

PANIMALAR ENGINEERING COLLEGE

Bangalore Trunk Road, Varadharajapuram, Poonamallee, Chennai – 600 123.

DEPARTMENT OF INFORMATION TECHNOLOGY

Technosphilla 22

DEPARTMENT MAGAZINE

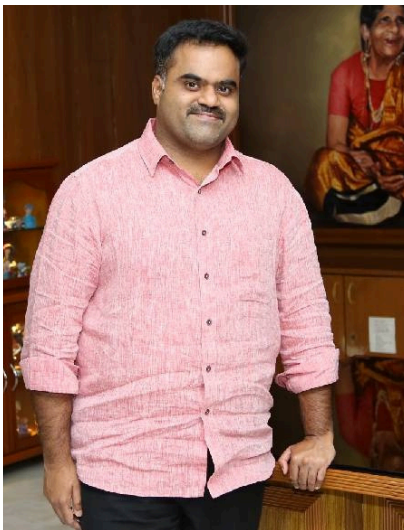
2021-2022

MESSAGE FROM THE MANAGEMENT

My sincere thanks go out to everyone who contributed to Technosphilla '22, the department magazine, which has been published with many advances in various fields.

The magazine envisions the genuine quality of both students and staff and serves as a print board to launch the department on its journey into the future. I wish the department all success.

Dr.P.Chinnadurai, M.A., M.Phil, Ph.D
Secretary & Correspondent,
Panimalar Group of Institutions



The lonely fantasies of the past in the era of computers have woven into a stunning panorama of reality in the present.

The issue of the magazine Technosphilla '24, offers loving assistance so they can leave feeling satisfied, fulfilled, and at the pinnacle of perfection. I want them to have the capacity to learn everything there is to know about computers.

Dr. C. Sakthi Kumar M.E, Ph.D
Director,
Panimalar Group of Institutions

As we continue to march ahead with unwavering dedication towards nurturing holistic development, I am delighted to address you through the pages of our esteemed magazine.

This magazine showcases the immense talent and creativity that thrives within our college community. Our college has always placed a strong emphasis on providing a well-rounded education that goes beyond textbooks and classrooms.

I urge all of you to take some time to peruse the magazine and embrace the passion and creativity on display.

Dr. Saranya Sree Sakthi Kumar B.E, M.B.A, Ph.D.
Director,
Panimalar Group of Institutions





Dr. K.Mani, M.E, Ph.D
Principal,
Panimalar Engineering College

I'm thrilled to share the Panimalar Engineering College's information technology department magazine with you. You will enjoy reading this work since it will introduce you to the many activities of this vibrant department.

Let this magazine and subsequent ones keep us all constantly updated on all the department's developments in the years to come. I offer my congratulations to the department's head, all of the staff, and all of the students for their excellent initiative in publishing this magazine.

EDITORS NOTE

Dear Readers,

It brings us great pleasure to publish this magazine on behalf of Panimalar Engineering College's Department of Information Technology. It was a pleasure to serve as this issue's editors. This magazine highlights the hidden talents of our students on various aspects and fields.

We sincerely hope that you are thrilled to understand the numerous skills made by the students of our department.

We would like to extend our sincere gratitude to Dr. M Helda Mercy, our department head, for her assistance, support, and direction in the development of this magazine.

Chief Editor:

Dr. M HELDA MERCY,
PROF & HEAD / IT DEPARTMENT

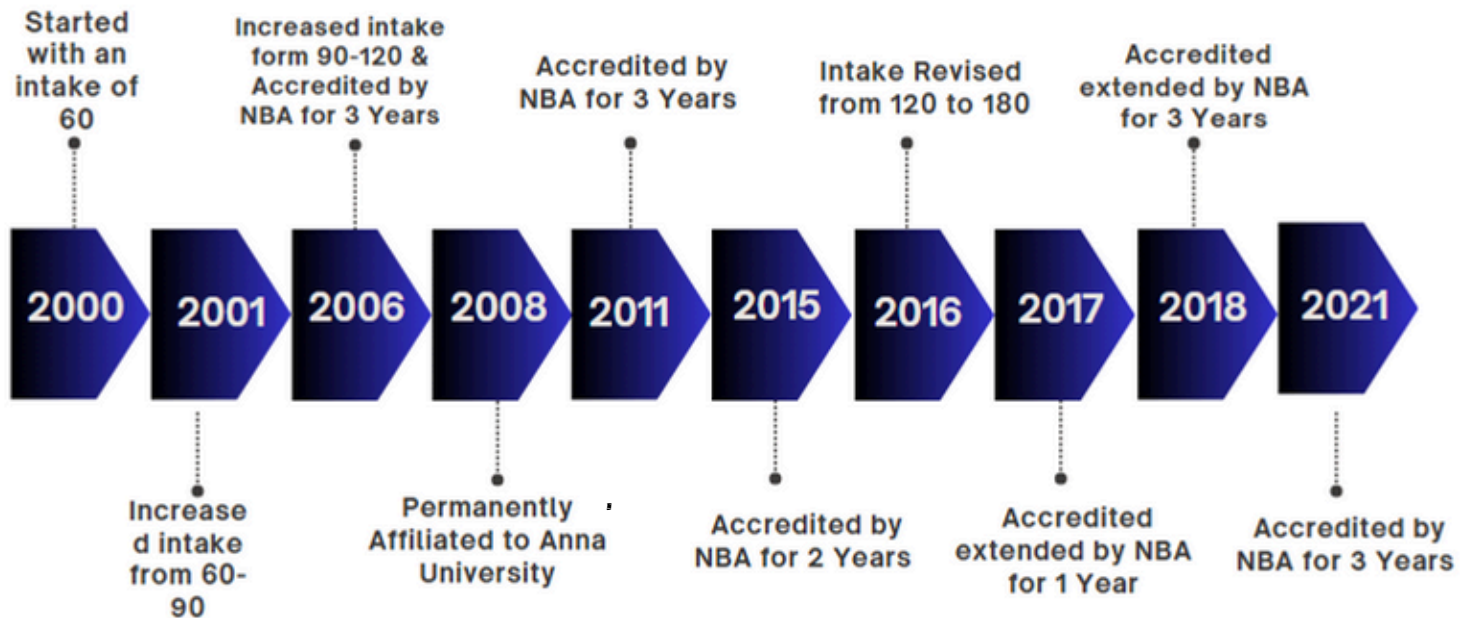
Faculty Editor:

Mrs. S. SHARANYAA / ASST PROF
IT DEPARTMENT

Student Editors:

KEERTHIVASAN R
KEERTHANA H
TAMILBHARATHI S

DEPARTMENT MILESTONE

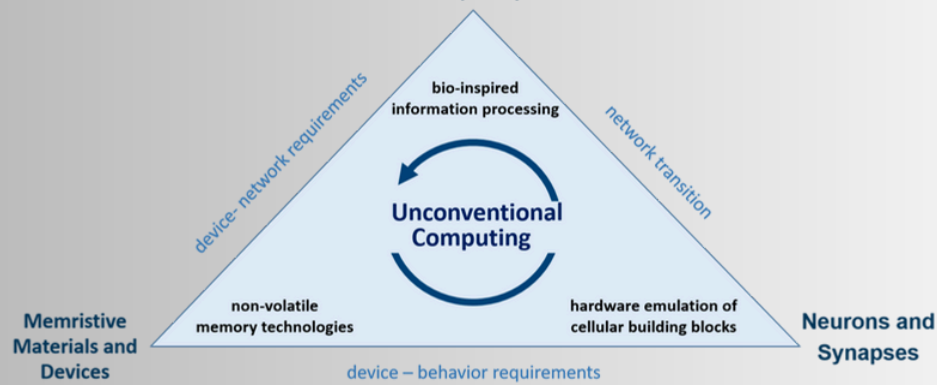




Research *Gazette*



A PERFECT STORM AND A NEW DAWN FOR UNCONVENTIONAL COMPUTING



As we enter an era increasingly defined by large-scale data acquisition and information analysis, a perfect storm is brewing. On one hand, new applications, including artificial intelligence (AI), require efficient compute to consume (and generate) data in a timely fashion. On the other hand, the main historical technology driver of silicon-based computing systems, Moore's law, continues its slowdown.

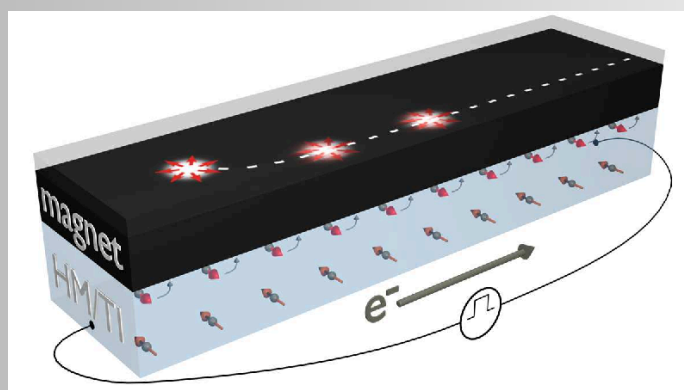
To overcome these challenges, there is a general consensus that future computing systems will require innovations across the whole computing stack, through co-designs of algorithms, architectures, circuits, as well as the underlying devices, materials and physical state variables used to store and process information.

It is our vision to make npj Unconventional Computing a home to such computing innovations and co-design efforts. By highlighting "unconventional," we hope to encourage and report research beyond the use of standard algorithms and digital logic-based hardware implementations, as opposed to, for example, applying AI to solve specific problems.

