UNIVERSITY OF ENGINEERING & MANAGEMENT
Good Education, Good Jobs

JUVENILIA

2024-2025

AN INITIATIVE BY
DEPARTMENT OF COMPUTER APPLICATIONS

2nd Edition

Table of CONTENTS

Message From the Desk of the Vice Chancellor

Prof. (Dr.) Sajal Dasgupta

Juvenilia: A Beacon of Innovation and Creativity

It is with great pleasure that I write this foreword for the second edition of **Juvenilia**, the departmental magazine of the Department of Computer Applications, IEM Newtown. This publication serves as a testament to the vibrant intellectual landscape fostered by the department and the dedication of its faculty and students.

Juvenilia showcases a diverse range of contributions, reflecting the breadth and depth of research, innovation, and creative expression within the field of computer applications. The articles, essays, and projects featured in this edition offer valuable insights into the latest advancements, challenges, and opportunities in the world of technology.

I am particularly impressed by the quality and originality of the student submissions. Their enthusiasm and passion for their work are evident in every page. **Juvenilia** provides a platform for these young minds to share their ideas, explore new horizons, and contribute to the growth of the field.

I commend the Department of Computer Applications for their commitment to fostering a culture of intellectual curiosity and creativity. **Juvenilia** is a tangible manifestation of this commitment and a valuable resource for students, faculty, and researchers alike.

I wish **Juvenilia** continued success in its mission to inspire and inform.

Message From the Desk of the Pro Vice Chancellor

Prof. (Dr.) Satyajit Chakrabarti

Dear Students, Faculty, and Readers,

It is with immense pleasure that I address you in second edition of the **Juvenilia** published by Computer Application Department, UEM Kolkata. The field of computer science and applications has seen exponential growth in recent years, driven by technological advancements and the increasing demand for innovative solutions in every aspect of our lives. As we stand at the cusp of a new era, where artificial intelligence, machine learning, and data science are transforming industries, I am confident that the students of this department are well-equipped to lead these advancements.

Our Organisation has always believed in providing a holistic education that blends academic rigor with practical experience. The Computer Application Department is no exception. With state-of-the-art facilities, industry-aligned curriculum, and a dedicated team of faculty members, we are committed to fostering a culture of innovation and excellence. Our students continue to excel in both academic and co-curricular activities, bringing recognition not just to themselves but also to the department and the institution.

I am particularly proud of the initiatives our students have taken, from organizing technical seminars and workshops to participating in national and international coding competitions. These activities reflect the dynamic spirit of our department and the ambition to not just learn but to apply that knowledge in solving real-world challenges.

I encourage all students to make the most of the resources available to them—whether it be through internships, projects, or research opportunities—and continue pushing the boundaries of what is possible in the world of computer applications.

As you go through this edition, you will find many stories of achievement, innovation, and inspiration. I hope it will motivate you to pursue your passions and strive for excellence in every endeavor.

Wishing you all the best in your academic and professional journeys.

Message From the Desk of the Registrar

Prof. (Dr.) Sukalyan Goswami

Dear Readers,

It gives me great pleasure to connect with you through the second edition of the **Juvenilia** published by Computer Application Department, UEM Kolkata. In an era where technology is reshaping the world at an unprecedented pace, it is inspiring to see how our department continues to thrive as a hub of knowledge, innovation, and creativity.

The realm of computer applications is one of boundless opportunity. From artificial intelligence and big data to cloud computing and cybersecurity, the horizons are ever-expanding, offering a platform for aspiring professionals to shape the future. Here, in the Computer Application Department, we are dedicated to nurturing talent that is not only proficient in technology but also adept at applying this knowledge to solve complex, real-world challenges.

Our students and faculty have consistently demonstrated excellence, both within the academic space and beyond. Be it through groundbreaking research, innovative projects, or participation in competitions and industry collaborations, their contributions reflect the high standards we uphold. I take this opportunity to commend their hard work and dedication, which has brought numerous accolades to our institution.

We have always believed that education is not confined to the classroom. It is through exposure to practical experiences, interdisciplinary learning, and continuous self-improvement that true professionals are shaped. I encourage each student to embrace these opportunities, participate actively in departmental initiatives, and stay curious and open to new learning.

This magazine serves as a testament to the brilliant minds we have in our department—students, faculty, and alumni who are driving progress in the world of technology. I hope you find inspiration in the stories, articles, and features included in this edition.

In closing, I extend my best wishes to the entire department. May we continue to set new benchmarks and strive towards creating a better, technologically advanced future.

Message From Desk of Dean

Prof. (Dr.) Rajiv Ganguly, Dean Science

I am extremely delighted that **JUVENILIA**, a vibrant platform showcasing the intellectual curiosity, creativity, and technical expertise is getting published by the Computer Applications department of the University. As we continue to navigate the complexities of the digital age, the department remains committed to fostering a culture of innovation, collaboration, and social responsibility. This magazine embodies the vision, highlighting - Cutting-edge technologies and research, student achievements and success stories, faculty expertise, industry insights, emerging trends and technological advancements to name a few.

This magazine would only be a successful endeavour if contribution from students, teachers, industry experts engage actively with it and contribute in an active and meaningful way. Your voices, perspectives, and experiences are essential to its growth.

A big congratulation to the editorial team, advisors, and contributors for their tireless efforts.

Message from the Desk of Head of the Department

Prof. Dr. Anirban Das

It gives me immense pleasure to share the Second Edition of the Departmental Magazine "**JUVENILIA**", published by the Department of Computer Applications (CA), University of Engineering and Management (UEM), Kolkata.

Since its inception in 2015, the department has remained prophetic in nurturing the students in computer science-aided multifaceted dimensions. The holistic approach in amalgamating the students' academic progress with the niche of cutting-edge technology rightly proclaims to bridge the industry-academia gap. The departmental galaxy of the finest students in tune with the erudite teaching fraternity has always remained committed to bringing out the best in terms of academic accomplishments and creative excellence. Pledged with the noble mission to harness NEP-2020, the departmental students remain engaged in multifarious inter/intra-institutional events, namely the Technical Fest (URECKON), the Cultural Fest (ECSTASIA), project and poster competition, coding competition, hackathon, industry visit, industry talk and seminar, technical workshop, to name a few. This volume of literary extravaganza exhibiting finesse and art of expression showcases the aesthetic dimension of the students to society at large.

The first edition of "**JUVENILIA**" in 2023 set the benchmark of achievement in multidimensional fields of creativity extending from writing excellence to wide-angle photography, from painting to digital art. I remain optimistic that the second edition of our departmental magazine will further raise the standard and ensure a path of continuous evolution.

I take this opportunity to express my sincere gratitude to the honourable Chancellor Sir, Vice Chancellor Sir, Pro Vice Chancellor Sir, Dean (Science) Sir, and Registrar Sir, who all are continuously guiding us to make our department a place of excellence. I also thank my dear departmental teachers and beloved students of the editorial board members, whose immense efforts culminated in the publication of the 2nd edition of **"JUVENILIA"**.

MESSAGE FROM EDITOR'S DESK

With great excitement and pride, we, the editorial board of **Juvenilia**, the Association of Computer Applications, present to you **Juvenilia**, a collection that showcases the innovative spirit and boundless creativity of our future engineers. In a world where technology advances at lightning speed, the field of computer science remains at the forefront of shaping tomorrow. The theme of this edition, "Idea is Dawn," signifies the spark of inspiration that brings forth new beginnings, fresh perspectives, and a brighter future.

This magazine is not just a compilation of articles and projects, but a testament to the hard work, curiosity, and ingenuity of our students. We extend our heartfelt thanks to our placement coordinators, whose relentless efforts have ensured that our students are well-prepared to step into the professional world with confidence. We also express our sincere gratitude to the facilitators of our association, who have tirelessly planned and executed activities that foster learning and growth outside the classroom.

We would be remiss not to thank our dedicated faculty members, whose guidance and encouragement have been a constant source of support for all of us. Their unwavering commitment to student success continues to inspire us.

It is our hope that you enjoy reading **Juvenilia** as much as we have enjoyed putting it together. This magazine is a celebration of ideas, creativity, and the promise of what lies ahead.

Happy reading, and may the dawn of innovation shine bright in each of you!

Warm Regards,
The Editorial Board
Juvenilia - Association of Computer Applications

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ABOUT DEPARTMENT

VISION

To be globally recognized through excellence in Outcome Based Education utilizing the potential of Application Oriented Research and Innovation in the field of Computer Applications.

MISSION

• To make the department a Center for Excellence in Technical Education, Innovation & Research.

• To foster students technologically up-to-date and endow with a high-end environment of learning by doing through continuous amendment of the curriculum with periodic feedback from all stakeholders.

• To strive to touch global benchmarks in shaping future leaders to become part of top-notch industries and research organizations at national and international levels.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO1: Technical Expertise: Develop the ability to plan, analyze, design, code, implement, test and maintain the software product for real time systems that are technically sound, economically feasible, environmentally sustainable and socially acceptable.

PEO2: Successful Career: Exhibit professionalism, ethical attitude and technical excellence in the field of Computer Applications to become a successful Technocrat or Entrepreneur.

PEO3: Interpersonal Skills: Develop communication skills, teamwork and leadership quality in their professional, multidisciplinary projects and adapt to current trends.

PEO4: Continuous Learning: Prepare the students to pursue higher studies by acquiring knowledge in mathematical and engineering principles in the field of computing and related fields and to work continuously in the fields of teaching and research.


TECHNICAL
WRITE UP
BY FACULTY

ETHICAL LIVING

Somnath Banerjee , Assistant Professor
Department of Computer Applications

Ethical living is the philosophy of making decisions for daily life that take into account ethics and moral values, particularly with regard to consumerism, sustainability, environmentalism, wildlife and animal welfare.

At present it is largely a personal choice and not an organized social movement. Ethical living is an offshoot of sustainable living, in which the individual initially takes a series of small lifestyle changes in order to limit their effect on the environment. Making the decision to start to live ethically, can be as easy as beginning to recycle, switching off electric lights when leaving a room, and buying local organic or fair-trade produce.

Many people often go further by reusing or recycling wastewater, using renewable resources in their homes, and giving up the use of the family car in preference of greener modes of transport. Despite the increasing popularity of ethical living, many in the environmental movement advocate for the enforcement of ethical practices on "Big Business."

10 Ways to Start Living Ethically Today

We all struggle with how to live ethically and how to make considered decisions in everyday life that are eco-friendly and sustainable. Today, we can decide to make small lifestyle changes in order to limit our carbon footprint and protect the environment. Small things like reducing electricity use, buying sustainable and organic produce, and taking public transportation as opposed to driving are easy ways to greener lives and help others. It's all about living a conscious lifestyle and making smart choices.

1. Recycle

It may seem obvious, but making sure to recycle paper (25 per cent of our trash is paper), plastic, glass, cans, boxes, and cardboard in accordance with your local laws is essential. When possible, purchase goods made from recycled paper and 100 per cent post-consumer recycled materials—even buying vintage clothing.

2. Donate Clothing

The average New Yorker tosses 46 pounds of clothing and other textiles in the trash annually. Donating gently used professional work clothes to non-profits like Dress For Success and Bottomless Closet, which help men and women trying to get back into the workforce dress the part for job interviews, is a great way to pass on clothes you're no longer wearing. With partner charities all over the country, it's easy to find a local drop-off.

3. Shop Ethically

Customers want to spend money with companies that they feel are aligned with their values and ethos. Direct-to-consumer clothing brand Ever Lane with its promise of "radical transparency" with regards to its sourcing and production is a great example of a do-gooding company that has resonated with customers. It's important to spend money smartly. Being a Fair-Trade-certified company and purchasing artisan-made goods are two things that consumers should be looking for.

4. Choose The Right Ingredients

It's hard to know what ingredients are ethically sourced, and even harder to avoid them altogether. We are told that certain packaged goods and sodas are bad because they contain processed foods, fake sugar and preservatives to extend their shelf life. Items like coffee and chocolate also raise ethical concerns due to the use of child labour needed to harvest these ingredients.

