



CITY ENGINEERING COLLEGE

Doddakallasandra, off Kanakapura Road, Bengaluru 560062

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TECH SAMACHAR



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
Monthly Magazine

DEPARTMENT VISION & MISSION

VISION

To Contribute to Global Development by producing knowledgeable and quality Professionals who are innovative and successful in advanced feild of Computer Science and Engineering to adapt the changing employment dem ands and social need.

MISSION

M1: To provide Quality Education for students, to build confidence by developing their Technical Skilla to make them competetive Computer Science Engineers

M2: To facilitate Innovation & Research for students and faculty and to provide Internship oppurtunities

M3: To Collaborate with educational institutions and industries for Excellence in Teaching and Research



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MESSAGE FROM THE CHAIRMAN



Dear Students, Faculty, and Esteemed Members of the Department,

It is with immense pride and joy that I share my thoughts with you in this edition of the department magazine. As we continue to progress and innovate, I am reminded of the hard work, dedication, and perseverance that each of you contributes to making this institution a place of excellence.

The challenges we face today are stepping stones to the successes of tomorrow. With every project, every idea, and every collaboration, you are shaping not only your own future but also the future of our society. Our collective commitment to fostering a culture of academic rigor, creativity, and leadership will always be the driving force behind our achievements.

I encourage you to keep pushing boundaries, embracing opportunities, and striving for greatness. Remember, the journey toward excellence is ongoing, and your efforts today will lay the foundation for the leaders of tomorrow.

Wishing you all continued success and growth.

Warm regards,

Dr. K R Paramahamsa

Chairman

[AMC-City Group of Institutions]

PRICIPAL'S INSIGHTS

Dear Students and Faculty,

It's with great pride and excitement that I welcome you to another issue of the department magazine! This magazine is not just a collection of words and pictures; it's a reflection of the dedication, passion, and creativity that define our college community. Every page you turn is filled with stories of perseverance, innovation, and growth.

As you continue to explore, learn, and challenge yourselves, remember that every step you take brings you closer to becoming the leaders, thinkers, and change-makers of tomorrow.

Stay curious, stay motivated, and never forget that the journey is just as important as the destination.

Keep reaching for the stars!

Warm regards,



Dr. S Karunakara

Principal

[City Engineering College]

A NOTE FROM THE HOD



Hello everyone!

As we flip through the pages of this fantastic magazine, I can't help but feel proud of how far we've come as a department. From all the brainstorming sessions to those "Aha!" moments in class, we've created memories, tackled challenges, and celebrated wins—big and small!

This magazine is proof of the creativity, enthusiasm, and hard work each one of you brings to the table. Whether you're presenting a new project, sharing an idea, or just exploring something new, you're contributing to a culture of curiosity and innovation. Keep that spark alive!

So, as you dive into these pages, remember that every moment is an opportunity to learn, grow, and have fun along the way. Here's to embracing the journey with passion and a good dose of excitement!

Keep shining bright,

Dr. Sowmya Naik

Head of Department

[Computer Science and Engineering]

FROM COORDINATORS' PEN

Dear Readers,

We are excited to present the latest edition of our technical magazine, which brings together the brilliant ideas, projects, and innovations from across our department. This issue showcases the hard work and creativity of our students, faculty, and staff, reflecting the cutting-edge work happening in our field.

As coordinators, our mission is to create a platform where technical knowledge and fresh perspectives can thrive. From research breakthroughs to engineering feats, every article in this magazine highlights the dedication and expertise that drive progress in technology and innovation.

We extend our heartfelt thanks to everyone who contributed to this edition. Your involvement makes this magazine a true reflection of our department's spirit. We hope you find it informative, inspiring, and thought-provoking.

Happy reading!

Mrs. Shruthi B S, Mrs. Vibhavi R N

Magazine Coordinators

[Assistant Professors, Department of Computer Science and Engineering]

"Learning never exhausts the mind." – Leonardo da Vinci

TECHXPLORE

Knowledge is Power, Learning is the Path!

Flexibility Beyond the Mat: Yoga for Engineering Minds

In the high-pressure world of engineering, students often face long hours of study, complex assignments, and constant mental strain. Amidst this, yoga offers a transformative practice that can help students not only relax but also boost their mental and physical well-being.

The Mind-Body Connection in Engineering

Engineering requires sharp mental clarity, creative problem-solving, and precision. However, long study hours can lead to fatigue, stress, and burnout. Yoga helps sharpen focus, reduce anxiety, and enhance cognitive function by encouraging mindfulness and deep breathing. Research shows that yoga enhances brain function, particularly in areas responsible for decision-making, creativity, and emotional regulation.



Stress Relief for a Busy Lifestyle

Yoga is particularly beneficial in managing stress, a constant companion for engineering students. Regular practice helps lower cortisol levels, reducing the impact of stress on the body. Techniques like Pranayama (breathing exercises) allow students to calm their nerves and regain focus, leading to better problem-solving and a more balanced mindset.

Counteracting the Physical Toll of Sitting

Long hours of sitting at desks or working on computers can lead to poor posture, back pain, and eye strain. Yoga poses such as Tadasana (Mountain Pose) and Bhujangasana (Cobra Pose) strengthen the spine and alleviate these common issues. By integrating yoga into their daily routine, students can prevent discomfort and improve their overall physical health.

Enhancing Problem-Solving Skills

Yoga fosters patience, discipline, and calmness, which are crucial traits for problem-solving in engineering. By practicing yoga, students develop the mental resilience needed to handle complex tasks without feeling overwhelmed. Studies show that yoga enhances cognitive flexibility, allowing students to shift between creative and analytical thinking with ease.

Yoga for Long-Term Well-Being

Yoga is not just about immediate relaxation; it contributes to long-term well-being. Regular practice builds resilience, reduces anxiety, and improves physical health, creating a balanced lifestyle for students. Yoga helps students maintain energy levels throughout their academic journey, preventing burnout and promoting a sustainable approach to work.

A Holistic Approach to Academic Success

Incorporating yoga into an engineering student's routine isn't just about fitness; it's about building a holistic approach to academic success. The discipline learned through yoga translates into better time management, focus, and productivity. Engineering students can stay healthier, sharper, and more efficient, making yoga a powerful tool for excelling in their studies.

Conclusion: Unlocking Potential Through Yoga

Yoga offers engineering students the chance to optimize both body and mind. By reducing stress, improving posture, and enhancing mental clarity, yoga provides the perfect foundation for students to thrive academically and personally. It's more than just practice; it's a key to unlocking their full potential.

