platform has empowered countless individuals and small organizations to harness the power of AI for tasks ranging from data analysis and natural language processing to image

recognition and predictive modeling. By lowering the barriers to entry, DeepSeek has enabled users to innovate and solve problems in ways that were previously out of reach.

Moreover, DeepSeek's success has inspired others to pursue similar initiatives, demonstrating that with the right approach, it is possible to create impactful technology without the need for vast resources. The story of DeepSeek serves as a reminder that innovation is not just about having the most resources or the latest technology—it's about vision, perseverance, and the ability to make the most of what you have.

### **Conclusion**

DeepSeek is more than just an AI platform; it represents what can be achieved when passion and resourcefulness come together. Its creation is a story of overcoming challenges, utilizing available tools, and remaining committed to the mission of democratizing AI.

As DeepSeek continues to grow and evolve, it serves as an inspiration to aspiring innovators everywhere. It demonstrates that the path to success is not always easy; rather, it is built on ingenuity, collaboration, and a steadfast dedication to making a difference.

### **Reference Links:**

[How Chinese AI Startup DeepSeek Made a Model that Rivals OpenAI | WIRED](#)

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**ATIYAH MEHER 6BCA**

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# AI vs. Human Creativity: Can a Robot write a Bestselling Novel?

I've always wondered if AI will actually take over the world. But if it really wants to do that, it should probably start small—like trying to beat humans at their own game. Not chess or math. I mean something harder. Something that actually makes us human. Creativity. Storytelling. Emotion.

But here's the thing—AI is a really good scam artist. It doesn't think, it doesn't feel, and it sure doesn't create the way we do. It just throws words together in a way that looks convincing, like a magician pulling tricks out of a hat—impressive at first, until you realize it's all just patterns and illusions. So, can it ever write a novel that actually moves people? Can it tell a story that makes you laugh, cry, or stay up all night flipping pages? Let's find out!



So how does AI actually do it? AI just analyzes patterns from millions of texts and stitches words together in a way that seems right. Instead of coming up with original ideas, it predicts what word should come next based on everything it has read before. That's how AI tools like GPT-4, ChatGPT, Sudowrite, and Jasper AI are able to generate full books, stories, and even poems. They don't write the way humans do; they just remix what already exists.

What's crazy is that AI-generated books are already on Amazon, and a lot of people don't even realize they're reading something written by a machine. Some authors use AI as a tool to help them brainstorm or refine their writing, while others straight-up publish entire AI-written books and sell them without ever touching the content. There have been cases where AI-generated books made it to

bestsellers lists, but also plenty of times where people bought them and realized halfway through that something felt... off. Weird storytelling choices, characters acting inconsistently, sentences that technically make sense but lack any real soul.

AI is ridiculously fast. While a human author might take months (or even years) to write a book, AI can generate an entire novel in minutes. It can also mimic different writing styles, so if you want a book that sounds like Shakespeare, Jane Austen, or Stephen King, AI can make it happen. Plus, for writers struggling with writer's block, AI is a useful tool—it can suggest ideas, build dialogues, or even draft entire chapters, giving authors something to work

with instead of staring at a blank page.

But AI has some serious flaws. It doesn't actually understand what it's writing, so while it can produce impressive sentences, it struggles with deep emotions and true originality. Since it's just remixing existing content, its stories often feel predictable or generic. And if you ever used AI for a single topic for a long period of time, you will know that AI also has some serious memory issues—it sometimes forgets details, here, within its own stories, leading to situations where characters suddenly change names or locations halfway through. And then there's the nonsense. AI-generated writing can seem normal at first, but the longer you read, the weirder it gets. There have been cases where AI wrote sentences like, "She smiled, but her eyes were crying spaghetti." It sounds poetic for a second... until you realize it makes absolutely no sense.

I've seen a lot of debates about AI vs. human creativity, and honestly, I'm still trying to figure out where I stand. AI can definitely write stories, but can it actually tell them the way humans do? That's the part I'm not so sure about.

I read somewhere that in 2016, an AI-written short story almost won a Japanese literary contest. Which is kind of insane? Like, it was good enough to compete with real writers. But then again, the judges said it lacked emotional depth, so maybe it wasn't that great. And then there's this AI-generated Harry Potter fanfic that made Dumbledore dance on a pig and had Hermione... uh, eating her own parents. Which is definitely not something J.K. Rowling would have written (I hope).