*2020PECIT183
DHANASEKAR S*



MAGNETIC SKYRMIONS FOR UNCONVENTIONAL COMPUTING



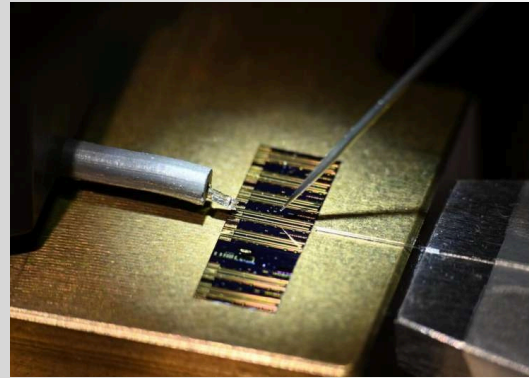
Magnetic skyrmions are nanoscale, stable, and energy-efficient magnetic structures driving advances in unconventional computing. Their small size and dynamic properties make them ideal for applications like neuromorphic systems, reservoir computing, and non-von Neumann architectures, integrating memory and processing. While they offer high-density data storage and low power consumption, challenges in control, scalability, and material costs remain, requiring further research to realize their potential in next-generation computing technologies.

*HARSHAN KRISHNA
2019PECIT270*



LASER-BASED ARTIFICIAL NEURONS

Laser-based artificial neurons represent a groundbreaking approach in the development of neuromorphic computing systems, where artificial structures mimic the behavior of biological neurons. These neurons utilize laser light to emulate the spiking activity of their biological counterparts, enabling ultrafast and energy-efficient data processing. By leveraging the unique properties of lasers—such as coherence, speed, and precision—these systems can perform complex computations, including pattern recognition and decision-making, at the speed of light.



A key innovation in this area is the use of photonic systems, where light is used instead of electricity to transmit and process information. Laser-based neurons exhibit high parallelism, allowing multiple signals to be processed simultaneously, which significantly enhances computational power. Additionally, they are less prone to heating issues compared to electronic systems, making them highly energy-efficient.

These artificial neurons are being explored for applications in advanced machine learning models, real-time data analysis, and optical computing systems. Despite their advantages, challenges remain, such as the scalability of these systems and the integration of photonic components into existing electronic infrastructures. Ongoing research aims to address these issues, paving the way for a new era of ultrafast and efficient computing technologies.

PRASANNASRINIVASAN A
2020PECIT192



ADVANCEMENTS IN 3D CHIP TECHNOLOGY

Advancements in 3D chip technology are transforming the landscape of semiconductor design, enabling higher performance, reduced power consumption, and enhanced computational capabilities. Unlike traditional 2D chips, which arrange components in a flat layout, 3D chip technology stacks multiple layers of circuits vertically, creating a more compact and efficient architecture. This approach reduces the physical distance between components, improving data transfer speeds and lowering latency.

Key innovations include Through-Silicon Vias (TSVs), which allow vertical electrical connections between layers, and advanced packaging techniques such as chiplet integration, where multiple smaller chips are combined into a single 3D module. These advancements enable greater parallelism and support the integration of heterogeneous components, such as CPUs, GPUs, and memory, on a single chip. This versatility is particularly beneficial for high-performance computing, artificial intelligence, and Internet of Things (IoT) applications.

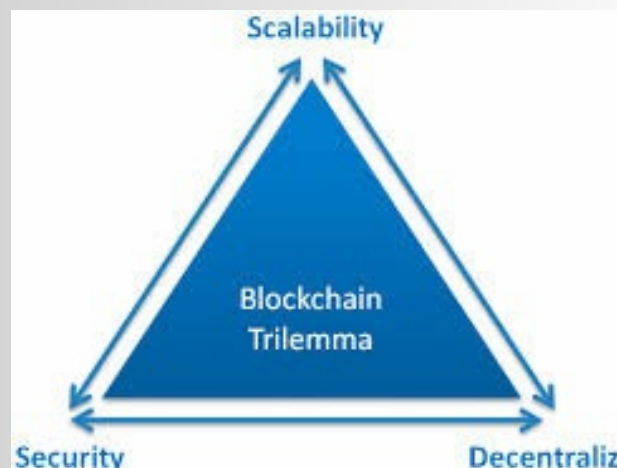
3D chip technology also addresses the limitations of Moore's Law by improving performance without relying solely on transistor miniaturization. However, challenges remain, including heat dissipation in densely packed layers, manufacturing complexities, and cost scalability. Researchers and industry leaders are actively exploring solutions, such as innovative cooling techniques and advanced fabrication processes, to overcome these obstacles. As the technology matures, 3D chips are poised to revolutionize industries by delivering unprecedented levels of computing power in smaller, more energy-efficient devices.

2020PECIT141
PREETHI N



Human-Computer Interaction

Blockchain scalability is the ability of a blockchain to handle a growing number of transactions efficiently. As blockchain networks expand, challenges like transaction speed, cost, and decentralization become more prominent. To address these, several solutions are being explored, such as Layer 2 solutions (e.g., Lightning Network), sharding (splitting the network into smaller segments for parallel processing), and alternative consensus mechanisms like Proof of Stake (PoS) and Delegated Proof of Stake (DPoS). Sidechains also help offload transactions from the main blockchain. Despite these advancements, issues of security, decentralization, and interoperability need to be addressed for mass adoption.