Pachyderm in Machine Learning: Revolutionizing Data Pipelines

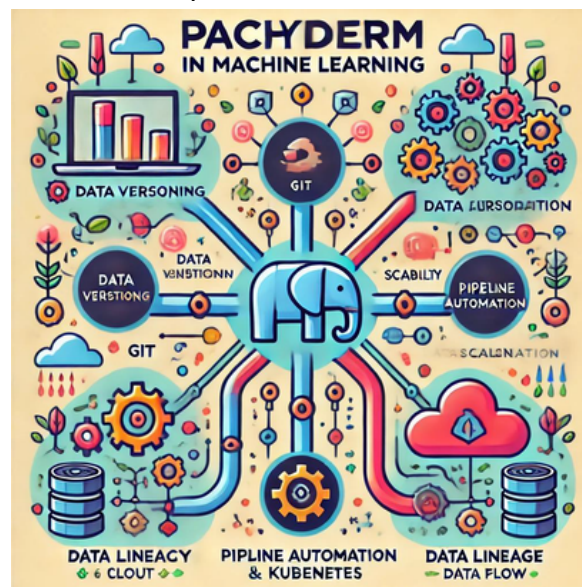
In the ever-evolving world of machine learning (ML), efficient data management plays a critical role. With data volumes growing exponentially and the need for reproducibility becoming a standard requirement, Pachyderm has emerged as a powerful solution. But what is Pachyderm, and why is it becoming an essential tool for data engineers and machine learning enthusiasts!.

What is Pachyderm?

Pachyderm is an open-source data versioning and pipeline orchestration platform designed for big data and machine learning workflows. Think of it as "Git for data" combined with a robust pipeline system. Pachyderm focuses on enabling version-controlled data management, making it easier to track, reproduce, and scale machine learning models.

Key Features of Pachyderm

1. **Data Versioning:** Pachyderm tracks every change made to your datasets, similar to how Git tracks changes in code. This ensures reproducibility and allows developers to roll back to previous versions of data if needed.
2. **Pipeline Automation:** Pachyderm automates the execution of machine learning pipelines. Once set up, it detects changes in data and automatically triggers the pipeline to run, ensuring your ML models stay updated.
3. **Scalability:** Built on Kubernetes, Pachyderm scales effortlessly to handle massive datasets and high computational workloads. Whether you're a researcher or a large enterprise, Pachyderm adapts to your needs.
4. **Language Agnostic:** Pachyderm supports a wide variety of programming languages and tools, making it versatile for diverse ML applications.
5. **Data Lineage and Provenance:** Knowing the "lineage" of your data—where it came from, how it was processed, and how it's used—is critical for auditability and compliance. Pachyderm records this information automatically.



Pachyderm's core features—Data Versioning, Pipeline Automation, Scalability, and Data Lineage—using vibrant icons and a clean layout to showcase its role in managing machine learning workflows.

How Pachyderm is Transforming Machine Learning?

Pachyderm is particularly useful in industries such as healthcare, finance, and autonomous systems, where transparency, reproducibility, and data integrity are paramount. By integrating with existing ML tools and frameworks, it bridges the gap between data engineering and model development.

For instance, consider a healthcare project where patient data undergoes preprocessing, feature extraction, and model training. Pachyderm can manage this end-to-end process while maintaining a complete history of all data and model changes. This ensures the results are reproducible and compliant with strict regulations like HIPAA.

Why Engineering Students Should Explore Pachyderm?

As future technologists and innovators, engineering students should familiarize themselves with modern tools like Pachyderm. Learning this platform not only enhances your resume but also gives you hands-on experience with cutting-edge practices in ML and data engineering.

By adopting Pachyderm, students and researchers can:

- Work on collaborative machine learning projects with ease.
- Gain insight into data versioning and pipeline automation.
- Develop scalable and reproducible ML workflows.

Conclusion

Pachyderm is shaping the future of machine learning by simplifying complex data workflows and emphasizing reproducibility. Its ability to manage large-scale data pipelines with precision makes it a must-learn tool for anyone venturing into the realms of data science and artificial intelligence.

Whether you're building a simple student project or a large-scale industrial application, Pachyderm offers the structure and scalability to help you succeed. Dive in, explore, and take your machine learning projects to the next level!

Mrs. Tejaswini B N
Assistant Professor, CSE

Developing Secure IoT-Based Solutions for Smart Cities

Cities, big and small, are becoming densely populated owing to the rise in urbanization. To efficiently manage traffic congestion, sanitation, waste management, environmental degradation and increasing energy consumption, municipalities are turning to innovative city solutions, such as the Internet of Things (IoT).

Implementing IoT-based smart city solutions is making urban life more convenient and safer. It is while helping cities improve infrastructure & public utility services.

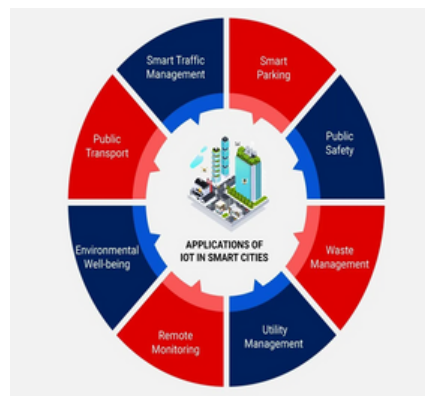
As urbanization continues to accelerate, cities worldwide face increasing pressure to manage resources efficiently, improve infrastructure, and provide better living conditions for their citizens. Smart cities offer a promising solution, utilizing IoT technologies to optimize everything from traffic management to energy usage and public safety. However, to unlock the full potential of smart cities, it's essential to develop IoT-based solutions that is secure. These factors are crucial for building a future where technology seamlessly integrates into urban life while ensuring safety and resilience.



Importance of IoT in Smart Cities

One of the key benefits of IoT in smart cities is the ability to streamline and automate processes, reducing inefficiencies and improving urban services. For example, smart traffic management systems can monitor vehicle flow, adjust traffic lights in real time, and provide alternate routes to drivers through connected devices. These systems help minimize congestion, reduce fuel consumption, and improve the overall flow of traffic, leading to more sustainable urban environments.

Here are some real-world IoT smart city examples:



Benefits of IoT in Smart Cities

- Improved infrastructure management.
- Enhanced public safety.
- Efficient transportation.
- Energy efficiency.
- Improved waste management and many more.

Securing IoT-Based Solutions in Smart Cities: As IoT devices become more prevalent in smart cities, the attack surface for cyber threats also expands. With so many connected devices, sensors, and data points, ensuring robust security is paramount. A compromised IoT device or system could lead to privacy violations, data theft, or disruptions in critical infrastructure, such as energy grids or public transportation.

Key strategies for securing IoT solutions in smart cities include:

Encryption and Data Protection: Encrypting data both at rest and in transit is essential for protecting sensitive information in smart city systems. Whether the data pertains to traffic patterns, energy consumption, or personal information, encryption ensures that only authorized entities can access it.

Authentication and Access Control: Implementing strong authentication mechanisms is necessary to prevent unauthorized access to IoT systems. Multifactor authentication (MFA) and public key infrastructure (PKI) can enhance security by ensuring that only legitimate devices and users can interact with the network.