AI poetry is another weird thing. It follows all the right rules, it rhymes, and it looks poetic, but when you actually read it, it just feels kind

of... empty? AI can describe sadness, but it doesn't actually feel it. It's like someone trying to write about heartbreak without ever experiencing it. Maybe that's why, even though AI can generate a whole book in minutes, it still doesn't feel like a real author.

And even if AI did write a book that was technically good, would people actually want to read it? If a book hit the bestseller list and readers found out later that no human had anything to do with it, would they still love it the same way? Maybe AI won't take over storytelling completely, but instead, it'll just be another tool—helping with the boring parts while humans bring the heart and soul.

AI is impressive—it can take everything that already exists, refine it, enhance it, and piece it together in a way that sounds original. But that's the thing—it's not actually original. It's just remixing what's already out there.

It doesn't have personal experiences, real emotions, or that spark of unpredictability that makes human creativity so powerful.

That doesn't mean AI won't play a big role in writing. It's already helping authors brainstorm ideas, refine their work, and even co-write books. Maybe the future isn't AI vs. humans but AI with humans, working together to create stories in new ways. But here's something to think about: Would you still love a book if you knew an AI wrote it? Or does a story only truly matter when it comes from a human mind?

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## AZEEN SATTAR 6BCA

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**Riddle:**  

**Hint:** An iterative approach to software development emphasizing flexibility and customer collaboration.

# AQUAFADE, THE PIONEERING PLASTIC

*Conservation, Community, Circular economy.*

In this fastmoving world, sustainability is an essential part of facing current and future challenges we may or may not face. This also involves resources being utilized to their fullest while still protecting future generations from any sort of compromise. With development and evolution in computer science and technology, various opportunities have emerged, which have affected the earth for the better.



E-waste is one of the major causes for environmental pollution, not just in quantity, but also in quality. E-waste is hazardous for its toxicity which poses significant risks to all human beings alike. There are measures (like the three Rs) that humans can follow, but informal processing of electronic waste leads to global e-waste problems. It can also contribute to issues like climate change and environmental degradation due to the materials the waste comprises (like lead, mercury, organic compounds, etc.,).

A computer cannot function without a circuit board. Acting as a terminal, it provides a platform for the electronic components within the system. It also aids in organizing the components and effective communication. Printed circuit boards (PCBs) are usually made of materials like fiberglass, epoxy, FR-4 (epoxy), etc. which make the board flexible, lightweight and bendable. Sadly, these PCBs are a significant contribution to e-waste due to improper disposal. The epoxy contained in the boards are

highly un-recyclable. It can release brominated flame retardants which are extremely harmful to the environment. Pentaform, a tech startup, attempted to reverse the above - to make circuit boards biodegradable and safe after disposal. It was made possible through AQUAFADE.



A technology that dissolves in water leaving behind no non-biodegradable plastic is something which sounds pretty farfetched. But Aquafade is something which has made it possible. Using this material for the casing of electronics, its soluble technology minimizes production of non-biodegradable components, thereby contributing less to the accumulation of e-waste. This has not only benefitted the earth, but also helped local communities financially due to recovery of the insoluble components encased in the Aquafade material case.

This innovation is one of the truer solutions to make the world greener, safer and pollution-free. And with a greener world, we can embrace sustainability, not just for us but also for future generations to come.

**Riddle:** 

**Hint:** Protecting systems, networks, and data from digital attacks.

Answer: Cybersecurity

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**SHRISTI NAYAK 2BCA 'B'**

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# EXCEL SHORTCUTS

| SHORTCUT          | ACTION                     | WHY IT'S USEFUL?                                       |
|-------------------|----------------------------|--|
| F2                | Edit active cell           | Quickly start editing without double-clicking.         |
| F4                | Repeat last action         | Saves time by applying the last action again.          |
| F11               | Create a chart             | Instantly generate a chart from selected data.         |
| Ctrl + Shift + =  | Insert Cells               | Quickly add new rows, columns, or cells.               |
| Ctrl + Delete     | Delete text to end of line | Erase text without holding backspace.                  |
| Shift + F3        | Open function wizard       | Easily insert and understand functions                 |
| Ctrl + -          | Open delete dialog         | Quickly remove selected rows, columns, or cells.       |
| Shift + F2        | Add/edit cell comments     | Add notes for clarity and collaboration.               |
| Ctrl + Shift + F6 | Switch between workbooks   | Move between open Excel files without using the mouse. |
| Alt + Down Arrow  | Open drop-down list        | Select from existing values without retyping.          |



# E-WASTE MANAGEMENT

"Proper e-waste management isn't just about discarding old electronics; it's about preserving our planet for future generations by recycling responsibly, reducing harmful waste, and rethinking the way we consume technology."