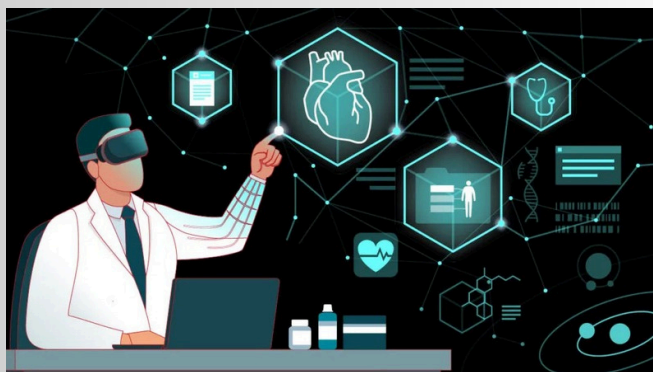
Central to HCI is the concept of user experience (UX), which encompasses the overall experience users have when interacting with a system or device. UX design principles emphasize usability, accessibility, and the emotional impact of interactions, striving to meet user needs and preferences effectively. This involves iterative design processes, where user feedback and usability testing play crucial roles in refining interfaces and improving user satisfaction.

SOWNDARYA K
2020PECIT165



AI Tools for Healthcare

AI tools for healthcare are revolutionizing the industry by enhancing diagnostic accuracy, treatment personalization, and operational efficiency. These tools leverage machine learning, natural language processing, and predictive analytics to analyze medical data, detect patterns, and assist healthcare professionals in decision-making. AI-powered systems can interpret medical images (e.g., X-rays, MRIs), predict patient outcomes, and even assist in drug discovery by analyzing vast datasets. Additionally, AI aids in streamlining administrative tasks such as patient scheduling and billing. The integration of AI into healthcare promises to improve patient outcomes, reduce costs, and enhance the overall quality of care.

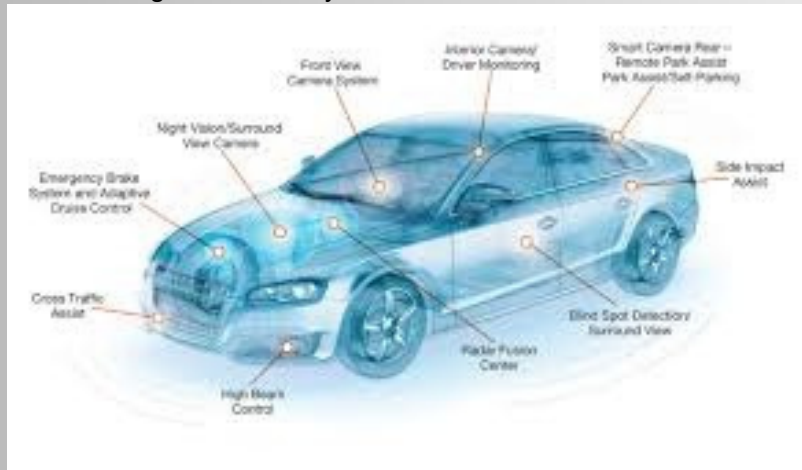


BARANI DHARAN A
2020PECIT240



Self-driving car systems

Self-driving car systems, or autonomous vehicles (AVs), are designed to navigate and operate without human intervention by utilizing a combination of advanced technologies such as AI, machine learning, sensors, and real-time data processing. These systems rely on sensors like lidar, cameras, radar, and ultrasonic sensors to perceive the environment and make decisions based on that data. AI and deep learning algorithms process this information to recognize objects, understand road conditions, and predict the behavior of other road users. While AVs hold significant promise, challenges remain in achieving full autonomy.



These challenges include ensuring safety and reliability in complex road scenarios, integrating various technologies into a cohesive system, overcoming regulatory hurdles, and addressing ethical concerns. Furthermore, public trust in self-driving technology is still a barrier, as many remain wary of its safety and reliability. Despite these obstacles, advancements in sensor technology, improved AI models, and collaborations between automakers and tech companies are gradually overcoming these limitations. The future of self-driving cars lies in further technological development, regulatory clarity, and the integration of smarter infrastructure, potentially revolutionizing transportation by making it safer, more efficient, and more accessible.

GRACY ROSHINI B
2021PECIT134



Artificial Life (AL) and Emergent Computation

Artificial Life (AL) and Emergent Computation are fields that explore the creation of life-like behaviors and complex computations from simple artificial systems, often inspired by biological processes. These areas focus on simulating or engineering systems that exhibit behaviors typically associated with living organisms, such as self-organization, adaptation, and evolution, as well as developing computational models that can solve complex problems through emergent behavior.