Regular Firmware and Software Updates: IoT devices are vulnerable to security exploits if they are not regularly updated. Developing a system for automatic firmware and software updates ensures that devices are protected against the latest threats.

Network Segmentation: Segmenting IoT networks into isolated sections can reduce the impact of a security breach. If a device in one segment is compromised, the segmentation helps prevent attackers from gaining access to other parts of the network.

Conclusion:

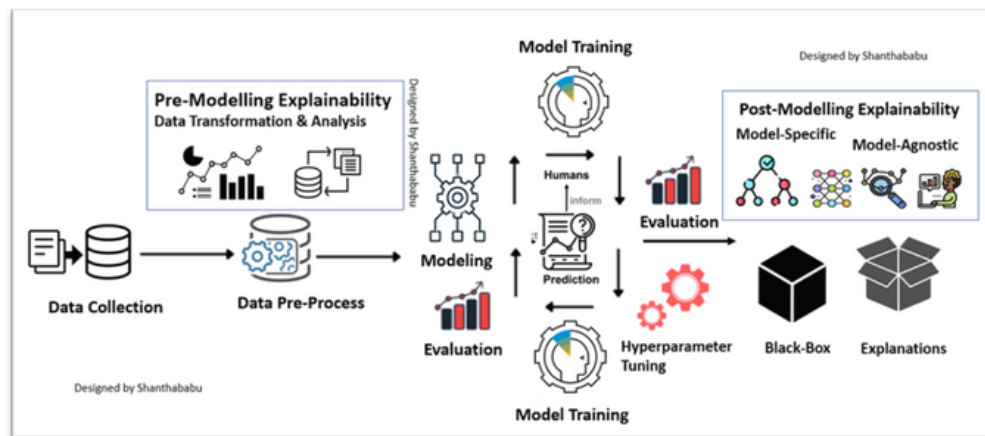
In the near future, IoT technologies are anticipated to become integral components across a range of smart city systems, from autonomous traffic management to utility monitoring and public safety, significantly enhancing efficiency and service quality. Ensuring the privacy rights of users and residents is essential to developing effective frameworks.

Moreover, by presenting a range of global smart city initiatives, critical standards, and success metrics these strategies serve as a valuable resource for other cities navigating the complex journey toward becoming smart cities. By leveraging cloud and edge computing, promoting interoperability, adopting modular architecture, and prioritizing robust security measures, smart cities can effectively manage the challenges of urbanization while improving the quality of life for their citizens. In this rapidly evolving landscape, scalable and secure IoT solutions will be the cornerstone of the smart cities of tomorrow.

Mrs. Sushree Sauravi Kar
Assistant Professor, CSE

EXPLAINABLE AI (XAI)

Explainable artificial intelligence (XAI) is a collection of well-defined processes and methods that allows users to understand and trust the output created by properly chosen machine learning algorithms based on the problem statements used to describe an AI model, its anticipated impacts, and potential biases. The XAI has been introduced in the ML life cycle, and it is taking the responsibility and to seal the expectation to explain and translate BLACK-BOX ALGORITHMS, which are used for stakeholder critical business decision-making process; it becomes to increase their adoption and alignments. In a quick way, we could say that Explainability can be applied in two stages briefly: before the Modelling and after the Modelling. In straight Data-centric and (Pre) and Model-Specific (Post). The below diagram shows this very precisely.



Takeaway about XAI:

Explainability' and 'interpretability' are frequently used interchangeably.

This integral role played by AI and ML models has led to the growing concern of business stakeholders and consumers about the lack of transparency and interoperability, as this black box is favorably subjected to bias.

This plays a critical role in industrial operations; model explainability is a prerequisite. (such as healthcare, finance, legal, and others)

XAI is the most effective practice to guarantee that AI and ML solutions are transparent

This is trustworthy, responsible, and ethical so that all regulatory requirements on algorithmic transparency, risk mitigation, and a fallback plan are addressed efficiently.

AI and ML explainability techniques provide visibility into how algorithms are operated at different stages.

XAI is allowing end-users to ask questions about the consequence of AI and ML models.

Mrs. Swetha A
Assistant Professor, CSE

Designing Teams of AI Agents: A New Era in Digital Workforces

Introduction

As AI agents evolve, they are no longer just tools but collaborative systems capable of reasoning, learning, and working together. The concept of designing AI agent teams introduces a novel approach to addressing complex challenges and revolutionizing workflows across industries.

In this article, we delve into the structure of AI teams, their core components, and strategies to create them effectively.

What Are AI Agent Teams?

Traditional AI systems often function as standalone entities, but as tasks grow increasingly intricate, the limitations of a single agent become evident. AI agent teams take a modular approach, enabling multiple specialized agents to work in unison toward a shared objective.

Much like human teams, these agents divide responsibilities:

Specialization: Each agent focuses on a specific role, such as data collection, analysis, or solution generation.

Collaboration: Agents share information and coordinate efforts to achieve optimal outcomes.

Efficiency: A focused scope allows each agent to perform its role with precision, enhancing overall team performance.

The Key Elements of AI Agent Teams

Role Assignment

Each agent must have a distinct and well-defined role to prevent overlap and ensure streamlined operations.

Example: A customer service setup could involve a "query handler," a "policy retriever," and a "feedback analyzer."

Communication Mechanisms

Effective communication between agents is critical. Frameworks like LangChain enable seamless data exchange and orchestration across agents.

Task Distribution

Workflows should be divided based on agent specialization. Tasks that exceed an agent's capability can be delegated to a more appropriate team member.

Knowledge Sharing

Shared knowledge repositories, such as FAQs or policy documents, enhance the team's ability to respond accurately and consistently.

Coordinated Decision-Making

Agents collaborate on decisions, guided by a leader agent or a central orchestrator that ensures alignment and efficiency.

Steps to Design Effective AI Teams

Begin with Focused Teams

Start with a small, targeted group of agents addressing specific tasks. Gradually expand by incorporating agents with complementary skills.

Set Clear Goals

Define measurable objectives for the team, ensuring each agent's role contributes to achieving these goals.

Iterate for Improvement

Continuously evaluate team performance, gather insights, and refine workflows to enhance efficiency and effectiveness.

Prioritize Security

Implement robust safeguards, including encrypted communication, role-based permissions, and comprehensive audit logs.

Embrace Modularity

Design agents as modular units, allowing flexibility in reconfiguration and adaptation to changing requirements.

Example Use Case: AI Team in Customer Support

Consider a customer support scenario with a team of specialized agents:

Query Processor: Handles incoming requests and categorizes them appropriately.

Policy Expert: Retrieves accurate answers from the knowledge base.

Task Executor: Executes backend actions such as processing refunds or account updates.

Feedback Collector: Gathers and analyzes customer feedback to drive continuous improvement.

This approach distributes responsibilities efficiently, delivering seamless customer support while reducing manual intervention.