**E**waste refers to discarded electronic equipment and parts that are no longer intended for reuse. It includes both functional and broken items such as personal devices, household appliances, and IT waste. E-waste is driven by rapid technological advancements, high consumption, poor waste management, social influence, and modern consumer trends. Its production increases as replacing old devices is often cheaper than repairing them.

In 2022, an estimated 62 million tonnes of e-waste were generated globally, but only 22.3% was formally recycled. Discarded electronics are either recycled, incinerated, or landfilled, though not all methods are sustainable. Incineration, landfilling, scavenging, and acid baths are common unsound practices that pollute the environment. The informal sector, using crude extraction and recycling methods, contributes to environmental degradation and the release of toxic chemicals, posing serious health risks. The E-Waste Management Rules, 2016, were introduced to regulate e-waste disposal and formalize recycling practices.

E-waste management involves handling and disposing of electronic goods to reintegrate them into the economy. It consists of several steps: Collection – gathering e-waste from various sources;

Dismantling – breaking down components to identify reusable parts; Data Sanitization – ensuring data is completely erased; Recycling – segregating parts to create new electronic items; and Refurbishing – reusing functional components to extend the life of other devices. Plastic retrieved from e-waste is recycled into insulators, trays, and fencing posts. Recovered metals are melted and repurposed into new products. Extracted mercury is sent to specialized recovery facilities, while non-recyclable substances are disposed of at authorized treatment centres.

Recycling e-waste is often challenging due to the complexity of modern devices, which contain intricate components and a mix of materials like glass, metals, and plastics. The recycling process varies depending on the type of electronic and its composition. From a business perspective, many tech products are intentionally designed with a limited lifespan, forcing consumers to replace them frequently. This practice, known as planned obsolescence, involves design changes, limited spare parts, and non-durable materials, making older devices quickly outdated.

Exposure to e-waste poses serious health risks, especially for pregnant women, infants, and children. It is linked to stillbirths,

premature births, neurodevelopmental issues, and learning disabilities, particularly due to lead exposure from informal e-waste recycling. It can also cause reduced lung function, respiratory diseases, and increased asthma rates due to air pollution around e-waste sites. Improper disposal of batteries, plastics, and other harmful materials allows toxins to seep into soil and water, making e-waste a major contributor to air, water, and soil pollution.

Proper e-waste management is crucial as it prevents the slow release of hazardous substances. E-waste can emit over 1,000 toxic chemicals, including lead, mercury, cadmium, barium, and lithium. Prolonged exposure can lead to brain, heart, liver, and kidney diseases, affecting the nervous and reproductive systems. If buried, these chemicals leach into the soil, contaminating ecosystems.

Proper e-waste management protects the environment, conserves resources, and creates jobs. It is valuable not only for security but also for sustainability.

Key solutions include monitoring e-waste sites, improving informal recycling practices, protecting public health, and educating health workers on e-waste-related child health issues.

A little awareness can help control e-waste production. Over five billion people own mobile phones, with individuals upgrading their devices every 3–4 years. As part of this system, our choices can either protect or harm the environment. Responsible e-waste disposal through authorized channels is essential. Before discarding electronics, we should consider reuse, repair, and maintenance to extend their lifespan. End-of-life products should be handed over to registered recyclers to ensure environmentally sound management.

E-waste is one of the fastest-growing environmental challenges of our time, with its impact stretching across ecosystems, human health, and resource sustainability. While recycling efforts and technological innovations are helping address the crisis, the gap between e-waste generation and proper disposal continues to widen. Governments, businesses, and individuals must take collective action to improve waste management, promote sustainable product design, and encourage responsible consumption. The future of e-waste management lies in a circular economy—where electronics are built to last, repair is prioritized over replacement, and recycling is efficient and accessible. As consumers, small actions like recycling old devices, supporting sustainable brands, and reducing unnecessary upgrades can make a significant difference. By embracing these changes, we can reduce the environmental burden of e-waste and move toward a more sustainable digital world.