In artificial life, researchers aim to replicate the properties of biological life, including reproduction, evolution, and adaptation, within digital or synthetic environments. This often involves creating virtual organisms or artificial ecosystems that evolve over time, exploring how simple rules can lead to complex, life-like behaviors. One of the key ideas in AL is that life-like properties can emerge from simple interactions within a system, much like how biological life evolves from basic molecular interactions.

VAMSHIKRISHNAN S
2021PECIT215

LET'S TALK IN
FUTURE-TENSE



TRENDING NOW

TECHNOSPILLA '22

Current Trends in Technology

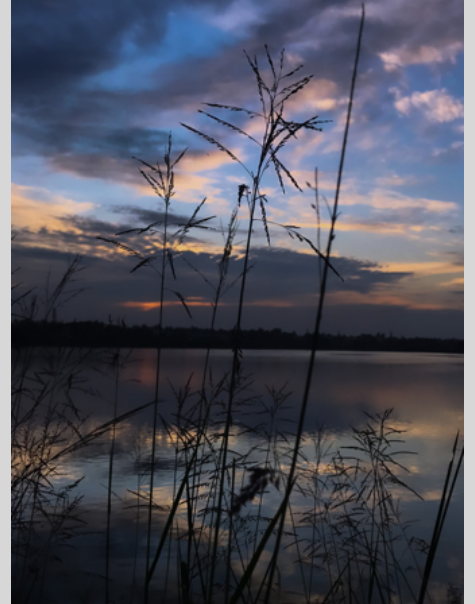
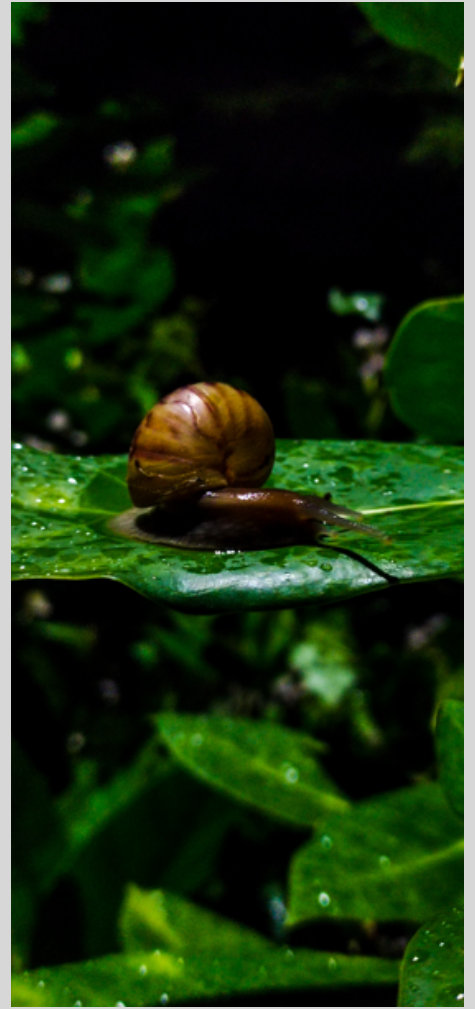
- AI and ML are transforming industries like healthcare, finance, and retail. They enable automation, predictive analytics, and personalized experiences, with applications ranging from chatbots to autonomous systems.
- Generative models (e.g., GPT-4, DALL-E) are advancing content creation, including art, writing, and software code. These tools are revolutionizing creativity and design processes across multiple fields.
- Edge computing brings data processing closer to the source, reducing latency and bandwidth usage. It is crucial for IoT applications, autonomous vehicles, and real-time decision-making.
- The rollout of 5G networks is enabling faster, more reliable internet, supporting IoT growth, smart cities, and autonomous vehicles with low-latency communication.
- Quantum computing promises to solve complex problems in cryptography, material science, and optimization that are beyond classical computing. It is still in development but has the potential to revolutionize various industries.
- Blockchain technology is driving the rise of DeFi, secure digital transactions, and transparent systems. Cryptocurrencies and blockchain-based applications are expanding into new sectors, despite regulatory challenges.
- AR and VR are transforming industries like entertainment, healthcare, education, and retail. These technologies provide immersive experiences and are a key part of the metaverse development.
- As digital transformation accelerates, cybersecurity remains critical. AI-driven threat detection, zero-trust security models, and privacy innovations are essential to protect data and systems from cyberattacks.
- There is a growing focus on eco-friendly technologies, including renewable energy, electric vehicles, and energy-efficient systems, to address climate change and promote sustainability.
- Robotics and automation are reshaping industries like manufacturing, healthcare, and logistics. AI and machine learning are powering robots to enhance efficiency and safety across sectors.
- Advances in genomics, AI, and big data are enabling personalized healthcare treatments. Biotechnology is also driving innovations in gene editing, drug discovery, and therapies for various diseases.