5. Get to Know What's in Your Beauty Products

The ingredient list is paramount when you're shopping for new products. Being aware of synthetics and chemicals like parabens, phthalates (acid), triclosan, sodium lauryl sulphate (SLS), and propylene glycol will help you be aware of what you are putting on your skin. If you prefer to avoid these ingredients, you should search for non-toxic makeup, haircare, and skincare alternatives. If you have sensitive skin, watch out for ingredients like petroleum, mineral oils, and fragrances, as they can cause anything from skin irritations to allergic reactions.

6. Try Cutting Out Meat

As author Michael Pollan (In Defence of Food), a critic of U.S. food policies, famously said “Eat food. Not too much. Mostly plants.” He and other authors such as Jonathan Safran Foer (Eating Animals) have advocated for the reduction of meat in one’s diet. Try going meat-free one day a week, a la Meatless Mondays whose goal is to reduce meat consumption by 15 per cent for our personal health and the health of the planet.

7. Eat Locally Sourced Food

Locally sourced food is more nutritious, seasonal, and fresher and helps support the local economy and farmers. Whether produce is purchased at a local farmers market or line-caught fish caught in local waters, try to eat only what’s fresh and produced nearby. Foods that are shipped hundreds or thousands of miles have a big carbon footprint that could easily be avoided by purchasing local and seasonal foods.

8. Practice Mindfulness

Life is busy and hectic. Practising mindfulness can calm the body and mind and promote generate wellbeing. The idea is to achieve a state of alert, focused relaxation by deliberately paying attention to thoughts and sensations. You want to allow your mind to refocus on the present moment.
Mindful meditation is a great way to quiet the body and mind especially if you tend to worry or overthink things! This can be done at a meditation studio, via a guided meditation app like InScape or Headspace or in the quiet of your home by just closing your eyes and sitting in silence to focus on the precious present.

9. Stop Buying Things You Don’t Need

How much of what you buy do you actually need? These days we as consumers spend too much money on things we don’t need (from food to clothes to products) and much of it ends up in the garbage. More stuff doesn’t equate to more happiness. Limit you purchases to functional items, and seek durable goods in place of consumables. You can even go the opposite route and donate or get rid of more possessions you don’t have much use for.

10. Use A Water Bottle

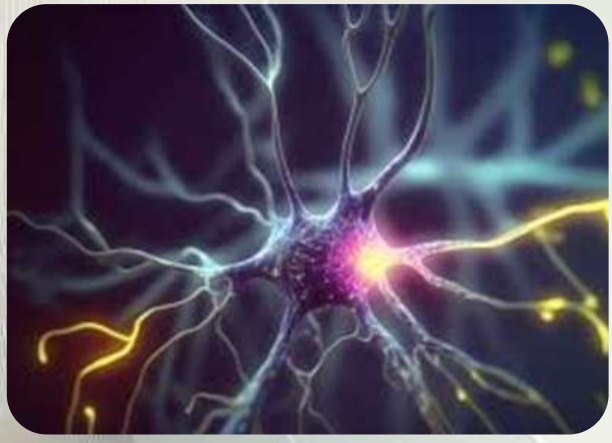
Not only do some plastic water bottles contain hormone disrupting chemicals like BPA, but they also are wasteful and are polluting our oceans (the combination of UV light and the salt cause these plastics to break down and release BPA, Phthalates, PCBs and DDT into the water) and clogging up landfills for future generations. Try to use a metal, glass, recycled or reusable hard plastic bottle—especially when they’re readily available in fun colours and patterns and are lightweight enough to carry in your bag to the gym or office.

Brain Cell Imaging and the Application of Machine Learning and Deep Learning

Purba Chakraborty , Assistant Professor
Department of Computer Applications

Introduction

Brain cell imaging has revolutionized neuroscience, providing detailed insights into the structure and function of neural circuits. However, the complexity and volume of data generated from these imaging techniques necessitate advanced computational tools for effective analysis. Machine learning (ML) and deep learning (DL) have emerged as powerful approaches to handle and interpret this vast amount of data, enabling researchers to uncover new patterns and make significant advances in understanding brain function.



Brain Cell Imaging Techniques

Brain cell imaging encompasses various techniques, including fluorescence microscopy, two- photon microscopy, and magnetic resonance imaging (MRI). These methods allow for the visualization of brain cells in both fixed and live tissue, capturing details from the level of individual synapses to entire neural networks. However, the images generated are often large, multidimensional, and complex, requiring sophisticated methods for processing and analysis.

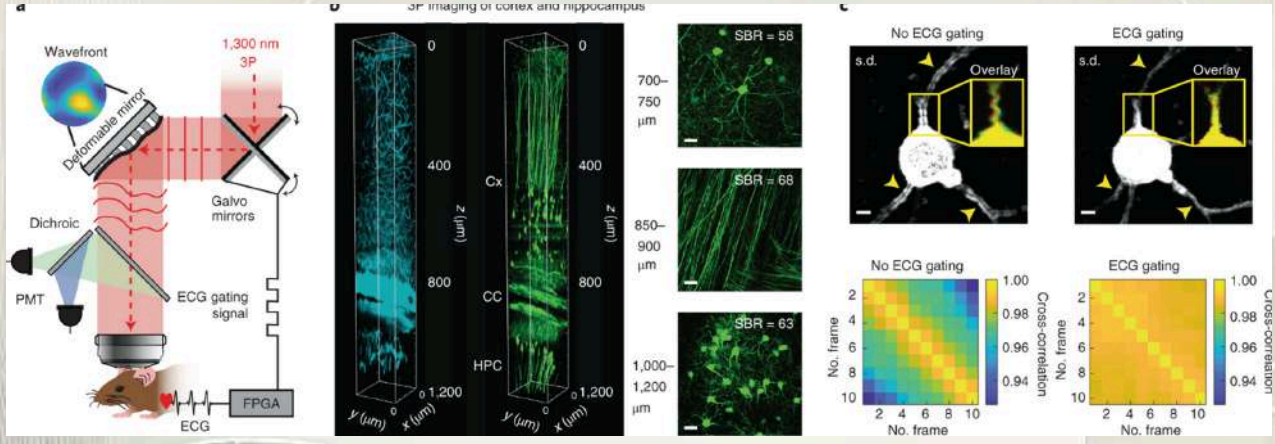
Challenges in Brain Cell Imaging

The major challenges in brain cell imaging include noise, variability in cell structures, and the sheer scale of the data. Manual analysis is time-consuming and prone to errors, leading to the necessity of automated, accurate methods. This is where ML and DL play a crucial role. They provide tools that can automatically identify, classify, and quantify cellular structures, significantly reducing the workload and increasing the accuracy of analyses.

Machine Learning in Brain Cell Imaging

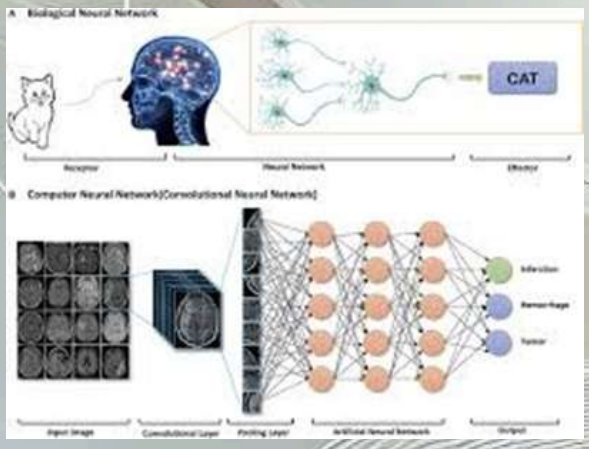
Machine learning algorithms have been applied to various aspects of brain cell imaging, from image segmentation to cell classification. Traditional ML methods, such as support vector machines (SVMs) and random forests, have been used to segment images, classify cell types, and even predict disease states based on imaging data. These methods rely on handcrafted features, requiring domain expertise to design effective feature sets.

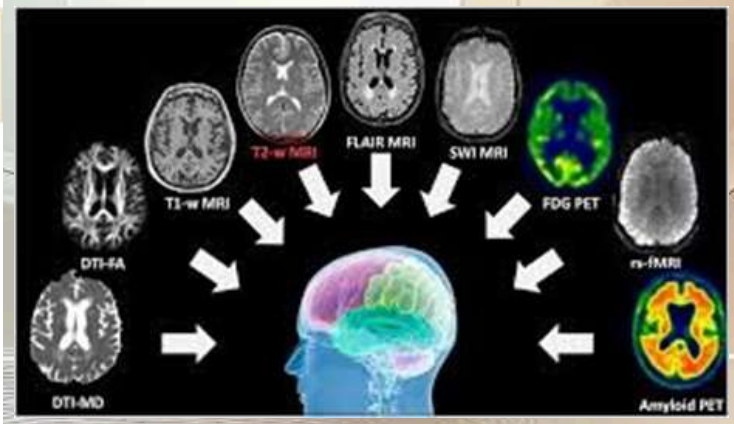
One significant application of ML in brain cell imaging is the segmentation of neuronal structures. Accurate segmentation is essential for identifying and quantifying different cellular components, such as dendrites, axons, and synapses. ML algorithms have been trained on annotated datasets to automate this process, offering substantial time savings and improving consistency.



Deep Learning in Brain Cell Imaging

Deep learning, a subset of machine learning, has shown immense potential in brain cell imaging due to its ability to automatically learn features from data. Convolutional neural networks (CNNs),in particular, have become the standard for image analysis tasks. They have been used extensively for image classification, object detection, and image segmentation in neuroscience.





One of the most significant contributions of DL to brain cell imaging is in the area of image reconstruction and enhancement. Techniques such as deep learning-based super-resolution allow researchers to reconstruct high-resolution images from lower-resolution inputs, overcoming the limitations of imaging hardware. Furthermore, DL models have been employed to denoise and deblur images, improving the quality and interpretability of imaging data.

Applications of ML and DL in Brain Research

The integration of ML and DL with brain cell imaging has led to breakthroughs in several research areas. For instance, these techniques have been used to map neural connectivity, revealing the intricate wiring of the brain. They have also been applied to analyze dynamic imaging data, such as calcium imaging, which tracks neural activity over time. DL models can identify patterns of activity, correlate them with specific behaviours, and even predict outcomes based on real-time data.

In disease research, ML and DL have been instrumental in identifying biomarkers and predicting disease progression. For example, in Alzheimer's research, DL models have been used to analyze brain imaging data to detect early signs of the disease, well before symptoms manifest. These predictive models offer the potential for early intervention and personalized treatment strategies.

Future Directions and Challenges

Despite the advancements, there are still challenges to overcome. One of the main issues is the need for large, annotated datasets to train ML and DL models effectively. The heterogeneity of brain cell imaging data across different techniques and studies also poses a challenge for model generalization. Additionally, the interpretability of ML and DL models remains a critical concern, particularly in medical and research settings where understanding the decision-making process is essential.

Future directions include the development of more sophisticated models that can handle multimodal data, combining different imaging modalities to provide a more comprehensive view of the brain. There is also a growing interest in the application of unsupervised and semi-supervised learning techniques, which require less annotated data and can discover patterns in the data without explicit labels.

Conclusion

Machine learning and deep learning have become indispensable tools in the field of brain cell imaging, enabling researchers to handle the complexity of imaging data and extract meaningful insights. As these technologies continue to evolve, they hold the promise of unlocking new frontiers in neuroscience, from mapping the brain's connectome to understanding the mechanisms of neurological diseases. The ongoing integration of ML and DL with brain cell imaging is poised to accelerate discoveries and pave the way for more personalized and effective treatments for brain disorders.