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**SHIVANGI BURMAN 4 BSC CS-MAT**

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**Riddle:** 🗯️🌐

**Hint:** A platform for version control and collaboration, allowing multiple people to work on projects simultaneously.

Credit: NARMADHA 6 BCA

# THE OPEN-SOURCE REVOLUTION: HOW COLLABORATIVE DEVELOPMENT IS SHAPING THE FUTURE OF TECHNOLOGY ?

The world of technology is evolving rapidly, and **open-source development** has become one of the most significant driving forces behind this transformation. From operating systems like **Linux** to programming languages like **Python** and web browsers like **Mozilla Firefox**, open-source software forms the backbone of modern computing. But what makes open-source so powerful, and why should developers actively contribute to it?

In recent years, I've come across countless articles, talks, and discussions by some of the most influential voices in tech, all pointing to one common theme—the **significance of open-source development**. Whether it's a keynote speech at a developer conference or a blog post by an industry leader, there is a shared understanding that open source is not just about code; it's about **collaboration, innovation, and the future of technology itself**.

## The Power of Open Source

At its core, open-source software is built on the principles of **collaboration, transparency, and innovation**. Unlike proprietary software, where the source code is restricted, open-source projects allow anyone to view, modify, and distribute the code. This model encourages a global community of developers to contribute, improve, and expand technology beyond the limits of individual organizations.

Open-source development has already led to some of the most groundbreaking technological advancements:

- **Android OS**, the world's most popular mobile operating system, is open-source.
- **Git**, the version control system used by millions of developers, was created as an open-source project.
- **Kubernetes** and **Docker**, which revolutionized cloud computing, originated from open-source communities.



The impact of open source is undeniable—it **democratizes technology, accelerates innovation, and fosters inclusivity.**

## The Role of Contributions in Open Source

While reading about the evolution of open-source projects, one thing becomes clear: **contributions matter.** Many of the most impactful open-source tools started as small projects but grew because developers, testers, writers, and designers **chose to contribute.**

Professionals frequently talk about the importance of getting involved in open source, not just from a technical standpoint, but as a way to be part of a larger movement. Some of the common reasons I've come across include:

- **Skill Development** – Many have pointed out that working on open-source projects provides hands-on experience in real-world coding standards, software architecture, and collaboration tools like GitHub.
- **Community and Networking** – I've seen countless testimonials from developers who built strong connections through open-source communities, leading to job offers, collaborations, and even startup ventures.
- **Shaping the Industry** – Open source is often described as a way to have a direct impact on the future of technology. Many of today's breakthroughs—**AI frameworks, cloud computing tools, blockchain innovations**—are the result of collective open-source efforts.

What's particularly interesting is that contributing to open source doesn't always mean writing code. Several articles and talks highlight the importance of **documentation,**

**bug reporting, UI/UX improvements, and community engagement** as equally valuable contributions.

It's not just individual developers who recognize the value of open source—**companies, both startups and tech giants, are actively supporting it.**

- **Google, Microsoft, IBM, and Facebook** are some of the biggest contributors to open-source projects.
- Many businesses **build their products on open-source frameworks,** proving that free and open software is a strong foundation for commercial success.
- There's an increasing push for **open-source ethics,** ensuring that AI models, security protocols, and cloud computing services remain transparent and accessible.

It's fascinating to see how open-source development has shifted from being a **community-driven initiative to an industry-wide movement** that is shaping the very future of technology.

The open-source movement is more than just a method of software development—it is a force driving technological progress, collaboration, and innovation. As industry leaders and companies continue to invest in and support open-source initiatives, its impact will only grow stronger. Whether through code, documentation, or community engagement, every contribution plays a role in shaping the future of technology. Open-source development is not just about building software; it's about building a **global, inclusive, and forward-thinking tech ecosystem.**

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**HARSHITA KHOIRAM 4BSC CS-MAT**

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# BUGS AND GLITCHES

## *Legendary Software Fails: When Code Went Horribly Wrong!*

Even the biggest tech giants and engineers have made costly mistakes! Here are some of the most famous software bugs and glitches in history.

### **Mars Climate Orbiter (1999)- Lost in Translation**

✗ **Issue:** NASA engineers mixed imperial (pound-seconds) and metric (Newton-seconds) units.

🔥 **Impact:** The probe entered Mars' atmosphere incorrectly and burned up, costing \$327.6 million.

### **Therac-25 (1985–1987- Deadly Radiation Bug**

✗ **Issue:** A race condition in medical radiation software led to massive overdoses.

💀 **Impact:** At least six patients died due to fatal radiation exposure.