Addressing Challenges

While AI agent teams hold immense potential, they also present unique challenges:

Coordination Complexity: Ensuring smooth interaction between agents requires careful orchestration.

Role Clarity: Clearly defining agent roles prevents redundancy and confusion.

Trust and Oversight: Transparent processes and robust monitoring systems build confidence in agent-driven decisions.

Conclusion

AI agent teams are paving the way for a new era of automation, reflecting the collaborative dynamics of human teams. By combining specialized agents into cohesive units, organizations can tackle complex tasks with agility and precision.

The rise of these digital workforces signifies a transformative shift in how we approach problem-solving and innovation, unlocking possibilities that were previously unattainable.

Mrs. Shruthi B S,
Assistant Professor, CSE

Unleashing Innovation Through Synergies of Big Data and Artificial Intelligence

In recent years, Big Data and Artificial Intelligence (AI) have become two of the most game changers across industries. These technologies are revolutionizing the future of business, science, and society by enhancing decision-making, optimizing operational efficiency, and unlocking valuable insights. While each of these technologies is powerful on its own, it is their synergy that truly fuels innovation.

Big Data refers to the large volumes of structured, semi-structured, and unstructured data generated at an increasingly rapid pace. The key characteristics of big data are typically referred to as the "3 Vs": Volume: The sheer quantity of data generated daily by businesses, individuals, and machines which includes everything from transaction records to social media posts, sensor data, and web logs. Variety: The different types of data, that includes text, images, video, audio, sensor readings, and more. This diversity of data types makes traditional data management and analysis challenging. Velocity: The speed at which data is created and needs to be processed. This includes Real-time data streams from IoT devices or financial markets and require instant analysis to be actionable.

Artificial Intelligence (AI) involves the development of computer systems that can perform tasks typically requiring human intelligence, such as learning, reasoning, problem-solving, pattern recognition, and decision-making. AI encompasses various subfields, including: Machine Learning (ML): A subset of AI that involves training algorithms to recognize patterns in data and make decisions based on those patterns. Deep Learning: A specialized form of machine learning that uses artificial neural networks to learn from large amounts of data. Natural Language Processing (NLP): AI that enables machines to understand and process human language. Reinforcement Learning: A type of machine learning where AI models learn by interacting with their environment and receiving feedback based on actions taken.

The Relationship Between Big Data and AI

AI, particularly machine learning, thrives on data. The more data an AI system is exposed to, the better it can learn and refine its models. Big Data serves as the fuel for AI algorithms, allowing them to Train and Learn, Enhance Model Accuracy etc.

While Big Data is often unmanageable for traditional analysis techniques due to its scale and complexity. AI helps manage and extract value from this data by:

- Automated Data Processing through machine learning and deep learning, can automate the process of cleaning, sorting, and analyzing vast amounts of unstructured data.
- Pattern Recognition: AI models excel at detecting hidden patterns and correlations within large datasets that would be too difficult for human analysts.

Real-Time Analysis: In fields such as e-commerce, finance, and cybersecurity, AI can analyze big data in real-time, providing immediate insights and enabling faster decision-making.

There are several cutting-edge tools and platforms currently using AI to enhance Big Data analytics, making it easier to process, analyze, and extract insights from massive datasets. Here are some popular tools in trend:



Apache Spark with MLib- Apache Spark is an open-source, distributed computing system that handles large-scale data processing. MLib is Spark's machine learning library, which integrates AI and machine learning models directly with big data processing.

2. Google Cloud AI- Google Cloud provides a variety of AI and machine learning tools integrated with their big data analytics services. It includes tools like BigQuery (for fast SQL-based analytics) and AutoML (for building custom machine learning models without coding), making it easy to use AI to analyze vast datasets in the cloud.

3. Microsoft Azure Machine Learning- Microsoft Azure provides a powerful cloud platform for building, training, and deploying machine learning models at scale. Azure integrates seamlessly with big data processing tools like Azure Data Lake and Azure Databricks. AI-powered analytics solutions can predict outcomes, automate decisions, and provide deep insights from large datasets.

4. Hadoop with AI Frameworks- Apache Hadoop is a well-established framework for storing and processing big data. It can be paired with various AI tools and libraries for advanced analytics. AI frameworks such as TensorFlow, Keras, or PyTorch can be integrated into Hadoop ecosystems to perform large-scale machine learning and deep learning, enabling advanced data analysis on massive datasets.

The integration of Artificial Intelligence (AI) with Big Data is fundamentally transforming industries across the globe by enabling smarter, more efficient decision-making and uncovering hidden insights within vast datasets. As AI and Big Data continue to evolve, their convergence is poised to unlock even more advanced capabilities, such as edge computing, autonomous systems, and personalized user experiences. Industries such as healthcare, retail, finance, and manufacturing are already benefiting from the synergy of these technologies, and the possibilities are limitless as the technologies continue to mature.

Mrs. Vibhavi R N
Assistant Professor, CSE

The Synergy of Quantum AI: How Artificial Intelligence is Revolutionizing Quantum Computing

Quantum AI results in the merging of two revolutionary domains: quantum computing and artificial intelligence (AI). Quantum computing, rooted in quantum mechanics principles, clamps the potential to transform computation, while AI continues its advancement in data processing. Quantum Computing is a relatively new field that has been gaining a lot of attention in recent years due to its enormous potential. In quantum computing, qubits are used to perform calculations that are not possible with classical computers. A qubit can be in multiple states simultaneously, allowing quantum computers to perform many calculations in parallel. Quantum Computing has many potential applications, from cryptography to drug discovery. However, quantum computing is still in its early stages, and it is challenging to build a reliable quantum computer.

Quantum AI refers to the integration of quantum computing with artificial intelligence (AI) to create systems that combine the strengths of both technologies. While quantum computing can significantly enhance computational power, AI focuses on mimicking human intelligence to automate tasks and make decisions. Together, Quantum AI has the potential to unlock powerful new capabilities in computing, problem-solving, and machine learning.



Classical computers process information using binary bits, which can either be 0 or 1. Quantum computers, on the other hand, exploit quantum mechanics properties like superposition and entanglement, enabling qubits to exist in multiple states simultaneously. This parallelism allows quantum systems to solve specific computational problems much more efficiently than traditional computers. For AI, this means faster data processing and model training, improved optimization techniques, and the ability to analyze vast datasets in a fraction of the time. Quantum algorithms could potentially outperform classical ones in areas like pattern recognition, forecasting, and natural language processing.

AI and Quantum Synergy: The fusion of AI and quantum computing has the potential to create groundbreaking applications, including:

Improved Machine Learning Algorithms: Quantum computing can dramatically speed up machine learning algorithms by leveraging quantum parallelism and entanglement. This could enable AI to process and learn from vast datasets more efficiently, ultimately leading to smarter, faster, and more accurate systems.

