Vol-6 ISSUE 4- 2023

Dr. M.G.R.
EDUCATIONAL AND RESEARCH INSTITUTE
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Periyar E.V.R. High Road, Maduravoyal, Chennai-95. Tamilnadu, India.

FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF MECHANICAL ENGINEERING

MESSAGE:

HOD

EDITOR'S

ARTICLES CORNER

1.Latest Innovations in Science & Technology

2.Must-Have Skills for the Modern Workforce

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Alumni Corner

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HOD-DESK

MESSAGE

by,
Dr.K.RAJAN,
HOD/Mech Engg.

HOD message:

Greetings!

I am delighted that Dr. MGR University has provided us with the opportunity and vision to support the release of the Newsletter series throughout all quarters of each academic year. This platform serves as a valuable forum for connecting with all stakeholders and fostering a sense of community.

I am especially pleased to see our department releasing the Newsletter for the period of October 2023 to December 2023. Wishing for many more successful editions ahead and an enriching reading experience for all!

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MESSAGE

Message:

It gives us immense pleasure to be an integral part of this Newsletter—a powerful communication platform designed to meet the needs of the time. It serves as a bridge, delivering key messages about significant events, achievements, and milestones to all concerned.

Beyond being an information channel, the Newsletter fosters a strong sense of belonging among faculty, alumni, and students. Life does not offer rewinds, only flashbacks, and our talented alumni possess a wealth of experience and skills to share with current students through insightful talks and newsletters.

We believe our efforts will be truly meaningful when, after reading these articles, you feel inspired and motivated to contribute even more to future editions. Let's continue this journey of knowledge sharing, collaboration, and growth together!

EDITORIAL BOARD

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ACTION CORNER

SNIPPETS FROM PALS AND OUR UNIVERSITY

OCTOBER TO DECEMBER

DATE	EVENT TITLE	SPEAKERS	EVENT COORDINATE
6 October, 2023	ISR Activity on Immunisation Awareness	A Joseph Mathew, CHAIRMAN, INDIAN PLUMBING ASSOCIATION	
7 November 2023	Guest Lecture on Flexible Manufacturing Systems	VIJAYARAGHUNATHAN V Associate Professor Dr.M.G.R Educational & Research Institute	

PALS: OCTOBER

EVENT: PALS-L2M- ENTREPRENEUR SPEAKS
SPEAKER: Vetrivel Palani
DATE: 25.10.2023
VENUE: ZOOM

On 25th October 2023, PALS-L2M organized the "Entrepreneur Speaks" session, featuring Vetrivel Palani, Founder & CEO of DAIRY. During the session, Vetrivel Palani shared his entrepreneurial journey, insights into the dairy industry, and the challenges and opportunities in starting and scaling a business. His experience as a founder offered valuable lessons to aspiring entrepreneurs, highlighting key aspects of leadership, innovation, and sustainability in business.

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ARTICLES CORNER

Emerging Career Opportunities in 2025

By,
Mr. Andrew Nallayan,
Asst. Professor/ Mech Engineering.

Science and technology are evolving at an unprecedented pace, bringing forth groundbreaking innovations that are shaping the future. From artificial intelligence to space exploration, the latest advancements are revolutionizing industries and improving lives. Here are some of the most remarkable innovations in science and technology in recent times:

1. Artificial Intelligence & Machine Learning

AI continues to make strides across various sectors, including healthcare, finance, and automation. Recent breakthroughs include:

- **Generative AI Models:** Advanced AI models like ChatGPT and DALL-E are transforming content creation, coding, and design.
- **AI in Drug Discovery:** AI-powered platforms are expediting drug development by analysing vast datasets and predicting potential compounds.

- **Autonomous Systems:** AI-driven self-driving cars and drones are becoming more sophisticated, enhancing logistics and transportation.

2. Quantum Computing

Quantum computing is advancing rapidly, with companies like Google, IBM, and startups achieving new milestones. Some notable developments include:

- **Quantum Supremacy:** Google and other tech giants are demonstrating the ability to solve complex problems exponentially faster than classical computers.
- **Secure Communication:** Quantum cryptography is enhancing data security through unbreakable encryption methods.
- **Optimization & Simulation:** Industries are leveraging quantum computing for material science, financial modelling, and climate simulations.