### **Ariane 5 Flight 501 (1996) - Overflow Disaster**

✗ **Issue:** A floating-point to integer conversion error caused a software crash 37 seconds after launch.

 **Impact:** The \$370 million rocket self-destructed in mid-air.

### **Google's €100 Billion AI Mistake (2023)**

✗ **Issue:** Google's AI chatbot Bard made a factual error in its first public demo.

💰 **Impact:** Google lost \$100 billion in market value in one day due to investor panic.

# AI x IoT – the collaboration we needed

*“Sustainability is no longer just a goal—it’s a tech-driven revolution powered by AI, IoT, and data-driven innovation.”*



Due to the hundred, million things that exist in this world, keeping a track of all of them gets tiring as well as difficult to keep them in check. AI has helped us be better at it by assisting in tasks like tracking, record conservation and optimization. Internet of things is said to be a network of physical devices which when connected, help in retrieving and sharing data. IoT “smart objects” range from simple devices which exist at our own houses (like smartwatches) to complex technology (like machinery). It makes use of sensors, cloud processing, user interaction, etc. to function in the various ways such devices are created for. Artificial intelligence and IoT work hand in hand to become an even more powerful solution for preservation and sustainability; with IoT collecting data and AI analysing it, efficiency and resource optimisation becomes very simple. Following are some examples that demonstrate the above:

**W**hile the above statement is something I found on the web as I was brainstorming for an idea for this newsletter, it just might have been the exact thing I needed to light up a bulb. We’re in a fast-moving world. At times, we might not even realize the developments that happen around us, even at our own workplaces maybe. AI has been integrated into so many daily used items that we don’t even realize how these items will work if AI didn’t exist. Sustainability is a term growing rapidly. In a general context, sustainability is nothing but practices that protect future generations while still meeting the needs of the current generation. “Practices” here can refer to actions like preservation and protection of biodiversity, policies, etc.

- Smart grids for energy optimisation, Google's data centres to monitor consumption and reduce it efficiently
- Smart tractors for farms to monitor crop health and prediction of required materials to take care of crop and soil
- EV charging networks to take care of and distribute charge
- AI powered road security cameras and traffic lights to monitor daily traffic and reduce congestion of vehicles on roads
- Smart irrigation, Smart water leak detection to measure weather conditions and keep a lookout for leaks in cities respectively

There are merely just some of the numerous inventions and innovations that exist to date. This powerful combination has not only helped in preserving our surroundings, but also in optimising and utilising resources to their fullest. Sustainability is indeed a tech driven revolution.

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**SHRISTI NAYAK 2BCA 'B'**

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**Riddle:** 🤖🇮🇳

**Hint:** A type of artificial intelligence that allows software applications to become more accurate in predicting outcomes without being explicitly programmed.

## THE EVOLUTION OF PROGRAMMING LANGUAGES: FROM ASSEMBLY TO PYTHON

Programming languages have come a long way since the inception of computing. The evolution of these languages reflects the changing needs and complexities of computing systems, and their journey is nothing short of remarkable.

### Assembly Language: The Dawn of Programming

In the early days of computing, programming was done using machine language, which consisted of binary code. However, this was highly error-prone and difficult to understand. To address this, assembly language was developed in the 1950s. Assembly language used mnemonic codes and labels to represent machine-level instructions, making it slightly more human-readable. It allowed programmers to write code that was directly translated into machine language by an assembler.

### High-Level Languages: The Need for Abstraction

As computing systems grew more complex, the need for more abstract and human-readable programming languages became evident. High-level languages (HLLs) emerged in the late 1950s and early 1960s. These languages allowed programmers to write instructions using English-like syntax, which was then translated into machine code by a compiler or interpreter.

**FORTRAN**, developed in 1957 by IBM, was one of the first high-level languages. It was designed for scientific and engineering calculations. Soon after, **COBOL** (Common Business-Oriented Language) was introduced in 1959 for business applications. Both languages significantly reduced the complexity of programming and made it more accessible to a broader audience.

## The Advent of Structured Programming

In the late 1960s and early 1970s, the concept of structured programming gained prominence. This paradigm emphasized the use of control structures like loops and conditionals to improve code readability and maintainability. **ALGOL**, developed in the late 1950s, and **Pascal**, developed in 1970, were among the languages that embodied structured programming principles.

## Object-Oriented Programming: The Next Revolution

The 1980s saw the rise of object-oriented programming (OOP), which aimed to model real-world entities as objects. This paradigm facilitated code reuse, modularity, and abstraction. **C++**, developed in the early 1980s, extended the C language with object-oriented features. It became widely used for system and application programming.