SURIYA PRIYA R
2021PECIT184

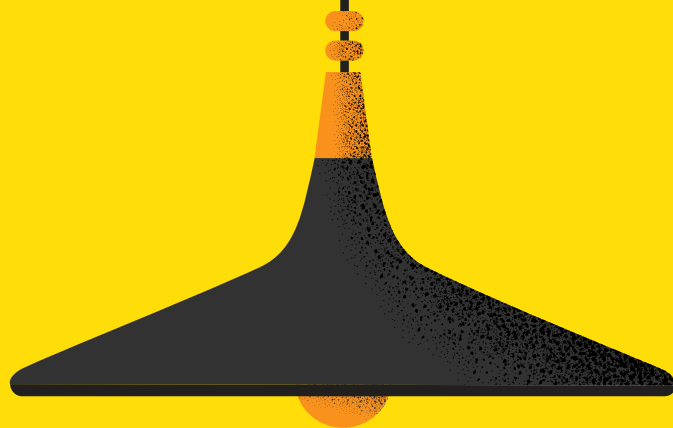
SHUTTERED E R E N I T Y



TECHNOSPILLA '22



**2020PECIT146
RAJASHREE V**



WE ARE
HIRING

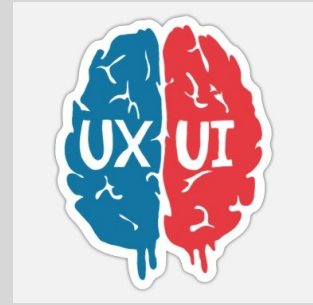




UX/UI Designer

Skills Required:

UX/UI Designer: Proficiency in design tools.
User research methodologies
Wire-framing, prototyping
Front-end development, usability principles.



Quality Assurance (QA) Tester

Skills Required:

Attention to detail, understanding of software testing methodologies, familiarity with automated testing tools.



Database Administrator

Skills Required:

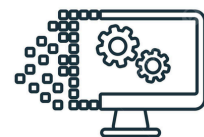
SQL, understanding of database management systems (MySQL, PostgreSQL, Oracle), data modeling



Digital Transformation Manager

Skills Required:

Project management expertise
Emerging technologies, strategic planning
Stakeholder management
Organizational change and innovation.



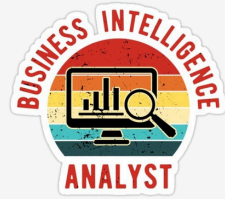
DIGITAL TRANSFORMATION



BUSINESS INTELLIGENCE ANALYST

Skills Required:

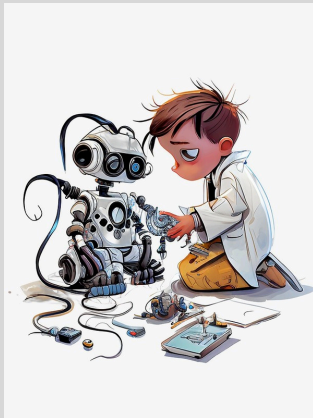
- Data analysis and visualization tools
- SQL and database querying skills
- Data warehousing concepts



WEB DEVELOPER

Skills Required:

HTML, CSS, JavaScript, responsive design, familiarity with frameworks like React or Angular.



DATA ANALYST

Skills Required:

Excel, SQL, basic knowledge of Python or R, data visualization tools (Tableau, Power BI).



CLOUD SOLUTIONS ENGINEER

Skills Required:

Understanding of cloud computing concepts, familiarity with services like AWS or Azure, basic networking knowledge.



Certifications (Optional but Beneficial)

- CompTIA A+/Network+ for technical support roles.
- AWS Certified Cloud Practitioner for cloud roles.
- Certified Ethical Hacker (CEH) for cybersecurity positions.
- Oracle Certified Associate (OCA) for database roles.