TECHXPLORE

Optimization Problems: AI often deals with complex optimization problems, like resource allocation or logistics. Quantum computers, with their ability to process vast combinations of possibilities, can potentially solve these optimization problems much more quickly and efficiently than classical methods.

Quantum Machine Learning: This is an emerging field where quantum computing is used to improve machine learning tasks. For instance, quantum algorithms can be used for clustering, classification, or training AI models, which could improve the performance of these systems.

Quantum-enhanced AI: AI models, such as neural networks or deep learning algorithms, could benefit from quantum-enhanced processing capabilities. Quantum computers could help speed up computations in areas such as natural language processing, image recognition, and more, enabling breakthroughs in AI applications.

Quantum AI for Drug Discovery and Material Science: The combination of quantum computing and AI could lead to accelerated breakthroughs in fields like healthcare and materials science by enabling more precise simulations of molecular interactions and optimizing the search for new materials or drugs.

The combination of Quantum AI and Quantum Computing has the potential to revolutionize many industries. Quantum AI can take advantage of the unique properties of quantum computing to perform calculations that are impossible for classical computers. This can lead to significant gains in computing power, faster machine learning, improved predictions, and improved optimization.

One of the most significant challenges of Quantum AI is building a reliable quantum computer. Quantum computers are highly susceptible to errors due to environmental noise and other factors. This makes it challenging to build a quantum computer with enough qubits to perform useful calculations. Another challenge of Quantum AI is developing new algorithms that can take advantage of the unique properties of quantum computing. This requires a deep understanding of both Quantum Computing and Artificial Intelligence.

The future of Quantum AI is bright, with many potential applications in various industries. However, there are still many challenges that must be overcome before Quantum AI can become a reality. One of the most significant challenges is building a reliable quantum computer with enough qubits to perform useful calculations.

In Conclusion, Quantum AI is a revolutionary technology that combines the power of Quantum Computing with Artificial Intelligence. It has the potential to revolutionize many industries, from finance to healthcare, by providing increased computing power, faster machine learning, improved predictions, and improved optimization. However, there are still many challenges that must be overcome before Quantum AI can become a reality. With continued research and development, Quantum AI has the potential to change the way we think about computing and transform many industries.

Mrs. Prajwala R
Assistant Professor, CSE



"Success is not the key to happiness. Happiness is the key to success. If you love what you are doing, you will be successful." – Albert Schweitzer

TECH TRIUMPHS

Breaking Barriers, Building the Future

TECH TRIUMPHS



Abhishek Kumar and Chandana, 5th sem, CSE won 1st Prize in the Byte-for-Bait Ideathon conducted on 5th December 2024 at Rajarajeshwari College of Engineering.

Students during Project Exhibition- Tech Tarang held on May 9,2024



Abhishek Kumar and Chandana, 5th sem, CSE won 2nd prize in Ideathon at BNMIT on 18th December 2024

Students secured 2nd prize at RRIT Project Exhibition- Technova 2K24

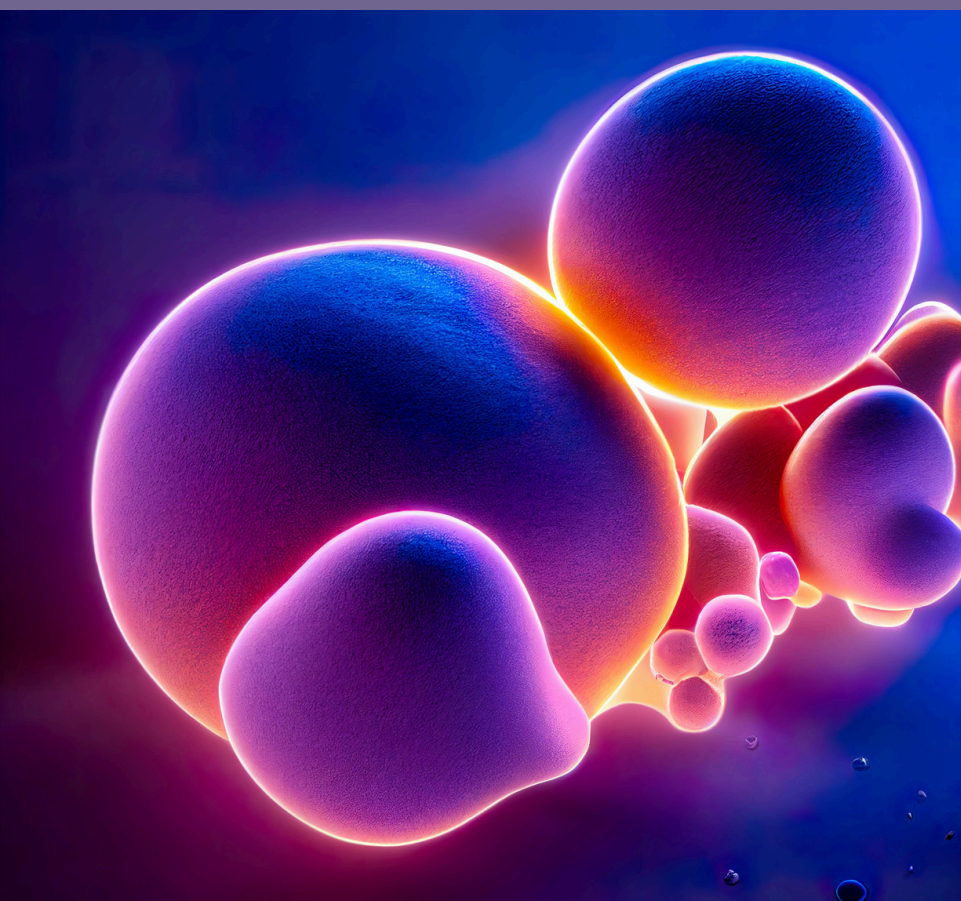


"Art is not freedom from discipline,
but discipline through freedom." –
John F. Kennedy

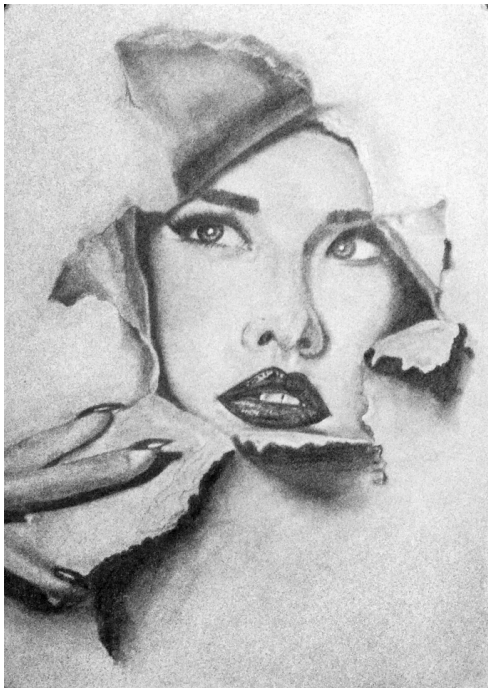


ARTSCAPE

Ink, Brush, and Pixels: A World of Expression!