**Java**, introduced by Sun Microsystems in 1995, further popularized OOP. Its platform-independent nature, thanks to the Java Virtual Machine (JVM), made it a favorite for web and enterprise applications. Java's "write once, run anywhere" philosophy revolutionized software development.

## Scripting Languages: Enhancing Productivity

As the internet grew in the 1990s, there was a need for scripting languages to create dynamic web content. **JavaScript**, developed by Netscape in 1995, became the go-to language for client-side web development. Its ability to manipulate web pages in real-time made it an essential tool for web developers.

Python, created by Guido van Rossum in the late 1980s and released in 1991, gained popularity as a versatile, easy-to-learn scripting language. Python's readability, simplicity, and extensive libraries made it suitable for various applications, from web development to data science and artificial intelligence.

## The Modern Era: Python's Dominance

Python's rise to dominance in recent years is a testament to its adaptability and user-friendly nature. It has become the language of choice for many developers due to its simplicity, readability, and extensive ecosystem. Python's role in data science, machine learning, and artificial intelligence has solidified its position as one of the most popular programming languages today.

The evolution of programming languages highlights the continuous drive toward greater efficiency, readability, and abstraction in software development. From the early days of assembly language to the dominance of Python, each stage has brought significant advancements that have shaped modern computing. High-level languages simplified coding, structured programming improved maintainability, and object-oriented principles enhanced modularity. With the rise of scripting languages and Python's widespread adoption in emerging fields like AI and data science, programming continues to evolve, ensuring that developers have powerful and accessible tools to meet the ever-growing demands of technology.

# 3D PRINTING: A SUSTAINABLE REVOLUTION



Additive manufacturing, often known as 3D printing, has become a game-changing technology that has the potential to change a number of industries while simultaneously reducing environmental effects. Because it facilitates on-demand production, lowers waste, and improves resource efficiency, it is becoming more widely acknowledged as a sustainable substitute for traditional manufacturing. However, 3D printing has both beneficial and detrimental effects on the environment, just like any other technology. In addition to discussing its drawbacks and wider ramifications, this essay explores how 3D printing advances sustainability.

## The Sustainable Impact of 3D Printing

- **Resource Conservation:** Traditional manufacturing methods waste a lot of raw materials. In contrast, 3D printing builds objects layer by layer, using only the necessary material, which reduces waste and promotes sustainability. This is especially beneficial for industries like automotive and healthcare, as it conserves natural resources and allows for the use of recycled materials.
- **Lowered Carbon Footprint:** 3D printing is typically more energy-efficient than traditional manufacturing, especially for small-scale or customized production.

- It reduces the need for large factories and extensive supply chains, decreasing the carbon footprint associated with production and distribution.
- **Localized Production:** A significant environmental benefit of 3D printing is its promotion of localized manufacturing. By enabling products to be printed on-site, it reduces long-distance shipping and lowers greenhouse gas emissions from transportation.
- **Circular Economy:** Advances in 3D printing technology now allow for the use of recycled plastics and biodegradable materials, including algae-based filaments, reducing reliance on virgin resources and promoting a circular economy.
- **Innovation in Design:** 3D printing enables the creation of complex, lightweight structures that traditional methods can't achieve. In aerospace and automotive industries, lighter components reduce fuel consumption and lower emissions.
- **E-Waste and Printer Lifespan:** 3D printers, like other electronic devices, have a limited lifespan and contribute to electronic waste when discarded. Proper recycling and disposal of these devices remains a challenge.
- **Scalability Issues:** 3D printing is excellent for prototyping and small-scale production, but it's not yet cost-effective for mass production, which limits its use in some industries.
- **Toxic Emissions:** Certain 3D printing processes, especially with thermoplastics, emit ultrafine particles and volatile organic compounds (VOCs), pose health risks, and contribute to air pollution if not managed properly.

### **Challenges of 3D Printing**

Despite its potential, 3D printing is not without challenges and drawbacks, particularly when it comes to sustainability and scalability.

- **Energy Consumption:** While 3D printing can be energy-efficient for small-scale production, processes like metal 3D printing require significant energy due to high temperatures and long printing times, potentially offsetting environmental benefits.
- **Material Limitations:** Many 3D printers still use petroleum-based plastics like ABS, which are not biodegradable and contribute to plastic pollution. Eco-friendly materials are limited and often more expensive.