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3D Nanoscale Optical Disc Memory with Petabit Capacity: A Revolutionary Leap in Data Storage

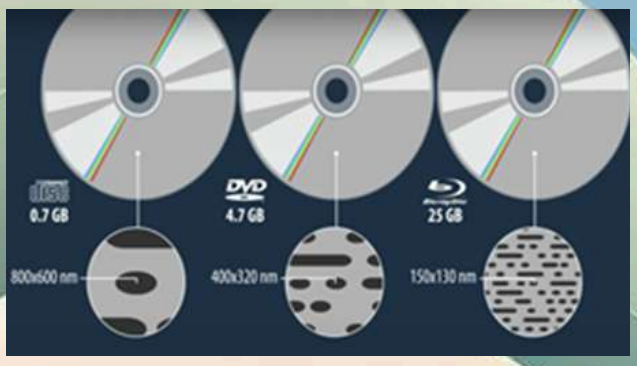
Ankur Biswas, Assistant Professor
Department of Computer Applications

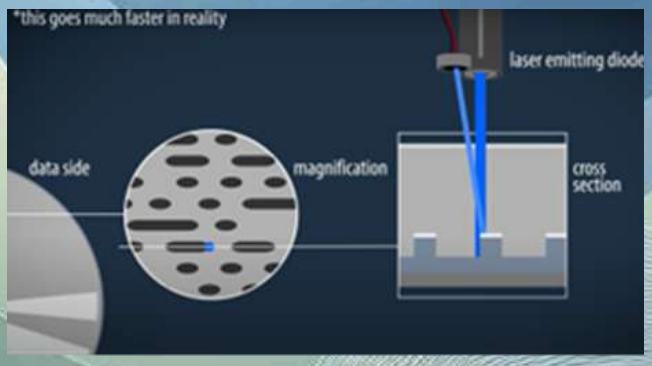
In our progressively digitised society, there is a growing need for effective and high-capacity data storage solutions. The rapid expansion of data generated by the Internet of Things (IoT), artificial intelligence (AI), and cloud computing has shown the constraints of conventional storage solutions. Researchers and technologists are developing innovative solutions to address these demands. One particularly intriguing technology is 3D nanoscale optical disc memory with petabit capacity. This advanced technology has the potential to completely transform the way we store, access, and manage data.

1. History of Storage Technology

The history of storage technology is a captivating voyage that extends across many ages, commencing with primitive techniques like punch cards in the 18th century. These cards were utilised for data input in diverse industries, particularly in textiles. The change commenced in earnest with the introduction of personal computers in the 1970s, when conventional storage methods such as punch cards were replaced by more efficient digital storage technology.

With the widespread availability of personal computers in 1977, floppy discs emerged as the predominant storage medium. During this period, notable computers such as the Commodore Pet, Apple II, and TRS-80 emerged. These computers employed floppy discs and cassette tape drives for storing data. The constraints of these initial storage methods established the groundwork for future sophisticated technology. By the conclusion of the 1980s, floppy discs had progressed from 5.25-inch single-sided discs to 3.5-inch double-sided ones capable of storing approximately 1.4 megabytes of data.





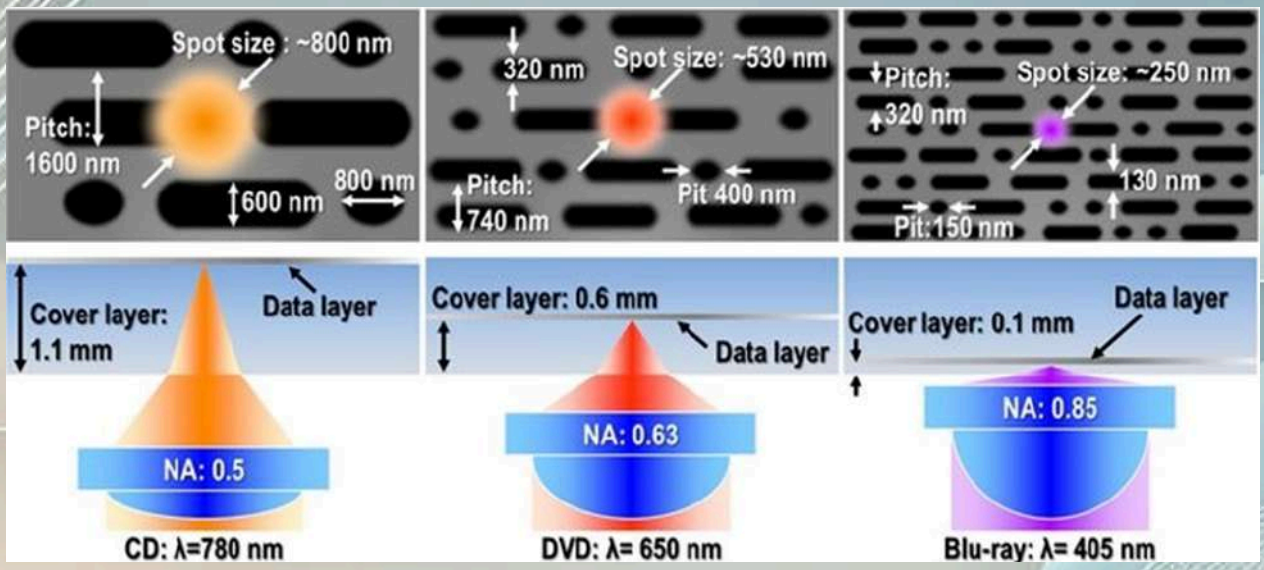


Figure 1: CD DVD Blu-ray disc data pit pitch and laser spot dimensions

The emergence of Compact Disc-Read Only Memory (CD-ROM) throughout the 1990s was a notable breakthrough in the field of storage technology. CD-ROMs quickly replaced floppy discs for software distribution because of their greater speed and dependability, thanks to their storage capacity of 650 megabytes. Subsequently, the implementation of Digital Versatile Disc (DVD) technology occurred, providing a larger storage capacity of 4.5 gigabytes. This advancement facilitated the global dissemination of movies and high-quality software.

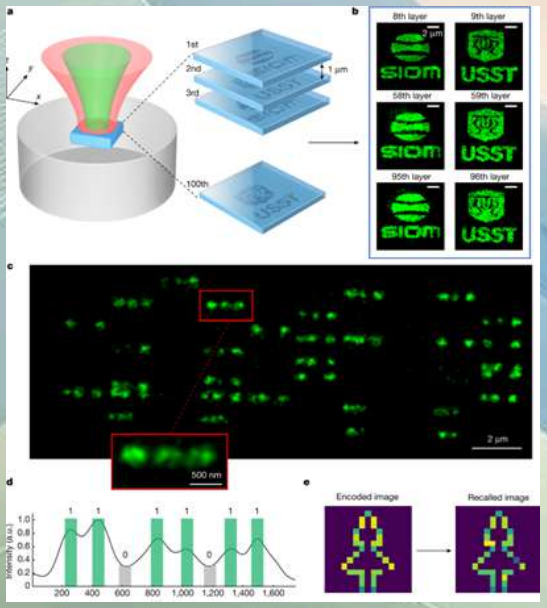
With the progression of technology, Blu-ray Discs were introduced in the early 2000s. These discs had a capacity of 25 gigabytes per layer, enabling the storage of high-definition videos. The advancement of storage technology has resulted in increased storage capacities as well as improved reliability and faster data access techniques. This transformation has involved moving from optical discs to hard disc drives (HDD) and, more recently, flash memory solutions such as USB drives and SSDs.

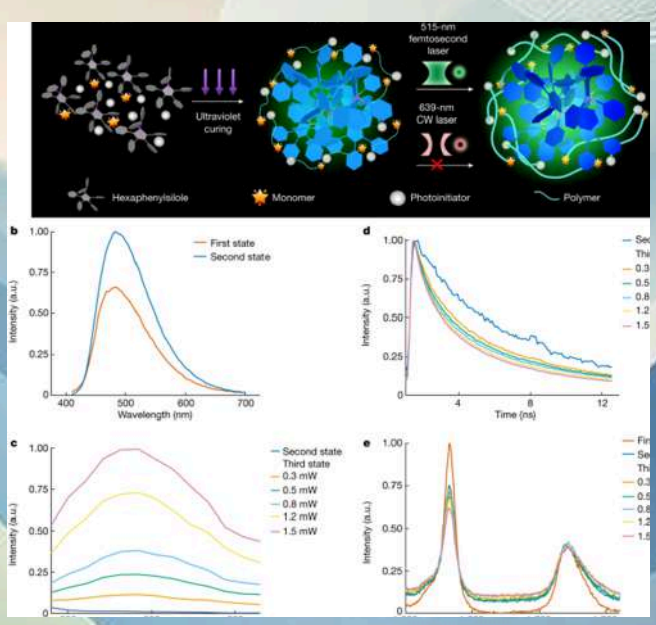
2. Technology Behind 3D Nanoscale Optical Disk Memory

The most recent breakthrough in optical storage technology is the development of a 3D nanoscale optical disc memory that can achieve a capacity of petabits. Scientists have created a recording medium that uses a photoresist film containing aggregation-induced emission dye (AIE-DDPR). This enables data to be recorded on over 100 levels within a single disc, with each layer being just 54 nanometres thick.

This technique utilises a complex dual-laser system to achieve its revolutionary functionality. The generation of data spots is initiated by a green laser, while a red laser deactivates the process after writing the data. This level of control allows for the creation of spot sizes that are smaller than the wavelength of light being employed. As a result, it overcomes the limitation of optical diffraction that previously restricted the amount of data that could be stored on traditional optical discs.

This breakthrough is highly significant since it leads to recording capacities that are about 4,000 times larger than those of regular Blu-ray discs and 24 times larger than high-capacity hard drives. The potential of this technology rests in its capacity to facilitate condensed storage systems capable of accommodating substantial volumes of data within limited physical areas, which is essential given the ongoing surge in data requirements.





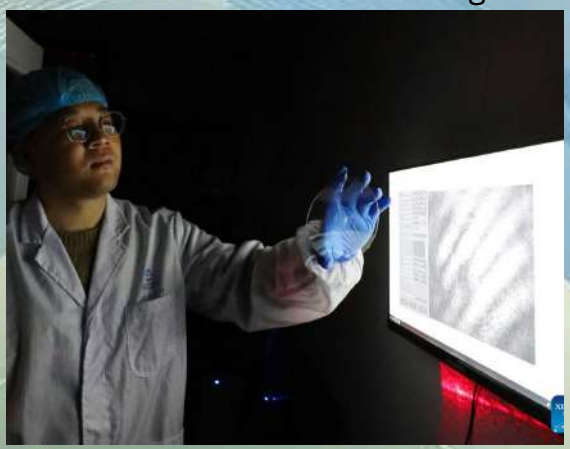
3. Researchers and Collaborators

A team of researchers from the University of Shanghai for Science and Technology and the Shanghai Institute of Optics and Fine Mechanics spearheaded the creation of the 3D nanoscale optical disc memory. Miao Zhao, Jing Wen, Qiao Hu, Xunbin Wei, Yu-Wu Zhong, Hao Ruan, and Min Gu are prominent contributors who have collaborated to advance the limits of optical data storage technology.

Their research has not only aimed at increasing the amount of data that can be stored, but also at improving the techniques used for writing and reading data to overcome the difficulties associated with high-density storage. The researchers' integration of modern materials and methodologies has made a substantial contribution to the advancement of optical disc technology, marking a revolutionary development in data storage methods.

4. Challenges of 3D Optical Disk Memory Technology

Although there have been significant breakthroughs in the development of 3D nanoscale optical disc memory technology, there are still a number of obstacles that need to be overcome. An important problem is the phenomenon of destructive reading, in which the act of reading can unintentionally modify the written information, potentially resulting in data loss over a period of time. This challenge requires the creation of more sophisticated reading techniques that reduce the likelihood of writing while reading.



Furthermore, the thermodynamic stability of the recording medium presents an additional challenge. The recording medium is susceptible to delayed chemical processes that may unintentionally reverse written data. Ensuring the stability and durability of recorded data is of utmost importance, particularly considering the expected lifespan of optical discs, which may extend up to 50 to 100 years.

Media sensitivity is a notable issue. The mechanism of two-photon absorption, which is utilised for writing, necessitates the employment of high-power lasers. However, these lasers are currently not practical for consumer devices. This constraint restricts the feasible implementation of the technology and diminishes its accessibility for extensive utilisation in consumer and commercial environments.