3. Biotechnology & Genetic Engineering

Biotechnology is making remarkable progress in medicine, agriculture, and sustainability. Key advancements include:

- **CRISPR Gene Editing:** Precision gene-editing technologies are being used to treat genetic disorders and enhance crop resilience.
- **Lab-Grown Organs:** Scientists are developing bioengineered tissues and organs to address organ transplant shortages.
- **Synthetic Biology:** Engineered microbes are being used for sustainable fuel production, pollution cleanup, and personalized medicine.

4. Space Exploration & Astronomy

Humanity is venturing deeper into space with ambitious missions and technological advancements:

- **Artemis Program:** NASA's Artemis missions aim to return humans to the Moon and establish a lunar base for future Mars exploration.
- **Private Spaceflight:** Companies like SpaceX and Blue Origin are making space travel more accessible with reusable rocket technology.

- **Exoplanet Discoveries:** Powerful telescopes like the James Webb Space Telescope are uncovering new exoplanets and potential signs of extraterrestrial life.

5. Renewable Energy & Sustainable Technology

Sustainability innovations are crucial for combating climate change. Some groundbreaking developments include:

- **Next-Gen Solar Panels:** High-efficiency perovskite solar cells are improving solar energy conversion rates.
- **Green Hydrogen:** Hydrogen fuel derived from renewable sources is emerging as a clean alternative to fossil fuels.
- **Carbon Capture Technologies:** Innovations in carbon sequestration are helping reduce greenhouse gas emissions from industrial activities.

6. Robotics & Automation

Robots are transforming industries by enhancing efficiency and precision. Recent advancements include:

- **Humanoid Robots:** AI-powered robots are assisting in healthcare, customer service, and manufacturing.
- **Swarm Robotics:** Coordinated robotic swarms are being deployed for environmental monitoring, disaster response, and agriculture.
- **Soft Robotics:** Flexible robotic structures inspired by nature are improving surgical procedures and delicate handling tasks.

7. Smart Materials & Nanotechnology

Innovative materials are unlocking new possibilities in construction, electronics, and medicine:

- **Self-Healing Materials:** These materials can repair themselves, extending product lifespan and reducing waste.
- **Nanomedicine:** Nanoparticles are being used for targeted drug delivery and early disease detection.
- **Graphene Applications:** Graphene-based technologies are enhancing battery performance, water filtration, and flexible electronics.

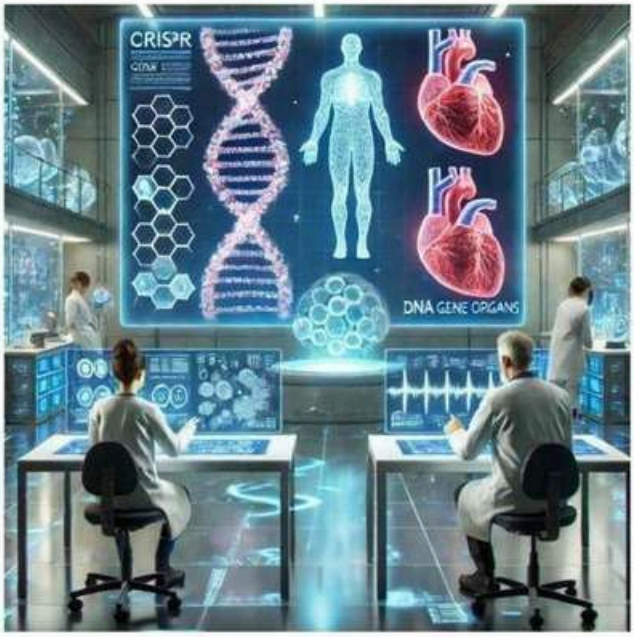
8. 5G & Next-Gen Communication

The rollout of 5G networks is revolutionizing connectivity and enabling futuristic applications:

- **Ultra-Fast Internet:** 5G provides high-speed, low-latency connectivity for smart cities and autonomous systems.
- **IoT Expansion:** The Internet of Things (IoT) is expanding with connected devices optimizing energy use, healthcare, and industry operations.
- **6G Research:** Scientists are already working on the next evolution of communication technology, promising even faster data transfer rates.

Conclusion

The rapid advancements in science and technology are shaping the world in extraordinary ways. From AI-driven innovations to space exploration and sustainable energy, these breakthroughs are improving human life and paving the way for a smarter, more efficient future. As research continues, the possibilities for further discoveries and applications are limitless.