### **Conclusion**

3D printing offers significant potential to tackle environmental issues related to traditional manufacturing, but technical limitations and commercial adoption challenges currently hinder its progress. Continued research and development are necessary to address concerns like emissions, material constraints, and energy consumption. With innovation and ethical standards, 3D printing can contribute to a more sustainable future. A balanced approach is essential to ensure that its benefits outweigh any drawbacks, fostering a greener environment.

### **Reference Material:**

[\(PDF\) Application of 3D printing across various fields to enhance sustainable manufacturing \(2024\) | Madhab Chandra Jena](#)

# Whispers in Verse

## THE DEEPEST PEACE...

*The world inside of me seems loud and fast,  
I really wonder how can it be so vast!  
My thoughts are hurrying for no cause,  
looks like it never wants to take a pause...*

*I wake up ignited every morning,  
defying the doubt, ignoring the warning!  
But in no time, my ocean-like brain  
predicts burden and I end up in vain!*

*How long should I dwell in this mess?  
The currents of darkness, I want to compress...  
For only when I walk through this night  
I can build up strength to know what's right!*

*The place where my soul feared the most  
became the guardian and my host!  
Down beneath, deep down, there exists  
immense peace that forever persists...*

*Though life seems like an endless fight,  
I'll win against it with all my might!  
This pain can never break me down,  
And here I stand, embracing my crown!!..*

***"Her own thoughts and  
reflections were habitually her  
best companions!"  
-Jane Austen***

## JUST THE WAY YOU ARE!

*My head is running over like busy bee.  
And my thoughts are gonna set me free!  
The terror of insecurity is making me flee. And I  
keep wondering, why does this  
happen to me?*

*The fear of not being heard is making me hide.  
This fact is gushing me away like a tide.  
I'm constantly in search of that inner light, which  
can untie me and cause me ignite.*

*I'm clueless about what I want  
And I'm always in search of things to flaunt. At  
times I feel that I'm fit for nothing  
This image keeps me worried about everything.*

*Well I think now, It's time for a deal.  
I should ignore darkness and strive to heal. I'd like  
to enter a state of bliss,  
By motivating myself to chant this:*

*"Though things might turn upside down,  
Try to find everything by your own! Remember, you  
are stronger than you think.  
When you believe in yourself, all struggles will  
vanish in a blink!"*

*Hey beautiful me, stay as much as far  
from people, who never accept for who you are.*

*Try to embrace the best qualities in yourself, This  
will grant you inner peace and  
you'll a star yourself!*

*Proclaim to the world, that you're not a coward.  
Always push yourself and keep moving forward!  
Stay positive cuz this will erase your inner scar.  
Remember! You're perfect.... Just the way you are*

# ACTIVITIES(2024-25)



**Freshers' day (Glamour Grid)**



**Academica (Singhasan)**



**Placement Interaction Session**



**Science Day (Cognitium)**



**Industrial Visit**



**Cul-Week (Fall Quest Frenzy)**



**Cul-Ah (Ascend: Rise of the Aces)**



**IT Club Activity**

# WORKSHOP



**Tech by Heart in collaboration with Hemant Sharan J, Assistant Commissioner of Police, Central Bengaluru Division (CEN)**



**Cyber Security and Ethical Hacking**



**Cybersecurity and Ethical Hacking by Techbyheart**

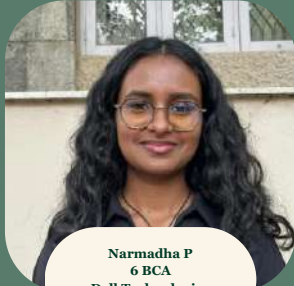


**Ethical Hacking & Social Awareness**



**Global Education Awareness Program Talk Mr. Abhilash, International Skill Development Cooperation (ISDC)**

# STEPPING INTO SUCCESS



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Inside Product Specialist



**Diya Ponnappa**  
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Operations Analyst



**Jhanavee Devee v**  
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Deloitte  
Web Developer



**Atiyah Meher**  
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Web Developer



**Umaymah**  
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**Theertha Girish**  
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**Priyadharshini**  
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Co-Ordinator &  
Associate Professor



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**Dr. Peter Jose P**  
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**Dr. Sarwath Unnisa**  
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**Ms. Renuka A**  
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**Mr. Digvijay S**  
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**Ms. Rakshitha Shindhey G**  
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**Ms. Trupthi M**  
Teaching Assistant