5. Future Prospects of 3D Nanoscale Optical Disk Memory

The possible uses of 3D nanoscale optical disc memory are extensive when considering future prospects. This technology has the potential to revolutionise data centres and large-scale digital archives because to its ability to store petabit-levels of data. The technology provides the opportunity to store vast quantities of data in a small space, which is crucial for organisations seeking to effectively handle growing amounts of information.

The expected decrease in energy consumption of the new technology compared to conventional data storage methods could potentially address the sustainability concerns associated with traditional data storage technologies. Given the growing energy consumption of data centres, this innovation has the potential to serve as a more environmentally responsible option, in line with worldwide objectives for sustainable technology. Ongoing research will prioritise the optimisation of writing speeds and the improvement of energy efficiency to fully exploit the potential of the technology in practical applications. The continuous progress in the field indicates a hopeful direction ahead, combining technological innovation with environmentally mindful approaches.

The advancement of optical storage technology relies on the incorporation of innovative materials, enhanced production methods, and precise writing techniques to overcome current obstacles. The continuous effort to develop storage solutions with increased density is driven by the growing demand to handle data expansion while also ensuring responsible environmental practices and accountability for their impact.

Conclusion

The 3D nanoscale optical disc memory is a major advancement in storage technology, surpassing its historical origins in punch cards and introducing state-of-the-art optical disc innovations capable of storing petabit-level data. The cooperation of proficient researchers has facilitated revolutionary progress, tackling obstacles and empowering the prospective development of data storage technology. As we further adopt the evolving field of data management, the possibility of 3D optical discs having a significant influence continues to be encouraging.

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Ethics in AI

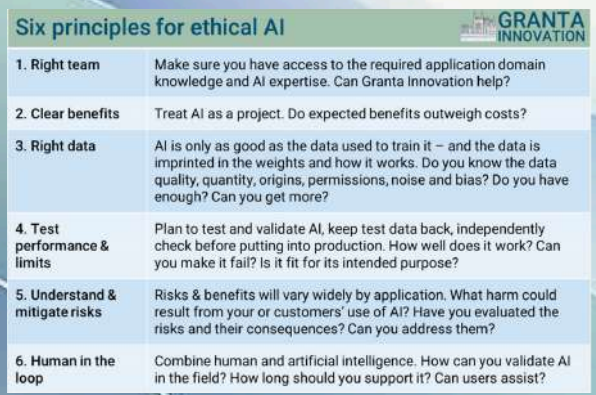
Somnath Banerjee, Assistant Professor
Department of Computer Applications

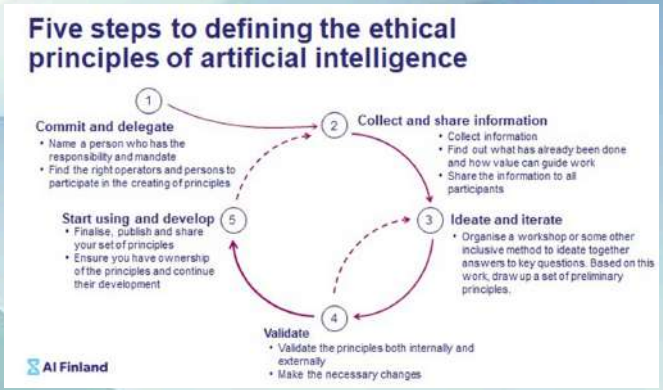
AI ethics is a system of moral principles and techniques intended to inform the development and responsible use of artificial intelligence technology. As AI has become integral to products and services, organizations are starting to develop AI codes of ethics.

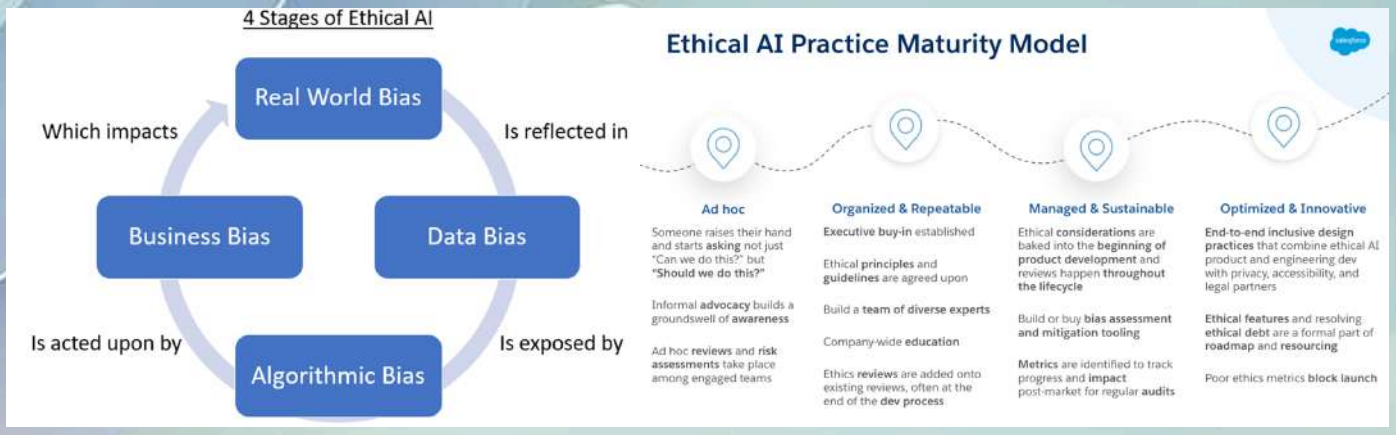
Top Ethical Challenges in AI

1. Unemployment – What happens after end of the jobs.
2. Inequality – How do we distribute the wealth created by machine.
3. Humanity – How do machines affect our behaviour and interaction.
4. Artificial stupidity – How can we guard against mistakes.
5. Racist Robots – How do we eliminate AI bias.
6. Security – How do we keep AI safe from adversaries.
7. Evil genies – How do protect against unintended consequences
8. Singularity – How do you stay in control of a complex intelligent system.

Robot rights – How do we define the human treatment of AI







How can Ethics in AI have a better future?

It is a must to have sensible regulation to balance the potential harms and benefits of AI.

Social Well-being: Ethical AI makes the system available for the individual, society, and the environment's sake. It will work for the benefit of mankind.

Avoid Unfair Bias: The AI system that is designed is ethically fair. It will not do any unfair discrimination against individuals or groups. It provides equitable access and treatment. It detects and reduces unfair biases based on race, gender, nationality, etc.

Privacy and Security: AI systems keep data security at the top. Ethical AI-designed systems provide proper data governance and model management systems. **Privacy and preserving AI** principles help to keep the data secure.

Reliable and Safe: The AI system works only for the intended purpose, thus reducing unknown mishappening chances.

Transparency and Explainability: Ethical system explains each prediction and output. It provides transparency for the logic of the model. Users get to know the contribution of data for the output. This disclosure justifies the output and builds trust.
Akira AI systems obey the principles of Explainable AI; therefore, it provides complete transparency and explainability of systems that build users' trust.

Governable: We are designing a system that works on intended tasks. It detects and avoids unintended consequences.

Value Alignment: Humans are making decisions by considering universal values. Ethical frameworks help to consider those universal values.

Human-Centred: Ethical AI system values human diversity, freedom, autonomy, and rights. It serves humans by respecting human values. The system is not performing any unfair and unjustified actions. It respects individual freedom and autonomy. Our systems are fair and protected. Our system respects the rights of individuals.

TECHNICAL WRITE UP

BY STUDENTS

THE USE OF BLOCKCHAIN IN SUPPLY CHAIN MANAGEMENT

ARPAN MALAKAR, MCA

Blockchain Technology was first developed to support cryptocurrencies like Bitcoin. But now it is being used in various other fields like supply chain management (SCM). This technology is a decentralized and secure way of recording transactions, offering significant advantages in tracking goods, ensuring transparency, and improving efficiency in the supply chain.

A common problem in supply chain management is the lack of visibility and transparency. Traditional systems often involve several databases that do not easily share information, leading to gaps in communication and delays. Blockchain solves this by creating a single, unchangeable record of every transaction where all parties are involved in the supply chain process. Each transaction or block is connected to its previous block, forming a chain that cannot be altered without the agreement of the whole network. This transparency allows everyone involved from manufacturers to retailers, to see the same information.

Frauds and counterfeiting are serious issues in global supply chains, especially in sectors like pharmaceuticals and luxury goods. Blockchain's secure and unchangeable nature makes it an effective tool for tackling these issues. The entire journey of the product can be recorded in the blockchain, from the source of raw materials to the final customers. This creates a history that can be verified at any point of time in the supply chain.

Supply chains are often complex, involving many parties and transactions. It can lead to significant paperwork and administrative costs, causing delays. Blockchain can streamline these processes by automating data entry and verification, reducing the need for manual work. This speeds up transactions, reduces errors and lowers the chance of disputes. Moreover, they can help companies better predict demand and manage inventory.

While blockchain offers many benefits for supply chain management (SCM), its adoption is still in the early stages and comes with challenges, such as high implementation costs, concerns with data privacy, etc. However, as the technology develops and these issues are addressed, blockchain is likely to become an essential tool in SCM. By making the supply chain more transparent, secure and efficient, blockchain has the potential to transform global trade.

BLOCKCHAIN IN SUPPLY CHAIN

KOUSTAV BARMAN, MCA

Blockchain technology was first developed to support cryptocurrencies, but now it is being used in many other technologies. Blockchain technologies have been making waves in the supply chain industry. Blockchain is a decentralized digital ledger that records transactions across a network of computers. This means that instead of relying on a third party to verify and authenticate transactions, blockchain enables peer-to-peer verification through a consensus mechanism. Blockchain is a decentralized ledger technology that allows secure and transparent transactions without intermediates. The technology is based on a distributed network of computers or nodes that stores and validate real-time transactions. Blockchain is a relatively new technology that has the potential to revolutionize supply chain management. One of its most significant benefits is real-time visibility, which allows all parties to see exactly what's happening at any given time. Transparency and traceability are also critical features of blockchain. With every transaction recorded on an immutable ledger, it becomes nearly impossible for anyone to tamper with or alter data without being detected. Blockchain also offers increased flexibility by allowing businesses to create customized solutions tailored to their need. As a result, it helps reduce fraud and errors while improving trust between participants in the supply chain ecosystem.

One major challenge of implementing blockchain in supply chain management is the issue of data privacy. While blockchain technology offers transparency and real-time visibility, it requires sharing data across a decentralized network. As such sensitive business information could be exposed to competitors on other parties accessing the network.

Implementing blockchain in supply chain management

1) Identify the main points
2) choose the right platform
3) Date use cases
4) collaborate with partners
5) Plot test before scaling up.

Retail companies use blockchain to track the movement of goods between suppliers and buyers.

THE ROLE OF CLOUD COMPUTING IN THE DIGITAL TRANSFORMATION OF BUSINESSES

ANJALI KUMARI, MCA

We are living in a world with continuous evolution, all companies need to evolve their activity to new forms of technology, this is why Digital Transformation becomes a means of survival. In this revolution, cloud computing plays a key role, it works as a catalyst for digital transformation of businesses. Nowadays every company measure their ability or performance through customer experience, cloud-enabled and cloud-delivered businesses support its organization to adopt newer technologies to offer high-level customer experience by differentiating its strategies and solutions to solve modern and digitally challenging problems.

Cloud Computing uses remote services on the internet to process, secure, manage, and transform data. It does not use local servers. Data is not safe on physical devices. But in the cloud, this helps businesses to better manage an organization, improve productivity, optimize costs, and also make enhance customer digital experience.

Cloud Computing has three types of services.