GANESH G
2023PECIT260



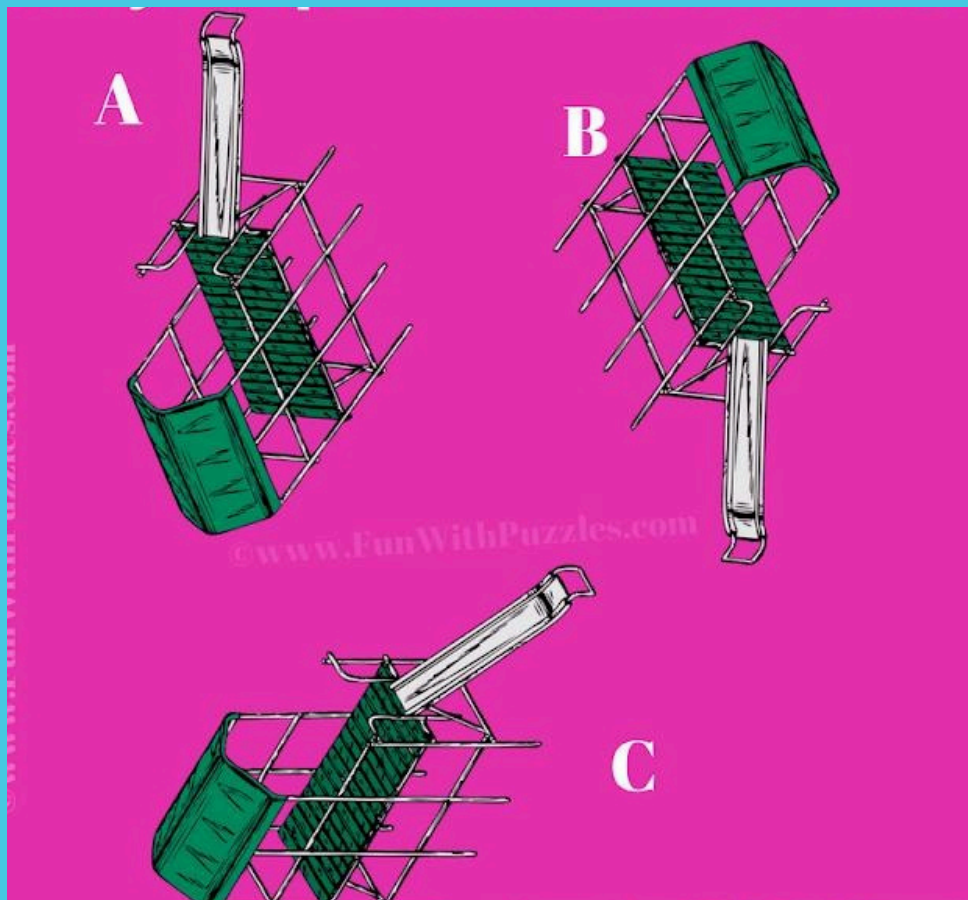
Tips for Freshers

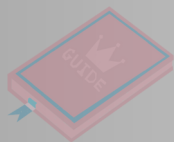
- **Build a Portfolio:** Work on personal projects or contribute to open-source projects to showcase your skills.
- **Internships:** Look for internship opportunities to gain practical experience.
- **Networking:** Attend tech meetups, webinars, and online forums to connect with professionals in the industry.
- **Online Courses:** Utilize platforms like Coursera, HackerRank, Codechef etc.. to learn and gain certifications in relevant technologies.

ABINAYA A G

BRAIN FLEX

Find the odd one out?





Placement Guidelines



To the creative minds and enthusiastic learners of Panimalar, I would like to share a few things that helped me grow through the next phase, The Placements!

- Familiarize yourself with the placement process at your institution, including timelines, procedures, and required documents.
- Keep your resume clear and concise. Include sections such as Education, Skills, Projects, Internships, and Extracurricular Activities.
- Participate in mock interviews organized by the placement cell or student clubs to gain confidence.
- Prepare for frequently asked questions like "Tell me about yourself," "Strengths and weaknesses," and situational questions.
- Revise core subjects related to your field. Focus on important concepts and problem-solving techniques.
- Engage in projects, internships, or workshops to gain practical knowledge and hands-on experience.
- Participate in group activities to enhance collaboration and teamwork skills.
- Arrive on time for interviews and placement tests.
- Keep up with the latest trends and developments in your field to demonstrate your interest during interviews.
- Consider enrolling in online courses to enhance skills that are in high demand in your field.
- Research companies that are recruiting, including their culture, values, and recent developments
- Utilize the resources offered by college's placement cell for workshops and guidance.

To all Panimalarites, I wish you the best of luck in your placement journey. Remember to stay focused, keep learning, and approach challenges with a positive attitude. With determination and the right skill set, you can achieve great success. Preparation is key to success in the placement process. Start early, stay organized, and maintain a positive attitude. Good luck!

Dymphna Mary

SUDOKU

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	4				6			
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Journey of a Panimalarite

ALUMNI CORNER





ALUMNI TESTIMONIALS



"Looking back, the most valuable aspect of my time at Panimalar Engineering College wasn't just the academic knowledge—it was the way the college prepared me to think outside the box. The focus on leadership, teamwork, and entrepreneurship inspired me to start my own business. I can still recall the intense group discussions and project presentations that allowed me to develop my communication and leadership skills. Today, I run my own successful startup, and I'm incredibly grateful to my college for fostering my entrepreneurial spirit and providing the platform to grow."



CELINA REKHA J

"My time at PEC was transformative. The faculty's support and the hands-on learning opportunities in computer science set me up for success in the tech industry. I remember the technical workshops and coding competitions that pushed me to think critically and creatively. The placement cell was incredibly helpful in guiding us through interviews, and I credit much of my career's success to the skills I honed at the college. I am currently working as a Software Engineer at Accenture , and I couldn't be more thankful for the strong foundation that Panimalar Engineering College gave me."



DIVYA P

"The engineering program at Panimalar equipped me with not only the technical knowledge but also the problem-solving skills required in the real world. The hands-on labs and projects during my undergrad helped me apply theoretical concepts in practical settings, and I got to work with a diverse group of students, which enriched my learning experience. The professors were incredibly supportive, always encouraging us to think critically and explore innovative solutions to complex problems. The college also provided excellent opportunities to collaborate on real-time industry projects, which prepared me for the challenges I would face in my professional career.