## COURSES OFFERED

### UG PROGRAM

**B.SC COMPUTER SCIENCE, MATHEMATICS**  
**B.SC DATA SCIENCE**  
**BACHELOR OF COMPUTER APPLICATIONS (BCA)**

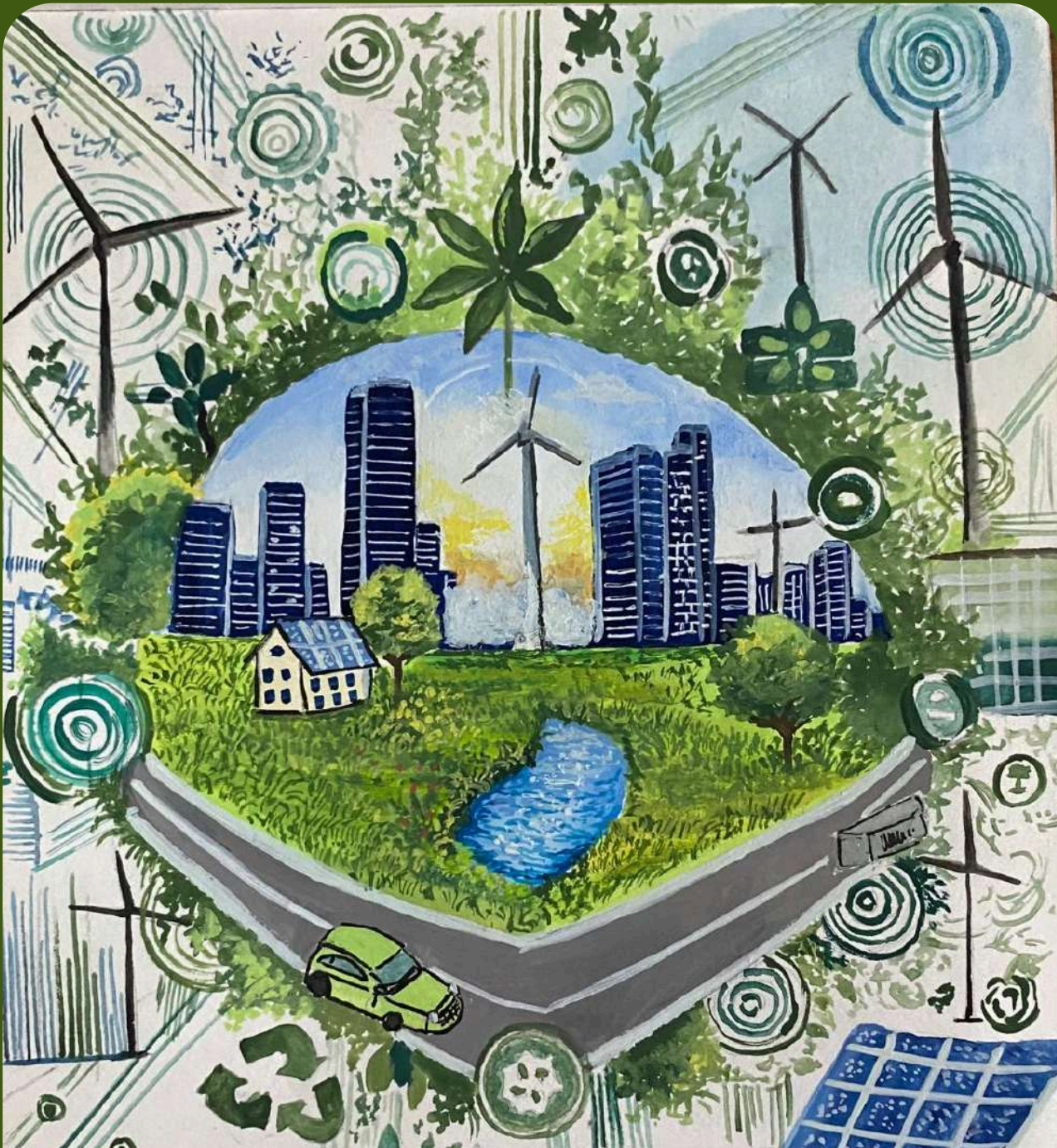
### PG PROGRAM

**M.SC COMPUTER SCIENCE (DATA SCIENCE SPECIALIZATION)**  
**MASTER OF COMPUTER APPLICATIONS (MCA)**

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ARTWORK BY SAMHITHA 6BSC CS STATS



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