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Must-Have Skills for the Modern Workforce

BY: MR.R.T.CHANDER, Asst Professor, Mech Engineering

In today's fast-paced, technology-driven world, the workforce is constantly evolving. With advancements in artificial intelligence, automation, and the growing emphasis on digitalization, employees must continually update their skill sets to remain relevant in their fields. Whether you're just starting your career or are an experienced professional looking to stay competitive, there are key skills that every modern worker should cultivate. Let's explore some of the most important ones.

1. Digital Literacy

As technology continues to transform every aspect of the workplace, digital literacy is no longer optional. Employees must be proficient in using various software tools, platforms, and systems. This includes basic knowledge of productivity software (like Microsoft Office or Google Workspace), familiarity with project management tools (e.g., Trello, Asana), and the ability to navigate data analytics platforms or CRM systems. Digital literacy also encompasses understanding cybersecurity practices and maintaining privacy online.

2. Communication Skills

Clear and effective communication remains one of the most valuable skills in any profession. In the modern workforce, employees must be able to express themselves clearly in both written and verbal forms, especially with remote work becoming increasingly common. This includes emails, virtual meetings, reports, and presentations. Additionally, active listening and the ability to engage in productive discussions are essential in both team settings and client-facing roles.

3. Critical Thinking and Problem-Solving

The ability to think critically and solve complex problems is highly sought after in today's workforce. As industries become more dynamic, employees are often faced with unpredictable challenges. The ability to analyse a situation, assess available data, and think creatively to find solutions is a valuable asset. Critical thinking encourages workers to approach problems logically, while also considering new and innovative methods to address issues.

4. Adaptability and Flexibility

In the ever-changing landscape of business and technology, adaptability is a key skill. The ability to adjust to new roles, processes, tools, or even organizational structures is crucial. Workers must be comfortable with change, whether it's in the form of adopting new technologies or shifting to remote or hybrid work models. Flexibility allows employees to thrive in uncertain environments, helping them respond to change with agility and a positive attitude.

5. Collaboration and Teamwork

With the rise of remote work and global teams, collaboration has become more important than ever. Being able to work effectively within diverse, cross-functional teams is crucial for success. Modern employees should know how to collaborate across departments, time zones, and cultural differences. This includes being open to others' ideas, giving and receiving constructive feedback, and contributing to a positive and supportive team environment.

6. Emotional Intelligence (EQ)

Emotional intelligence is the ability to recognize, understand, and manage your own emotions, as well as the emotions of others. In the workplace, EQ is critical for building strong interpersonal relationships, managing stress, and navigating office dynamics. High emotional intelligence helps with conflict resolution, managing workload pressures, and understanding diverse perspectives. With EQ, employees are better equipped to lead teams, inspire collaboration, and create a positive workplace culture.

7. Time Management and Self-Discipline

In an era where distractions are everywhere, time management has become a fundamental skill. Being able to prioritize tasks, set goals, and meet deadlines efficiently is essential for staying productive. Time management also involves knowing when to delegate tasks, when to say no, and how to balance professional and personal responsibilities. Self-discipline plays a significant role here, particularly in remote work settings where the boundaries between work and personal life can blur.

8. Creativity and Innovation

Creativity is no longer just for artists and designers—it's a crucial skill in all industries. The ability to generate fresh ideas, approach tasks from new angles, and think innovatively is vital for staying competitive. Modern workers must be open to experimentation, willing to challenge the status quo, and proactive in looking for ways to improve processes or products. Creativity also supports problem-solving by presenting novel approaches to challenges.

9. Data Literacy

Data is the foundation of decision-making in today's digital world. Professionals need to be comfortable interpreting and using data to guide their decisions. This includes understanding basic data analysis, recognizing trends, and knowing how to make informed choices based on data insights. Even if your job doesn't directly involve data science, understanding how to read and interpret key metrics can make you a more valuable team member.

10. Leadership and Decision-Making

Leadership skills aren't limited to managers or executives. Today's employees are expected to lead projects, influence colleagues, and make decisions that impact their team or company. Strong leadership involves taking initiative, being accountable, and guiding others toward achieving goals. It also means being able to make sound, timely decisions, often in high-pressure situations. Even without a formal leadership title, demonstrating leadership qualities can set you apart in your career.

11. Cultural Competence and Diversity Awareness

In a globalized world, the ability to understand and respect cultural differences is increasingly important. Employees must be aware of how diversity impacts their workplace, interactions with colleagues, and their approach to business. Cultural competence helps in fostering inclusive environments where people from all backgrounds feel valued, leading to more innovative and effective teams.