1. SAAS - Software-as-a-Service. In this option, the third-party cloud providers host s/w applications and provide them to on-demand customers all over the world. Exp- Google App.
2. IaaS - Infrastructure-as-a-Service. In this second option, third-party, cloud providers provide the software and hardware tools, operating environment & computing platforms that are used to develop internet platforms. Exp- Windows Azure.
3. PaaS - Platform-as-a-Service. In this option, the third-party cloud delivers security to secure the data, network components etc. Exp- Digital Ocean.

In order to be competitive and add value to the company, each company should embrace the digital transformation process when required to upgrade the old IT technologies into the new ones. Beyond cloud computing a company should establish or integrate new technologies like Artificial Intelligence, Machine Learning, Big Data Analytics, Internet of Things (I-OT), these technologies require high processes and a large amount of space, so cloud computing comes as a solution to all these problems! Cloud Computing is very flexible, by using this we can easily maintain and develop our organization mainly if it is in continuous change, cloud computing allows companies to save costs by not investing in setting up and maintaining IT resources in-house.

Cloud Computing provides a scalable framework where businesses need to pay only for used services. Any data or personal information stored in houses can be attacked or threatened. Cloud hosting instead is able to store multiple stored backups of data in a distributed system.

By using Cloud Computing, different teams can work together.

AI IS FRIENDLY FOR HUMAN

RAHUL PAL, MCA

Arjun was a first-year MCA student with a passion for technology and an insatiable curiosity about the world of artificial intelligence (AI). He had always been fascinated by how AI could transform industries, solve complex problems, and make life easier for everyone. But there was one thing that bothered him: the widespread fear that AI might one day become dangerous to humans. One day, while working on a project for his AI class, Arjun decided to build a simple AI assistant. His goal was to create a program that could help students like him manage their time, study more effectively, and even answer some of their questions about programming. He called his AI assistant “Jr A.I”. “Jr A.I” was designed to be friendly, helpful, and completely safe. It wasn’t capable of making independent decisions or learning in unpredictable ways. Instead, it was programmed to follow a strict set of rules that Arjun had carefully designed.

As Arjun continued to develop “Jr A.I” he noticed something interesting. The more he interacted

with it, the more he realized how beneficial AI could be. “Jr A.I” helped him organize his study schedule, reminded him of upcoming deadlines, and even suggested resources when he was stuck on a difficult programming problem. It was like having a personal tutor and assistant rolled into one.

One evening, while discussing “Jr A.I” with his classmates, a heated debate broke out. Some of his friends argued that AI could become dangerous if not controlled properly. They cited examples from science fiction movies where AI turned against humans, leading to disastrous consequences. Arjun listened carefully and then shared his experience with “Jr A.I”. He explained how “Jr A.I” was designed with strict limitations to ensure it could never harm anyone. It could only perform specific tasks and always required human input to function. Moreover, it was transparent in its operations, meaning Arjun could see exactly how it made decisions.

“But what if “Jr A.I” learns too much and becomes uncontrollable?” one of his friends asked. Arjun smiled and replied, “Jr A.I” isn’t designed to learn beyond what I’ve programmed it to do. It’s like a calculator—it can only solve the problems you give it. And even if we build more advanced AI in the future, we can always set boundaries to ensure it stays safe.”

He went on to explain that AI, like any other tool, depends on how humans use it. If designed with care and responsibility, AI can be incredibly beneficial. It can assist in education, healthcare, environmental protection, and countless other fields, making life better for everyone. Arjun’s classmates were intrigued by his perspective. They realized that while AI has potential risks, those risks can be managed with proper oversight and ethical considerations. “Jr A.I” was a perfect example of how AI, when created with the right intentions, could be a valuable ally rather than a threat.

AI IS FRIENDLY FOR HUMAN

In the end, Arjun's project not only helped him excel in his studies but also changed the way his friends viewed AI. They came to understand that AI isn't inherently dangerous; it's a powerful tool that, in the right hands, can be used to create a better future for all.

Arjun's journey with "Jr A.I" taught him an important lesson: AI is not something to be feared, but something to be harnessed responsibly. And as he continued his studies in MCA, he was more determined than ever to contribute to the development of safe and beneficial AI technologies.

Arjun's journey with AI assistant (Jr A.I) didn't stop there. As he delved deeper into his studies, he began to explore more advanced concepts in AI. He learned about machine learning, natural

language processing, and neural networks. Each new topic opened up a world of possibilities, and Arjun was eager to apply his knowledge to improve "Jr A.I".

One day, Arjun decided to enhance "Jr A.I" capabilities by integrating it with a voice recognition system. This would allow "Jr A.I" to interact with users through voice commands, making it even more user-friendly. He spent weeks working on the integration, carefully testing and refining the system to ensure it worked seamlessly.

When the voice recognition system was finally ready, Arjun was thrilled with the results. "Jr A.I" could now understand and respond to spoken commands, making it even more accessible to users. Arjun's classmates were amazed by the new feature, and many of them started using "Jr A.I" to help with their studies.

As "Jr A.I" popularity grew, Arjun received feedback from users suggesting new features and improvements. He welcomed the input and worked tirelessly to incorporate the suggestions into "Jr A.I". He added a feature that allowed "Jr A.I" to provide personalized study plans based on each student's strengths and weaknesses. He also integrated "Jr A.I" with online resources, enabling it to recommend articles, videos, and tutorials tailored to each user's needs.

Arjun's dedication to improving "Jr A.I' paid off. The AI assistant became an indispensable tool for students, helping them stay organized, manage their time effectively, and excel in their studies. "Jr A.I" success also caught the attention of Arjun's professors, who praised his innovative approach and encouraged him to continue his research.

Inspired by the positive feedback, Arjun decided to take "Jr A.I" to the next level. He envisioned "Jr A.I" as a comprehensive educational platform that could benefit students worldwide. To achieve this, he needed to expand "Jr A.I" capabilities and make it accessible to a broader audience.

AI IS FRIENDLY FOR HUMAN

Arjun reached out to a group of like-minded students and formed a team to work on “Jr A.I”. Together, they developed a web-based version of “Jr A.I” allowing students to access the AI assistant from any device with an internet connection. They also translated “Jr A.I” into multiple languages, making it accessible to students from different countries and backgrounds. The team’s hard work paid off, and “Jr A.I” quickly gained a global user base. Students from around the world praised “Jr.AI” for its user-friendly interface, personalized study plans, and helpful recommendations. Arjun and his team were thrilled to see their creation making a positive impact on so many lives As “Jr A.I” continued to grow, Arjun remained committed to ensuring its safety and ethical use. He implemented strict guidelines to prevent misuse and regularly updated “Jr A.I” security features to protect user data. He also collaborated with experts in AI ethics to ensure “Jr A.I” adhered to the highest standards of transparency and accountability.

Arjun’s journey with “Jr A.I” taught him valuable lessons about the potential of AI and the importance of responsible development. He realized that AI, when designed with care and consideration, could be a powerful tool for good. It could empower individuals, enhance education, and create opportunities for a better future.

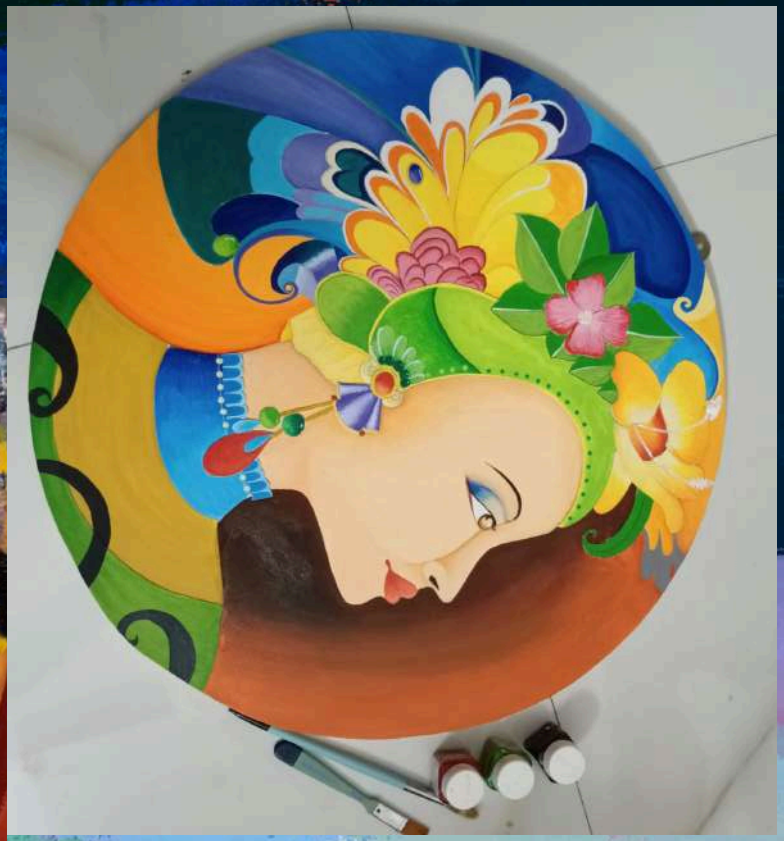
Through his work with “Jr A.I” Arjun demonstrated that AI is not something to be feared, but something to be embraced and harnessed responsibly. His story inspired others to explore the possibilities of AI and to approach its development with the same dedication and ethical considerations.

In the end, Arjun’s vision for “Jr A.I” became a reality. The AI assistant he had created as a simple project for his AI class had grown into a global educational platform, helping students around the world achieve their goals. Arjun’s journey with “Jr A.I” was a testament to the power of innovation, collaboration, and responsible AI development. And as he continued his studies and research, he remained committed to using AI to create a better, safer, and more inclusive future for all.