Today, as a Software Engineer at Infosys, I rely on the strong foundation built during my time at Panimalar to tackle engineering challenges. Whether it's analyzing large-scale systems or developing efficient code, I find myself using the skills I honed during my studies every day. The technical knowledge, teamwork skills, and problem-solving mindset I developed at Panimalar continue to guide me in my career. I'm proud to say that the experience I gained there laid the groundwork for my professional success and shaped me into the confident engineer I am today."



SARAVANAN G

SOLUTIONS

IF
 $123=12$
 $134=20$
 $253=40$
 $261=21$
 THEN
 $542=?$



The answer is 51

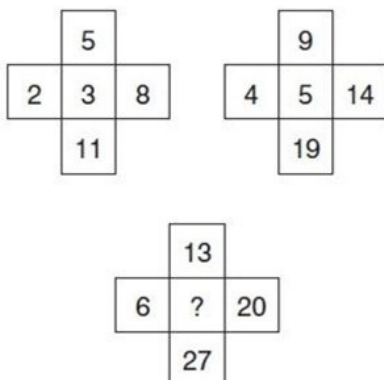
Multiply all the numbers on the left and then add each of the digits to the multiplication to get the number on the right side of the equation.

IF
 $A + C = 4$
 $D + E = 9$
 $B + F = 8$
 $Z + C = 29$
 THEN
 $G + A = ???$



The answer is 8

Mark $A=1$, $B=2$, $C=3$ and so on till $Z=26$
 So $G+A=7+1=8$



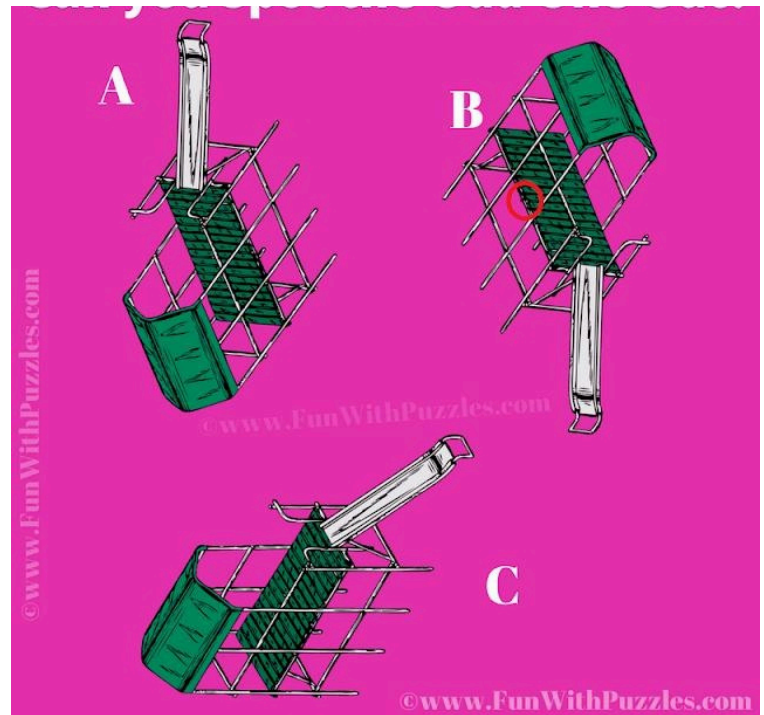
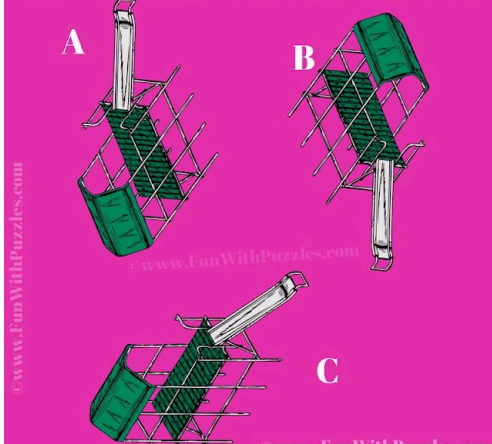
The answer is 7

The numbers round the center **increase by seven** (in the others they increase by three and five respectively)

Day - Break

SOLUTIONS

Can you Spot the Odd One Out?



The answer is Alice: Cherry, Bob: Banana, Charlie: Apple
- Page no 17

SUDOKU

1	5	6	2	3	9	7	8	4
7	4	3	8	5	6	9	2	1
9	8	2	1	4	7	5	6	3
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2	9	8	3	6	5	4	1	7
4	6	9	7	8	3	1	5	2
5	2	1	6	9	4	3	7	8
8	3	7	5	2	1	6	4	9

1	3	6	5	2	4	7	9	8
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8	1	5	7	4	6	3	2	9
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5	9	2	6	3	7	8	4	1
3	8	1	5	9	4	2	7	6
4	6	7	8	1	2	9	5	3

Night fall

Day-Break