Conclusion

The modern workforce is multifaceted, demanding a wide array of skills to keep pace with technological advancements and evolving business needs. By cultivating digital literacy, communication skills, adaptability, emotional intelligence, and other essential competencies, employees can not only survive but thrive in today's dynamic job market. As industries continue to change, the key to success will be lifelong learning and the ability to embrace new challenges with a proactive and growth-oriented mindset.

Investing in these skills will not only make you more employable but also position you as a forward-thinking and invaluable asset to any organization.

Must-Have Skills for the Modern Workforce (Anime Edition):

By: Jai Kishore.M,

3rd Yr, Mechanical Engg.

In a world full of challenges, whether it's the corporate battlefield or an actual fantasy battlefield, having the right skills can make or break your journey. Just like an anime protagonist levelling up, modern professionals need to upgrade their skill sets to stay ahead. Let's dive into the must-have skills for the modern workforce—anime style!

1. Digital Literacy – The Tech Mastery of a Cyber Hero

In the digital age, mastering technology is as essential as a hacker in a cyberpunk anime. Just like **Kazuto "Kirito" Kirigaya** from *Sword Art Online* navigating the virtual world, modern professionals need to understand software, data analytics, and cybersecurity to stay ahead.

◈ **Key Abilities:**

- Proficiency in digital tools
- Cybersecurity awareness
- Navigating AI and automation

2. Communication – The Power of Words Like a Shōnen Protagonist

Ever noticed how anime heroes talk their way into friendships or out of dangerous situations? Like **Lelouch vi Britannia** (*Code Geass*) persuading armies, professionals must master communication—both verbal and written—to succeed.

◈ **Key Abilities:**

- Clear and concise messaging
- Effective negotiation skills
- Active listening and teamwork

3. Critical Thinking – The Strategic Genius

From **Light Yagami** (*Death Note*) devising elaborate plans to **Shikamaru Nara** (*Naruto*) strategizing in battle, critical thinking is a skill that separates the best from the rest. Whether solving problems in business or real life, a sharp mind wins.

◈ **Key Abilities:**

- Logical reasoning
- Analytical problem-solving
- Decision-making under pressure

4. Adaptability – The Shape-Shifting Survivor

Think of anime characters who constantly evolve—like **Eren Yeager** (*Attack on Titan*), adapting to new realities. In today's fast-changing job market, the ability to learn and adjust is a survival skill.

◈ **Key Abilities:**

- Willingness to learn new skills
- Handling sudden challenges
- Thriving in remote/hybrid work environments

5. Emotional Intelligence – The Heart of a True Leader

A great leader isn't just strong—they understand people. Like **Tanjiro Kamado** (*Demon Slayer*), professionals must be emotionally intelligent, empathetic, and capable of handling stress with grace.

◈ **Key Abilities:**

- Understanding emotions (yours and others')
- Conflict resolution
- Leadership and mentorship

6. Time Management – The Speed of a Shōnen Hero

If only we had **Dio Brando's** (*JoJo's Bizarre Adventure*) ability to stop time! Since we don't, we need strong time management skills to juggle tasks like an overpowered anime protagonist.

◈ **Key Abilities:**

- Prioritization and focus
- Meeting deadlines efficiently
- Balancing work and personal life

7. Creativity & Innovation – The Vision of a Dreamer

Great anime creators give us mind-blowing stories—professionals need that same innovation. Like **Senku Ishigami** (*Dr. Stone*) reinventing civilization with science, modern workers must think outside the box.

◈ **Key Abilities:**

- Problem-solving with creativity
- Thinking outside conventional methods
- Innovation in projects and business strategies

8. Collaboration – The Strength of Nakama (Companions)

No hero fights alone. Just as **Luffy** (*One Piece*) relies on his crew, workplace success depends on teamwork. Collaboration ensures smoother workflows and stronger relationships.

◈ **Key Abilities:**

- Working with diverse teams
- Sharing ideas and feedback
- Supporting colleagues in achieving goals

Conclusion – Become the Protagonist of Your Career!

Every great anime protagonist starts as an underdog, but through perseverance, skill-building, and an unbreakable spirit, they rise to greatness. Your career journey is no different!

Just like Izuku Midoriya (*My Hero Academia*) training to master One for All, or Naruto Uzumaki striving to become Hokage, you must continuously improve your abilities. The modern workforce is your battleground, and the skills you develop—digital mastery, critical thinking, adaptability, and leadership—will be your ultimate techniques.