ARTSCAPE



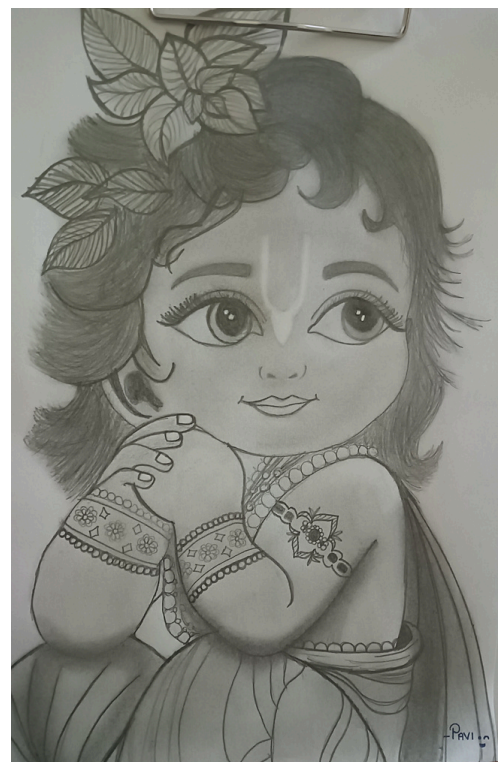
Dhanushiya R, ECE, 1st sem



Nehashree N, CSE, 5th sem



Pravalika R, CSE, 3rd sem



Pavithra R, CSE, 3rd sem

ARTSCAPE



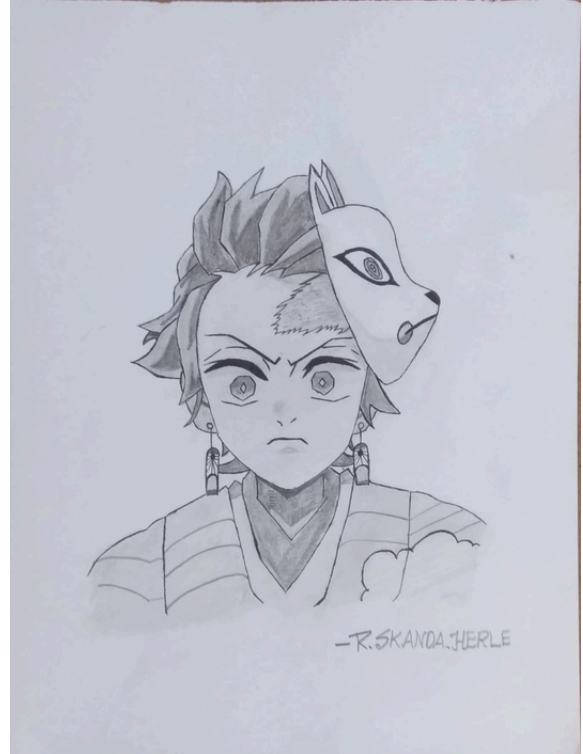
Mohammed Musa, 1st sem, AI&ML



Aditi R, CSE, 7th sem



Nethravathi S, CSE, 1st sem

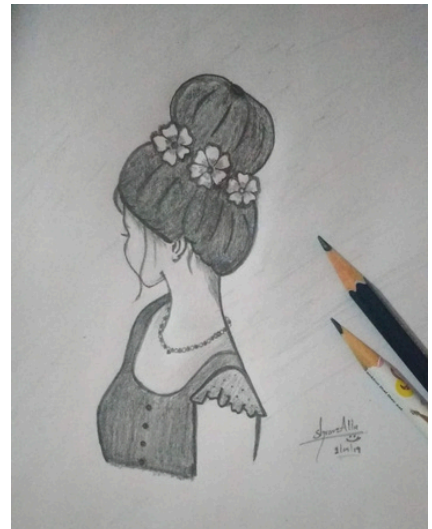


Skanda R Herle, ISE, 1st sem

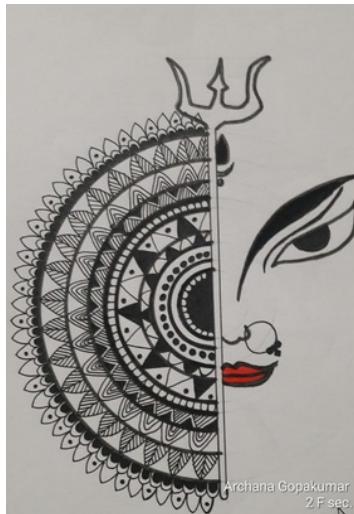
ARTSCAPE



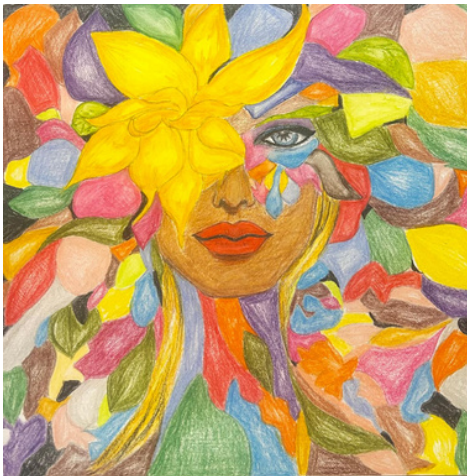
Archana Gopakumar, CSE, 1st sem



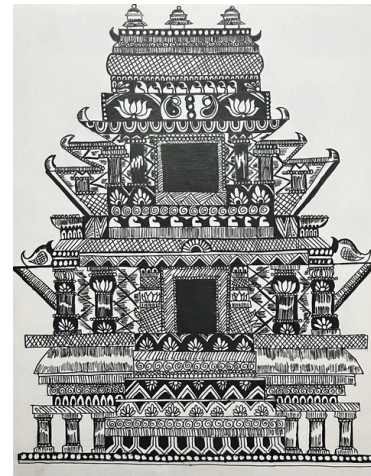
Ms. Shravya S, Assistant Professor, CSE



Kavya G, CSE, 3rd sem



Mrs. Vibhavi R N, Assistant Professor, CSE



Mrs. Prajwala R, Assistant Professor, CSE



INK SPOT

"Writing is an exploration. You start from nothing and learn as you go."

— E.L. Doctorow



Trapped within screens: escape from this spell of addiction.

In today's tech driven world, we cannot stay away from screens, as they play a crucial role in our everyday lives. We depend on them not only for communication and entertainment but also as a tool for productivity. From the moment our eyes open up to the moment our heads meet the pillow, we are surrounded by screens in different forms. But the ones we cannot tend to live without are mobile phones, we are so used to these pocket sized computers that on average a person spends 6 to 7 hours a day on their mobiles. This figure can be even worse when talking about teenagers, as many of which spend over 9 hours a day in front of their mobile screens.