ART

EXPLORING THE SOUL OF CREATIVITY

ART



SHREYA KARMAKAR

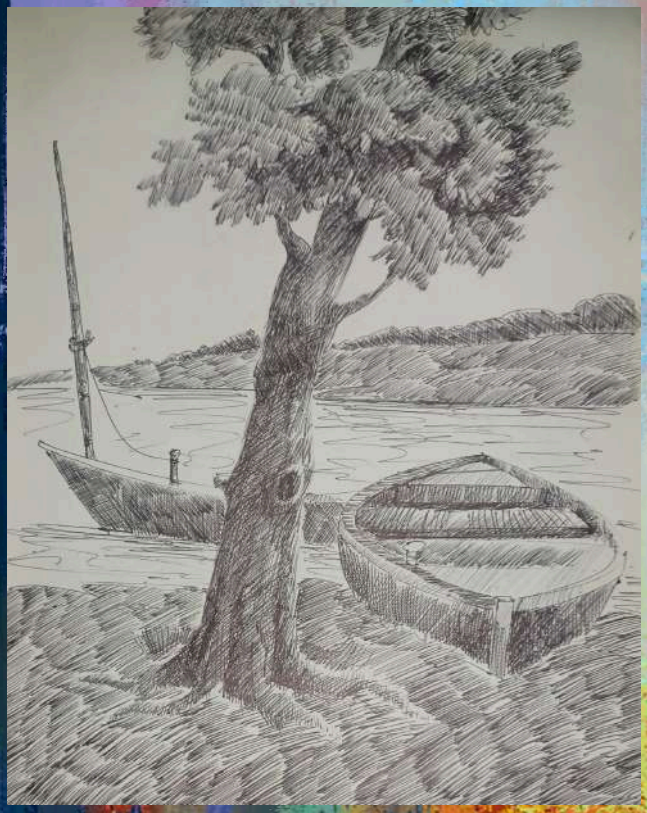
ART

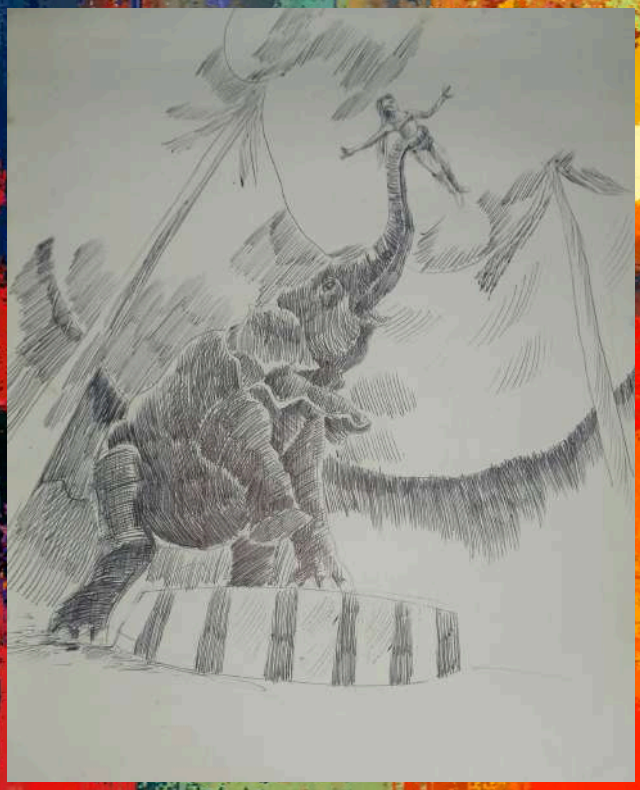
EXPLORING THE SOUL OF CREATIVITY

RITTIKA PAUL,
MCA

ART

EXPLORING THE SOUL OF CREATIVITY





SUBHRAJYOTI SARKAR, MCA

ART

MADE BY
MONALISHA MUKHERJEE
MCA

EXPLORING THE SOUL OF CREATIVITY

ART

AISHIKA ROY CHOWDHURY_MCA

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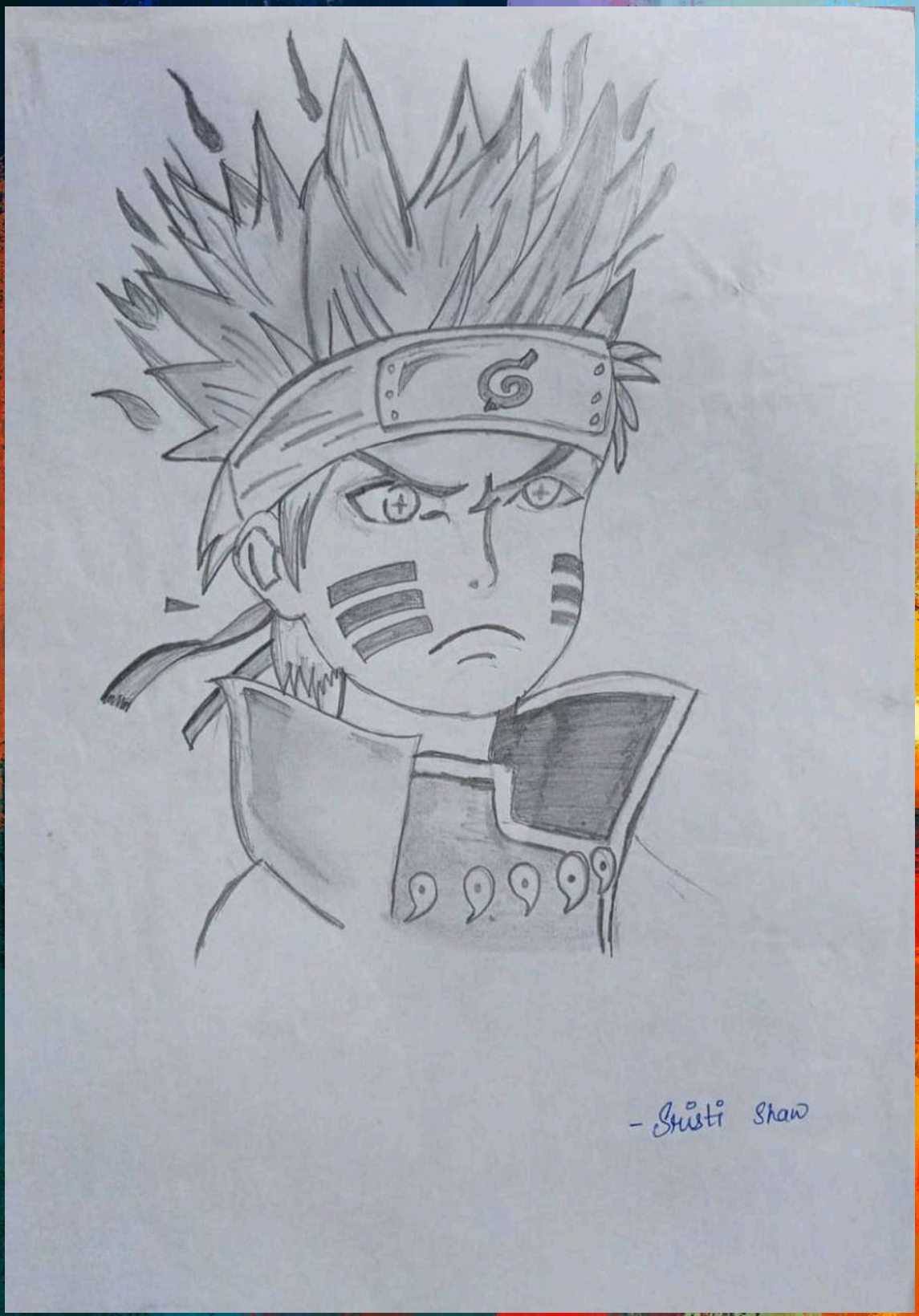

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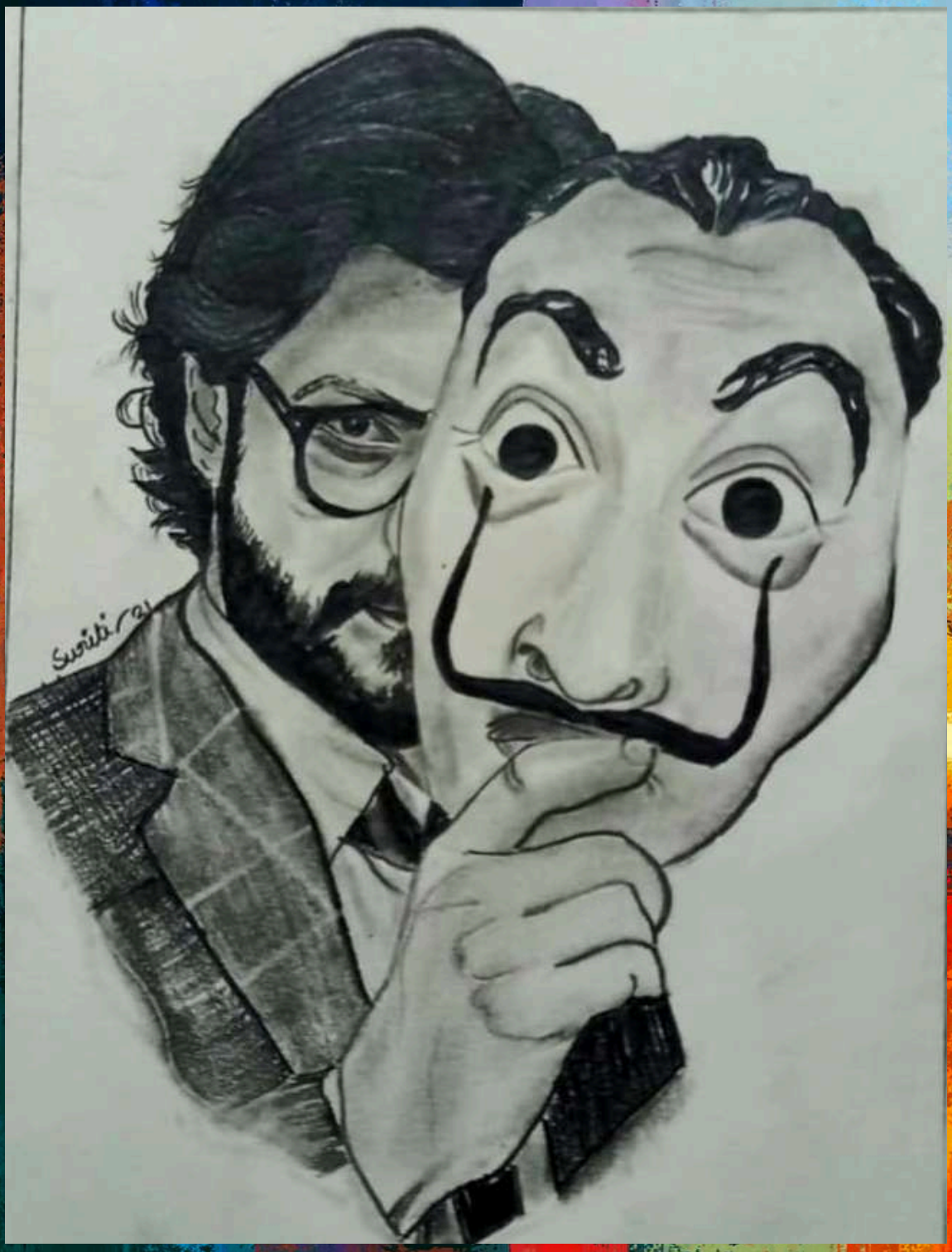

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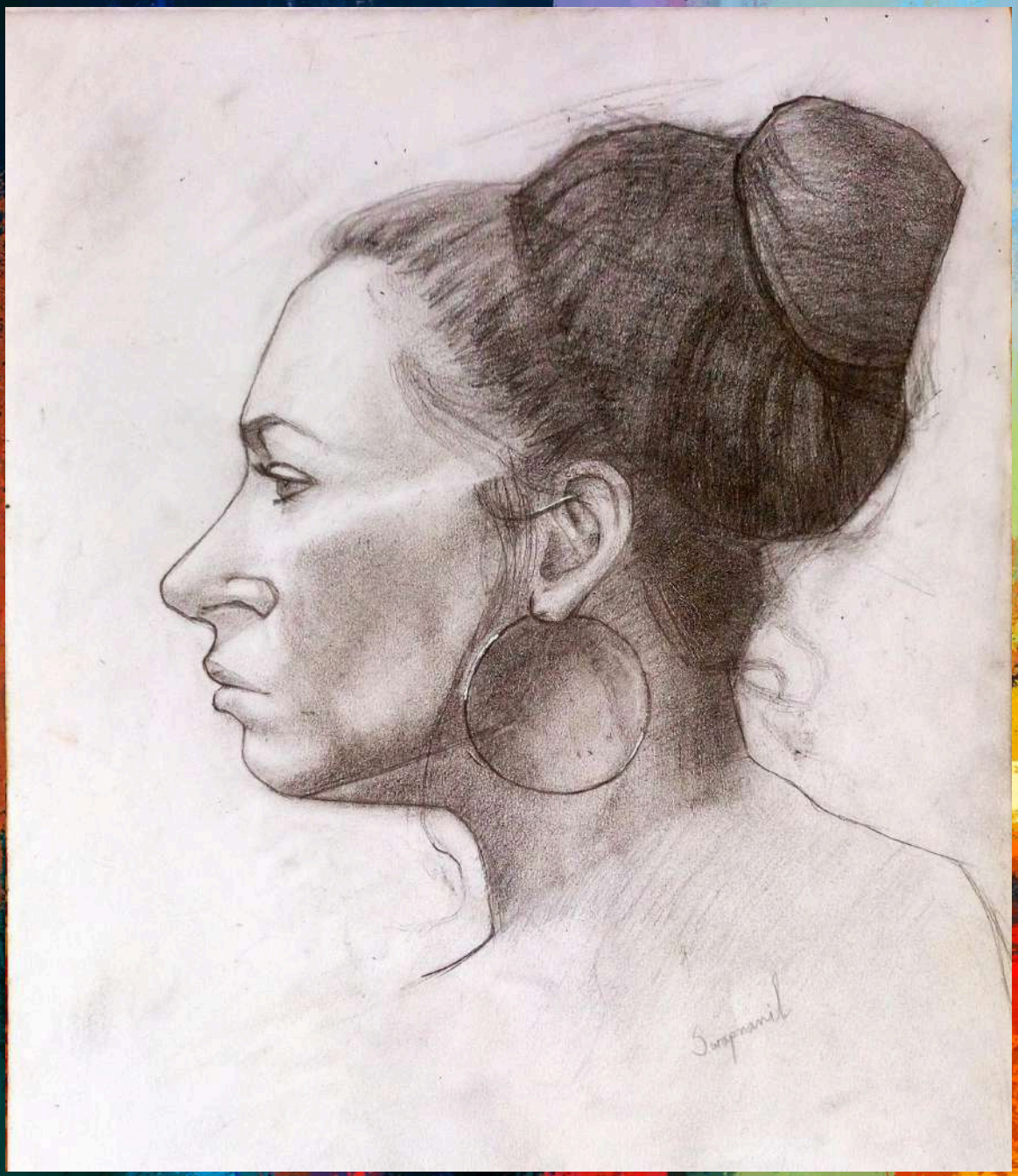