◈ Level Up Constantly – Never stop learning. Every new skill is an upgrade to your power level.
◈ Face Challenges Head-On – Like an anime hero, embrace setbacks as part of your growth arc.
◈ Surround Yourself with Nakama (Allies) – Success isn't a solo adventure; teamwork and collaboration will help you reach new heights.
◈ Stay Resilient and Believe in Yourself – Even when things get tough, push forward. Every hero faces trials before they achieve greatness.

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INSPIRING PAPER CRAFT - A HOBBY

by, N.V.Parimala Sowmyaa, 3rd Yr, Mechanical Engg.

The Magic of Paper: A Journey into Creativity and Craft

There is something deeply satisfying about the crisp, familiar feel of an old newspaper. Whether lost in thought, watching TV, or simply seeking a moment of calm, my hands instinctively reach for its pages—rolling, folding, and shaping them into miniature works of art. This seemingly unremarkable material, so easy to manipulate into delicate forms or fine cylindrical rolls, has become my favourite medium for crafting. With a little imagination, even discarded paper can be reborn into something extraordinary.

Origami—the mesmerizing art of transforming a single sheet of paper into intricate forms—has long held a special place in my heart. A few precise folds, and an ordinary page blossoms into a graceful swan, a playful fox, or a delicate butterfly. Each creation carries its own charm, proving that the possibilities of paper are as limitless as the human imagination. It's a form of magic, where a flat surface takes on infinite dimensions, shaped only by patience, vision, and a touch of wonder.

Like many, my journey into paper crafting began with the simple pleasure of folding a boat, setting it afloat, and marvelling at its effortless grace. But curiosity soon pushed me beyond the basics. I found joy in crafting intricate butterflies, detailed dino baskets, and whimsical pop-up greeting cards—each piece a reflection of my evolving love for the art. The greatest reward? The delight on the faces of those who received them, especially my mother, my first and most cherished audience.

As my passion deepened, I ventured beyond traditional folds, embracing the structural possibilities of rolled newspaper tubes. This shift unlocked an entirely new dimension of creativity. One of my proudest achievements is a fully functional dining table, crafted meticulously from rolled newspaper tubes—a testament to the strength and versatility of paper. I have also experimented with flower vases, artistic lamp shades, and even an outdoor swing, proving that paper, when handled with care and precision, can be transformed into something both functional and breathtaking.

The process of paper crafting is not just an artistic endeavour—it is a meditative practice, a lesson in patience, and a testament to the beauty of simplicity. With a keen eye for detail and a spark of creativity, even the most ordinary scraps can be reshaped into extraordinary art. Best of all, this craft comes at almost no cost, proving that true creativity does not rely on expensive materials but on the ability to see potential where others see waste.

As I continue this artistic journey, I look forward to sharing my creations, techniques, and inspirations. If you, too, find joy in shaping paper into something extraordinary, let's embark on this creative adventure together. After all, with a single fold, a new possibility is born.

Success Story of Elon Musk

by, Hari Krishnan D, 3rd Yr, Mechanical Engg

The Success Story of Gautam Adani: From Small Beginnings to a Global Business Empire

Gautam Adani, the chairman and founder of the Adani Group, is one of the most powerful business magnates in India and a global leader in infrastructure, energy, and logistics. His rise from a modest background to becoming one of the richest individuals in the world is a true testament to vision, perseverance, and bold entrepreneurship.

Humble Beginnings and Early Struggles

Born in 1962 in Ahmedabad, Gujarat, Gautam Adani grew up in a middle-class family. His father was a small textile merchant, but young Adani had little interest in the family business. He had an entrepreneurial spirit from an early age and dreamed of making it big.

At 18, he dropped out of college and moved to Mumbai with just a few hundred rupees in his pocket. He started working as a diamond sorter in a jewellery firm, gaining valuable business experience. Within a few years, he established his own diamond brokerage business, which became successful and gave him his first taste of financial independence.

The Birth of the Adani Group

In 1981, his elder brother asked him to return to Ahmedabad and help run the family's newly acquired plastics business. Seeing an opportunity in global trade, Adani ventured into the import and export business in 1988, founding **Adani Exports** (now **Adani Enterprises**). Initially, the company focused on agricultural and power commodities, but Adani had bigger ambitions.

His turning point came in the 1990s when India's economic liberalization opened doors for private businesses. He quickly expanded into infrastructure, setting up **Mundra Port** in Gujarat, which is now the largest commercial port in India. His strategy was clear—control critical infrastructure like ports, power plants, and logistics, ensuring his companies had a stronghold on India's growing economy.