This excessive use of mobile screens has a negative impact on our mental health as well as our physical fitness. Therapists, in this case emphasize that our inclination to use mobiles has become habitual and unavoidable. With mobile phones and at the centre of our lifestyle, we must keep in our minds the limits of mobile usage and to identify and prevent addiction to maintain a healthy lifestyle and take back the control over our lives.

What is mobile addiction? How exactly does it happen?

Mobile addiction is when your phone becomes more than just a tool, it starts to take over. You find yourself constantly checking your phone for notifications, scrolling mindlessly through social media or getting lost in binge watching shows, often far beyond a healthy limit. Over time this constant engagement with screens begins to affect other parts of your lives, relationships starts to become more distant, loss of focus and productivity and it ends up affecting both physical and mental well being. It's not just about the time spent on your mobiles, but how it pulls you away from real life connections and meaningful moments of the world around you.

The mechanism of mobile addiction and the reason for that irresistible urge to open and scroll through your mobile screen can be understood by learning how our brain works.

Whenever we complete a difficult task or achieve something, our brain releases dopamine, the feel-good chemical, which makes us feel good and encourages us to repeat the activities that bring pleasure. Dopamine makes our brain feel like, 'This is enjoyable, keep doing it!'. The same happens when we scroll through our mobiles, each new notification, like or a post, gives a small burst of dopamine, which makes us feel scrolling is rewarding and keeps us coming back for more, creating a loop.

Over time, we might feel the need to scroll longer to get the same level of satisfaction, making us spend more time on our phones. This can eventually make real-life rewards, like hobbies or social activities, feel less satisfying, leading us into a cycle where we keep reaching for our phones to feel good.

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Mobile screens & teenagers: Impact of digital dependency.

For today's teenagers, mobiles have become a constant presence, influencing everything from social interactions to the way they see themselves. Studies reveal, on average teenagers spend over 9 hours day in front of their mobile screens, with social media, gaming and video content taking up most of the time. As a result, this constant overuse of mobile phones has become a normal part of daily lifestyle, making it feel normal and often leading to digital dependency.

But the consequences are significant. The constant focus on likes comments and views causes a need for validation, leading to cycles of anxiety, low self esteem and sometimes social isolation. Many teenager prefer this virtual interactions and validations than real life interactions, deepening the dependency on mobile phones.

Mobile addiction not only causes hindrance in social well being of teenagers but also affects their academics. This dependency and the constant urge to use mobiles impacts focus and productivity. This reduces the efficiency of the minds of students to a point, where it becomes harder for them to focus on academics without getting distracted. In fact, screen time has replaced physical activities, hobbies, face to face conversations.. etc. All necessary for overall development of a teenager.

Teenagers and children spend a large amount of time staring at mobile screens, these modern day devices not only have an impact on their behaviour, but also cause self esteem issues and cause a hindrance to their overall development of their social skills. Teen digital dependency isn't only about spending hours, it's reshaping how they think, feel and grow. The way they see relationships and friendships is also affected, making real life connections harder and sometimes awkward. This is not unusual for the Gen Z(modern generation) teenagers to struggle with face to face conversations as most of the social interactions take place through mobile screens.

This constant digital interaction also builds a habit of instant gratification, making it tough to develop patience and focus, which in turn affects school and personal growth. Over time, this dependency changes how teens view and experience relationships, often leading to more surface-level connections. As a result, many teens are missing out on the depth and quality of relationships that build resilience, empathy, and true connection.

Subtle signs you might be addicted to your phone.

·Constant Checking: Ever found yourself picking up your phone without even thinking about it? It happens to the best of us, without our knowledge we constantly grab our mobile phones to check for notifications, interrupting our focus and breaking away from the tasks at hand.

·Avoiding Responsibilities: How often have we delayed that one important thing because of scrolling or checking a notification? Sometimes, scrolling feels easier than tackling that task, assignment, or project. Before we know it, important matters like work, school or even personal goals gets side-lined.

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Anxiety When Disconnected: Ever felt that uneasiness, restlessness or a little frustrated when your phone isn't nearby? It's a weird feeling, but being offline can actually cause stress when we're used to the comfort of constant connection. It's a sign of how dependent we have become on always being connected.

Social Detachment: It's so ironic, even though we're connected through screens, real life connections still fade. We end up feeling lonely when we rely too much on screens to stay connected. This addiction cause emotional isolation, which leads to people becoming less engaged in face to face interactions and relationships loose meaning. Despite being "in touch", we may end up lonelier as our digital connections lack the emotion of in person conversation.

Regret Over Screen Time: We've all been there, spending hours on our phones, only to feel that familiar guilt later on. Even though we regret the time we wasted, it's hard to stop ourselves from doing it again. Each time we scroll mindlessly, we realize we could have been focusing on our goals, relationships, or personal growth. But somehow, it gets harder to break the cycle, and the habit just keeps pulling us back in.

The Hidden Toll of Mobile Addiction on Our Health

We all love our phones, they keep us connected, entertained, and informed. But let's be honest, sometimes it's hard to put them down, and over time, that constant scrolling and tapping can quietly affect our health in ways we might not notice right away. Here's a closer look at some of the ways mobile addiction can impact us, and why finding a balance could be one of the best things we do for ourselves.

Eye strain and vision problems: Have you ever felt that burning or dryness in your eyes after a day of staring at your screen? You're not alone, digital eye strain is a common leaving. Constant screen exposure can leave our eyes tired and strained, making it harder to focus. The blue lights from the screens can also be harsh and may even contribute to long-term eye issues. So, if you find yourself squinting or blinking more than usual, it might be your eyes' saying "I need a break".

Trouble falling asleep and disrupted circadian rhythms: That urge to scroll through social media or check one last notification before bed? Your not alone, in today's world it's a habit we all share. But it's one of the biggest sleep disruptors. The blue light from screens interferes with melatonin, the hormone that signals our bodies that it's time to sleep, leaving us sleepless and awake. This can lead to poor sleep quality or even insomnia, often leaving us exhausted the next day. A 2020 survey by researchers from Government Doon medical College Dehradun, found that nearly 60% of young adults feel they don't get enough sleep, with smartphone use being a major contributor. So if you've been waking up tired lately, your phone might be partly to blame.

Anxiety, depression and loneliness: We all love staying connected, but too much screen time, especially on social media, comes with downsides. It's easy to get caught up in the endless notifications and the pressure to keep up with everyone else online. Studies have linked excessive use of phone use to rising rates of anxiety, loneliness and depression. We're constantly bombarded

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with carefully curated images of people's lives which makes us feel their lives are perfect which stems a feeling of doubt and sadness of our own lives, making it hard not to feel like we're missing out or not measuring up. Sometimes stepping away from social media is just as important as staying connected.