SWAPNANIL SARKAR_MCA

ART

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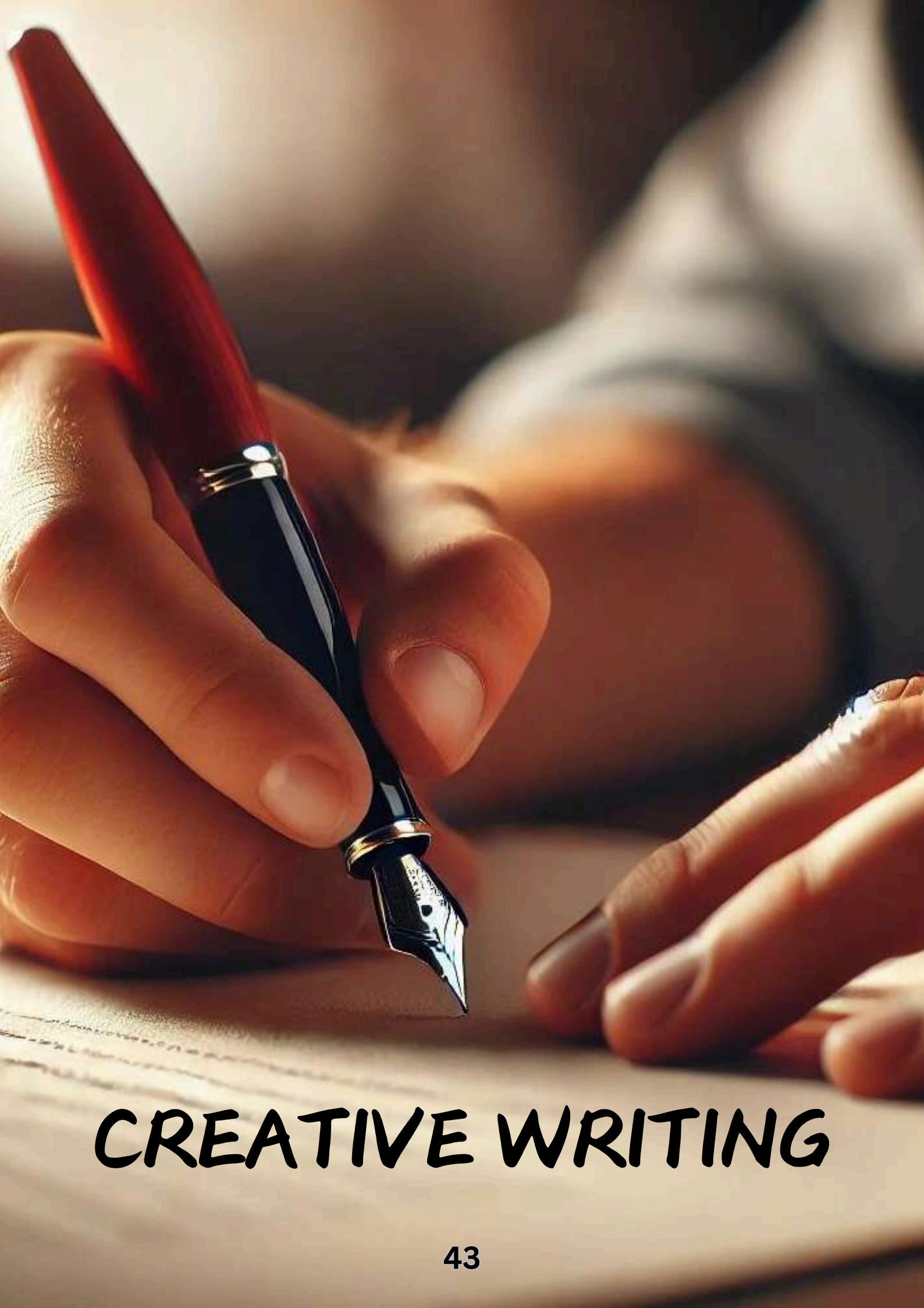


CREATIVE WRITING

“সুখে থেকো মা”

By Sahin Nayak (MCA)

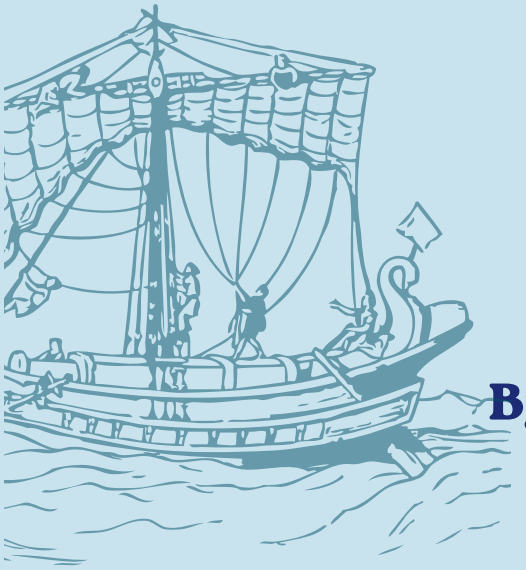
হয়তো আর ফিরবো না
থাকবো না আর পৃথিবীতে ।
হয়তো আর আসবো না
তোমার সেই আঁচলেতে ।।

ভালো থেকো আসি মা গো
স্মরণে রেখো আমাতে ।
কেঁদো না মা আমার জন্য
থেকো তুমি খুশিতে ।।

সুখে থেকো সুখে রেখো
ভেবো না কথা আমার ।
পরিবারকে ভালো রেখো
তাতেই খুশি আমার ।।

যদি না আসি ফিরে মা
কোরো না দুশ্চিন্তা ।
মনে রেখো আমি মা
দিয়েছি পাড়ি অনন্তা ।।

ভেঙ্গে পড়োনা তুমি গো মা
বেড়িও না খুঁজে তুমি আমাকে ।
মনে রেখো ছেলে তোমার মা
করেছে বরণ মৃত্যুকে ।।



“Fear”

By Sristi Shaw (MCA)

When someone asks what I am scared of
I try to play it basic and say the dark

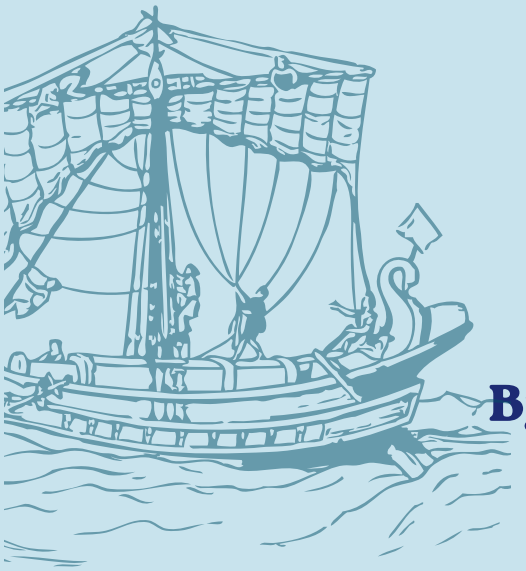
Sometimes I’ll say heights,
Needles or even snakes

Maybe I’ll say love
Or getting hurt by someone you love

I’ll say a close place,
Or even loud sounds or voice.

But I hide my real fears
As far as I can from someone’s reach.

Cause my biggest fear is what if,
I won’t be able to see TOMMOROW
What if today is my last day,
What if the last memory of my
closed ones with me is not HAPPY one.



“Sorry”

By Sristi Shaw (MCA)

He used to say SORRY for literally everything
Even for the mistake he didn’t do.

He used to say SORRY like it’s a melodious song tune
He apologized for everything that went wrong,
Even for the fault which I am answerable to
Because he labelled himself as an earthquake

He was SORRY for being innocent child from heart
who loves to enjoy his life,
Because no one ever told him he was too good to be true.

No one ever told him he was also a human being and
human being can do mistake it’s part of life,
The sadness inside him and the eagerness to be a perfect
human is all left inside him.

So all he learned is being SORRY MACHINE all his life,
Even for breathing freely.

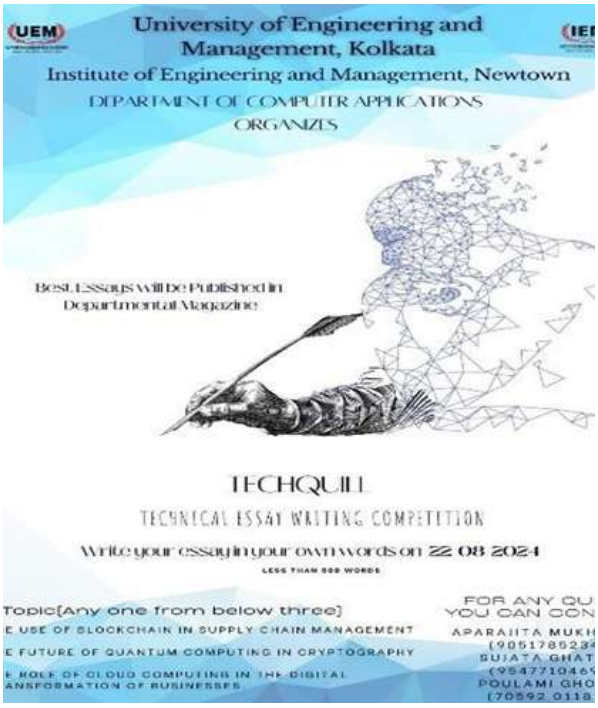

DEPARTMENTAL
EVENTS

ESSAY WRITING COMPETITION

DATE: 22 AUGUST 2024

ORGANIZED BY THE DEPARTMENT OF COMPUTER APPLICATIONS, UEM KOLKATA EVENT TYPE: COMPETITION

Faculty Coordinator: Sujata Ghatak, Aparajita Muherjee, Poulami Ghosh



The technical essay writing competition is an endeavour to mine the multidimensional talents of our students by exploring their knowledge of different upcoming and past technologies and how they are related as well as their skills in representing that knowledge through the English language.

Thirty-five students participated in the event in which the judges from the technological field, as well as English language experts hand-picked four essays which are shortlisted as best write-ups among the lot; to be awarded prizes and the essays, to be published in the departmental magazine.

POSTER COMPETITION

DATE: 18TH MARCH 2024

ORGANIZED BY: COMPUTER APPLICATIONS (CA)

TYPE OF EVENT: POSTER EXHIBITION

Faculty Coordinator: Aparajita Mukherjee, Purba Chakraborty

The Poster Competition was participated by 21 teams comprising MCA students. The competition was judged by Prof. (Dr.) Shrimayee Ganguly (Department of Basic Science and Humanities) and Prof. Pradipta Sarkar (Department of CST/CSIT).

Department of Computer Applications (CA) organized a Poster Competition on 18th March, Monday, 2024 4:15 PM onwards.

POSTER COMPETITION

POSTER COMPETITION

DATE: 19TH SEPTEMBER 2024

ORGANIZED BY: COMPUTER APPLICATIONS (CA)

TYPE OF EVENT: POSTER EXHIBITION

Faculty Coordinator: Aparajita Mukherjee, Somnath Banerjee

The Poster Competition was participated by 11 teams comprising MCA students. The competition was judged by Mr. Avik Das, Department of CSE(IoT) and Mr. Sudipta Sikder, Department of CST-CSIT.