Expanding into Energy, Infrastructure, and Beyond

From ports and logistics, Adani expanded into power generation and transmission, coal mining, and renewable energy. Today, **Adani Power** is India's largest private thermal power producer, and **Adani Green Energy** is one of the world's biggest renewable energy companies. His ventures also include **Adani Wilmar** (FMCG), **Adani Total Gas**, and airport management, making Adani Group a diversified global powerhouse.

Despite facing criticism and challenges—including regulatory scrutiny, environmental concerns, and stock market fluctuations—Adani's empire has continued to grow. His companies have played a crucial role in India's infrastructure development, and his focus on renewable energy aligns with the global shift toward sustainability.

Lessons from Gautam Adani's Success

1. **Vision and Risk-Taking:** Adani saw opportunities where others hesitated. His ability to take calculated risks and invest in large-scale infrastructure projects set him apart.
2. **Control Over Supply Chain:** By integrating his businesses—owning ports, power plants, and logistics—he ensured a seamless supply chain and minimized costs.
3. **Adaptability and Expansion:** He didn't limit himself to one sector but strategically expanded into areas that complemented his core businesses.
4. **Resilience and Long-Term Thinking:** Despite challenges, controversies, and setbacks, he stayed focused on long-term growth.

Conclusion: A Legacy in the Making

From a college dropout with no inherited wealth to one of the world's richest men, Gautam Adani's journey is an inspiring tale of ambition, resilience, and strategic growth. His ability to

ALUMNI CORNER

My college journey

BY, Rajnish Pandey

Mechanical Engineering

May 2007 - May 2011

My Journey at Dr. MGR University: Growth, Friendships, and Success

College is more than just academics; it's a journey of transformation, self-discovery, and lifelong connections. My experience at Dr. MGR University has been nothing short of incredible, shaping me into the person I am today. From the nervous excitement of my first day to the triumph of landing my first job, every moment has been filled with challenges, learning, and growth.

Stepping onto campus for the first time, I was both thrilled and overwhelmed. The vibrant atmosphere, diverse students, and impressive infrastructure instantly made me realize that this was where I was meant to be. Adjusting to the academic rigor and new social environment was tough, but as days passed, I found my rhythm—balancing lectures, assignments, and friendships. The late-night study sessions, group discussions, and interactions with professors pushed me to think critically, improving both my knowledge and problem-solving abilities.

Beyond academics, the extracurricular activities at Dr. MGR University played a crucial role in my personal development. As a member of the Society of Mechanical Engineering, I got hands-on experience in real-world engineering

projects. My participation in technical competitions, cultural fests, and community service projects helped me develop leadership, communication, and teamwork skills. One of my most cherished memories was competing in a national-level technical event, where my team secured second place after months of hard work and dedication. Another proud moment was presenting a research paper at a student conference, an experience that boosted my confidence and fueled my passion for innovation.

As my final year approached, I was filled with nostalgia and excitement, but also a sense of responsibility for my future. The campus placements were a defining moment, and the nervous anticipation of interviews turned into joy when I received my offer letter from a top energy company. That achievement was the result of years of perseverance, guidance from mentors, and unwavering support from my family and friends.

Looking back, I am incredibly grateful for everything Dr. MGR University has given me—knowledge, skills, friendships, and unforgettable experiences. The lessons I've learned, the challenges I've overcome, and the memories I've created will stay with me forever. As I step into the professional world, I carry with me the confidence and determination to chase my dreams, knowing that my time at this university has prepared me for whatever lies ahead.

PUBLICATIONS

STAFF PUBLICATIONS OCT-DEC 2023

1. EVALUATION OF IMPROVED CORROSION RESISTANCE OF Zn ALLOY AS ELECTRODE MATERIAL BY Co3O4 COATINGS

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EVALUATION OF IMPROVED CORROSION RESISTANCE OF Zn ALLOY AS ELECTRODE MATERIAL BY Co_3O_4 COATINGS

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2. Examination on Properties of Wrinkled Pipes in Helical Coil Heat Exchangers by CFD

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Original Article

Examination on Properties of Wrinkled Pipes in Helical Coil Heat Exchangers by CFD

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3. A NOVEL CONCEPTUAL DESIGN OF AN UNDERWATER ROBOT USING BIOMIMETICS

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A NOVEL CONCEPTUAL DESIGN OF AN UNDERWATER ROBOT USING BIOMIMETICS.

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