·Shorter Attention Span and Focus Issues: Have you ever started a task, only to get side-tracked by a notification or the urge to check your phone? You're definitely not alone. Our phones give us quick hits of satisfaction, and pretty soon our brains start craving that feeling, making it harder to focus on anything that doesn't offer the same instant reward. Studies from a 2019 survey by research firm Asurion show that people check their phones an average of 96 times a day, which takes a toll on attention spans and focus. Constantly reaching for our phones is taking a toll, making it tougher to focus on tasks, impacting productivity and even really absorb what we're working on.

·Physical strain and posture issues: The phrase "tech neck" might sound funny, but the pain is real. Bending over our phones all day can lead to serious neck and back strain, affecting our posture and even causing chronic pain. And there's also the "text claw," the ache in our fingers from too much scrolling and texting. These little aches might not seem like much at first, but they can add up, making us feel stiffer and more sore over time.

·Dopamine dependency: the addiction within addition: Our phones are designed to give us quick hits of dopamine, the "feel-good" chemical. Every time we get a notification or check our social feeds, our brains get a small reward, making us want to come back for more. A study by Dscout found that people check their phones frequently, averaging 2,617 interactions daily, with heavy users reaching over 5,400 touches. This adds up to around 15 quick check-ins every hour, showing how deeply these short bursts of phone usage are woven into our routines. Before we even realise it, we're reaching out for our phones out of habits almost without thinking. This constant cycle can create a dependency, where we start reaching for our phones without even realizing it. Over time, it can start to feel like "real life" just doesn't compare, leaving us feeling a bit empty or restless, always looking for that next little boost.

Simple Ways to Spend Less time on your phones.

We've all been there, grabbing our phones to "quickly check something," only to look up and realize an hour has passed away into scrolling. It's not only about the lost time, it's about how these habits pull us away from things that truly matters. Breaking free from this cycle might feel impossible, but with proper steps, it's absolutely achievable.

Here are some practical and approachable ways to take back control of your time and attention:

·Set clear screen time limits: Start by setting limits that feel realistic, maybe 30 minutes less per day. Use apps or your phone's settings to track progress. It's not about stopping all at once; it's about finding balance.

·Create No-Phone Zones: Make certain areas in your home "phone-free." For example, no scrolling at the dining table or before bed. You'll be amazed at how much more present and connected you feel with others and yourself.

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- Engage in offline activities: Remember those hobbies you used to love? Drawing, reading, or even just taking a walk? Get back into them. These activities not only help you relax but also make you less reliant on your phone for entertainment.
- Mute the Noise: Turn off notifications for apps that don't actually matter, like random social media updates. Fewer interruptions mean fewer reasons to pick up your phone, and honestly, most of those notifications aren't even important.
- Track your habits and reflect: Ever wondered, why you reach for your phone so often? Track your screen time for a few days, the apps on which u spend too much of your unnecessary time and notice how it makes you feel. Recognise the triggers, like boredom or stress, which can help you take small steps to cut back
- Swap Scrolling for Something Better: When you feel that urge to grab your mobile, try something small but productive instead like stretching, drinking that glass of water to meet you daily goal or write down a thought or an idea in a notebook and start working on it. It doesn't have to be perfect, just something that feels better than endless swiping.

It's not about ditching your phone entirely, but about finding healthier ways to spend your time. Small, consistent changes can make a huge difference, and who knows? You might even enjoy the extra freedom.

How Reducing Mobile Addiction Can Change Your Life

Cutting back on your screen time doesn't just give you more hours in the day, it can completely change your life.

Here are a few improvements that come from reducing your phone use, which can positively impact your life:

- Improved Relationships: When you're not constantly looking at your phone, you can truly be there for the people you care about. Spending time together, whether it's talking, laughing, or just being present, helps strengthen your bonds and create lasting memories and always remember, family and friends should be of utmost priority in your life.
- Better Focus and Productivity: Without the constant ringing of notifications, you'll find it easier to focus on your tasks. Whether it's work, studying, or personal projects, cutting out distractions allows you to give your full attention to what matters and get more work done.
- Enhanced Mental Health and well-being: When you spend less time scrolling through negative posts or comparing yourself to others, you'll start to feel less anxious and insecure. Instead of getting overwhelmed, you'll notice yourself becoming calmer, more in control, and at peace with who you are.
- Increased Creativity: Stepping away from screens frees up your mind. Whether you're coming up with new ideas, picking up a hobby, or just letting your thoughts wander, your creativity has room to grow when you're not constantly glued to your phone.
- Imprved and healthier sleep: Cutting back on screen time, especially before bed, helps your body get back to its natural sleep cycle. Better sleep means waking up feeling refreshed, with more energy to take on the day.

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·More Time for Yourself: Reducing screen time gives you more space to invest in things that help you grow. Whether it's working on a new skill, hitting the gym, or just taking time to reflect, you'll be amazed at how much more you can do when you're not always scrolling through your mobile.

Conclusion:

In today's world, it's hard to imagine life without mobiles, they've become a major part of our lives. But it's important to recognize when they start affecting our well-being. By reducing screen time and focusing on healthier habits, we can take back control, strengthen our relationships, and give more attention to our mental and physical health. Even the smallest changes can make a huge difference, helping us live a more balanced and fulfilling life, both online and offline. It's all about finding the right balance to truly enjoy life, both in the digital world and in the moments that matter most.

Vinaykumar S Mathpati, CSE, 1st sem

In a solitude embrace

*In a solitude embrace , the writer finds their voice
No ears to hear , yet their pen makes the choice
Alone with their thoughts , emotion takes flight
Silence whisper echo in the empty room
Ideas bloom and fear dissolve like mountain dew
The blank page become canvas ,a friend
A place where journey of the creation begins and never ends
In a realm where the thoughts ,darkness battles with light
So , in absence of an audience to see
People become writers to set their spirit free*

Harini . G, CSE 1st sem

TECH SAMACHAR

City Engineering College (CEC), established under Jayanagar Education Society by Dr K.R Paramahamsa, Chairman in the year 2001. CEC is one of the most sought colleges by students from across the country for Engineering and Management Education. The college believe in providing a high-quality education to the prospective professionals of the country for which necessary quality bench marks have been put in place, in the areas of faculty recruitment, training and development, teaching and learning process, student's grooming, external academic audits and feedback system for academic enhancement.

The B.E in Computer Science and Engineering program at City Engineering College, affiliated with Visvesvaraya Technological University (VTU), is meticulously designed to provide students with a robust foundation in computer science principles and their applications. This program blends theoretical concepts with practical skills, ensuring that graduates are well-prepared to navigate and excel in the rapidly evolving technology landscape. At City Engineering College, we are committed to fostering a comprehensive learning environment, supported by modern facilities and a faculty team with extensive academic and industry experience.

"Tech Samachar" is a vibrant magazine that serves as a platform for innovation, creativity, and knowledge sharing. This magazine brings together insightful articles, cutting-edge technological advancements, thought-provoking opinions, and creative expressions in the form of poetry, essays, and stories.

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