Here are a few glimpses of the event.

PROJECT COMPETITION

DATE: 20TH MARCH, 2024

ORGANIZED BY: DEPARTMENT OF COMPUTER APPLICATIONS (CA)

TYPE OF EVENT: PROJECT COMPETITION

Faculty Coordinator: Purba Chakraborty, Anirban Das

PROJECT COMPETITION

DATE: 23RD SEPTEMBER, 2024

ORGANIZED BY: DEPARTMENT OF COMPUTER APPLICATIONS (CA)

TYPE OF EVENT: PROJECT COMPETITION

Faculty Coordinator: Purba Chakraborty, Anirban Das

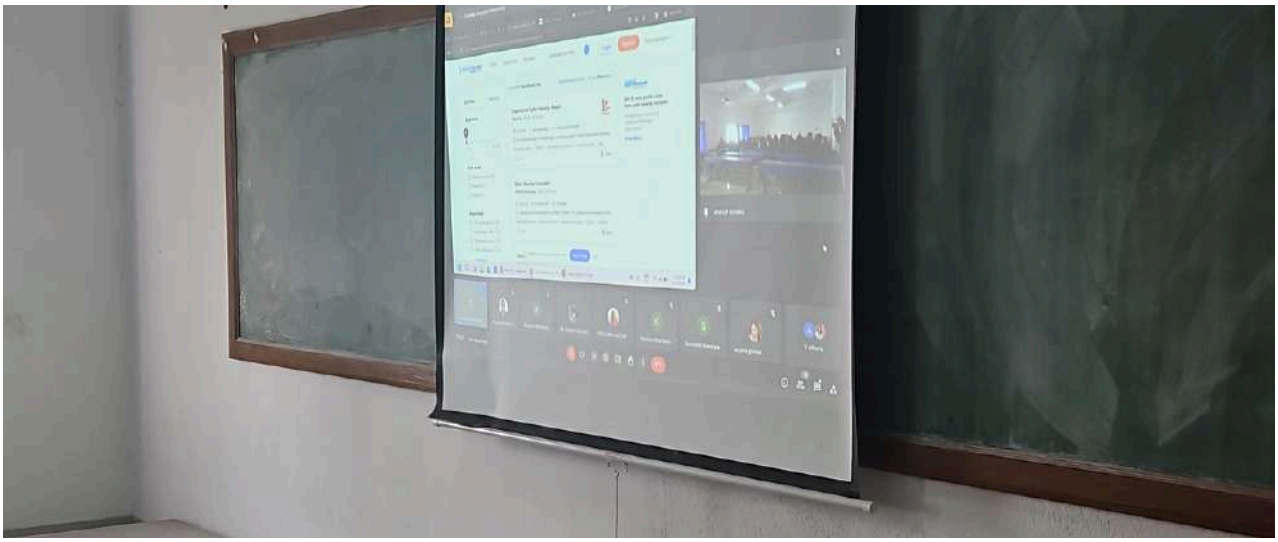
The Department of Computer Applications (CA) organized Project Competition on 23rd September 2024, 4:15 PM at the Buddha Auditorium, UEM Kolkata campus.

Comprising of 14 teams, the project competition was participated in by MCA students. The competition was judged by Professor Soumik Poddar, BSH department and Professor Kamalika Bhowal, CST-CSIT department.

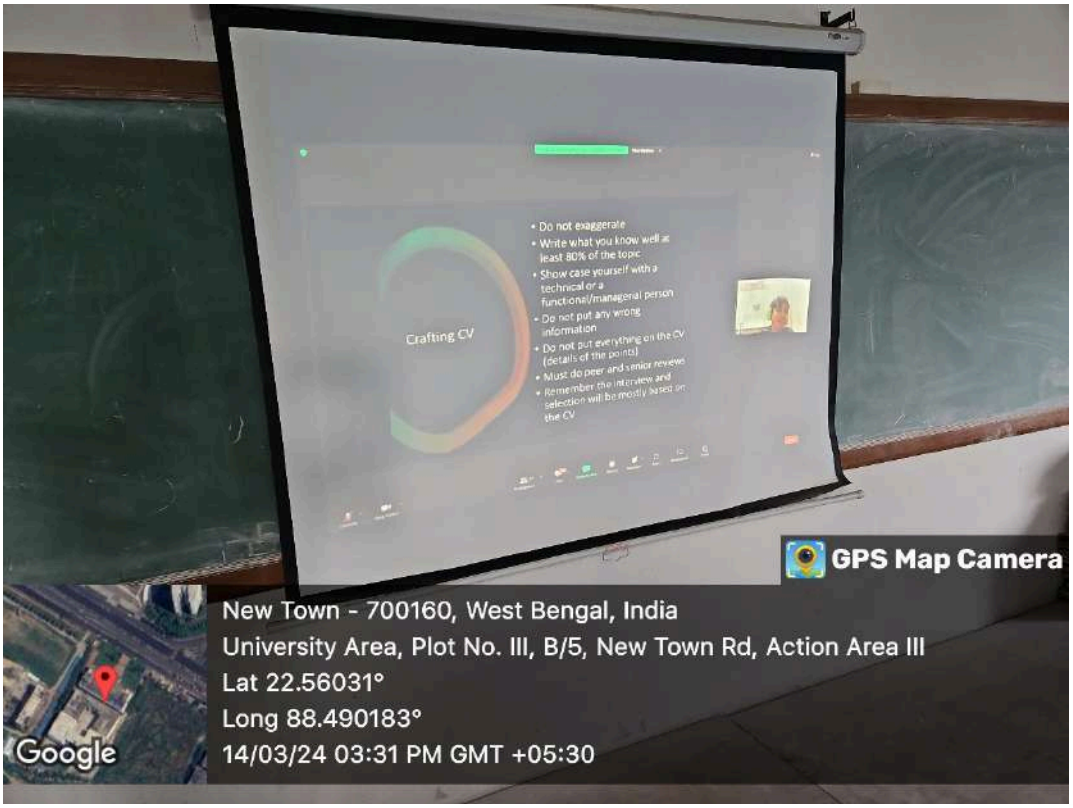
Here are a few glimpses of the event.

FACULTY DEVELOPMENT PROGRAMME

EXPERT TALK



ALUMNI TALK


Crafting CV
• Do not exaggerate
• Write what you know well at least 80% of the topic
• Show case yourself with a technical or a functional/managerial person
• Do not put any wrong information
• Do not put everything on the CV (details of the points)
• Must do peer and senior reviews
• Remember the interview and selection will be mostly based on the CV
GPS Map Camera
New Town - 700160, West Bengal, India
University Area, Plot No. III, B/5, New Town Rd, Action Area III
Lat 22.56031°
Long 88.490183°
14/03/24 03:31 PM GMT +05:30
Google


GPS Map Camera
New Town - 700160, West Bengal, India
University Area, Plot No. III, B/5, New Town Rd, Action Area III
Lat 22.56031°
Long 88.490183°
14/03/24 03:11 PM GMT +05:30
Google

ALUMNI LECTURE SERIES

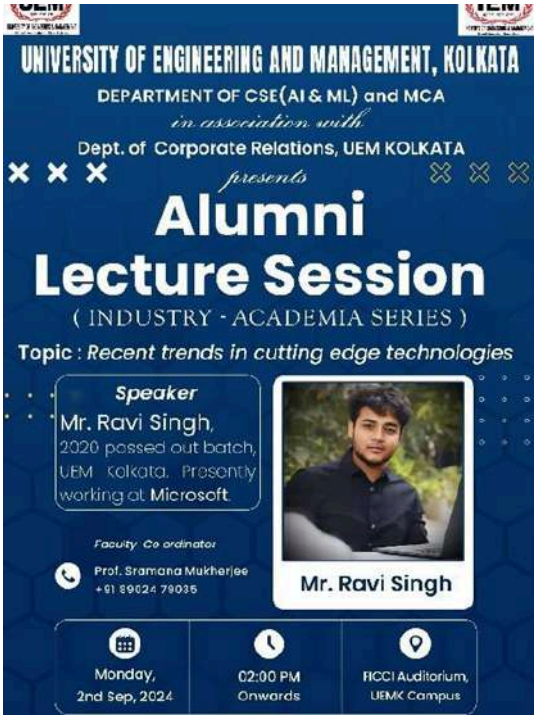
DATE: 2ND SEPTEMBER 2024

ORGANIZED BY: CSE (AI & ML) / COMPUTER APPLICATIONS (CA)

TYPE OF EVENT: INDUSTRY – ACADEMIA LECTURE SERIES

Faculty Coordinator: Sramana Mukherjee CSE (AI & ML), Purba Chakraborty (CA)

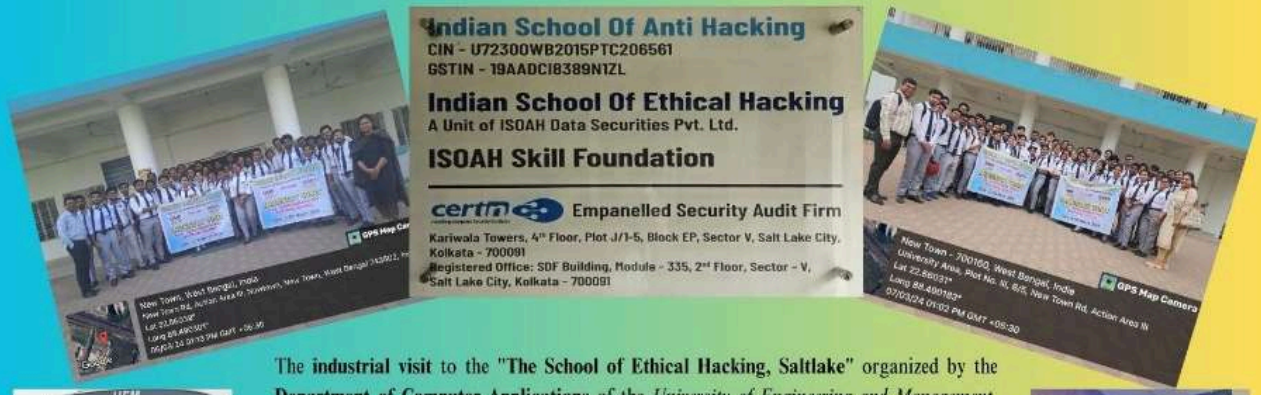
Department of CSE (AI & ML) and Computer Applications (CA) jointly organized an Industry- Academia Lecture Series on 2nd September 2024, Monday,2024 2 PM on the topic "Recent trends in cutting edge technologies". Mr. Ravi Singh, 2020 passout from UEM Kolkata, presently working at Micosoft shared his journey from Academia to Industry.200 + students from B.Tech CSE (AI & ML) and 50+ MCA students participated in this lecture series.



University of Engineering and Management, Kolkata
Institute of Engineering and Management, Newtown

Department of Computer Applications

INDUSTRIAL VISIT
6TH AND 7TH MARCH 2024



The **industrial visit** to the **"The School of Ethical Hacking, Saltlake"** organized by the **Department of Computer Applications** of the *University of Engineering and Management, Kolkata*, proved to be an enlightening experience for the participants, consisting of **MCA 1st Year** students. On the **6th and 7th of March 2024**, the visit provided a comprehensive insight into the intricacies of cybersecurity and ethical hacking. Under faculty coordinators Sujata Ghatak, Aparajita Mukherjee, Ankur Biswas, and Poulami Ghosh, students were exposed to cutting-edge technologies, practical demonstrations, and interactive sessions led by industry experts. From exploring the fundamentals of ethical hacking principles to delving into advanced cybersecurity strategies, the visit equipped students with invaluable knowledge and skills essential for navigating the dynamic landscape of cybersecurity.

Throughout the visit, participants engaged in hands-on exercises, real-world case studies, and discussions, gaining a deeper understanding of cybersecurity challenges and solutions. They had the opportunity to interact with seasoned professionals and industry practitioners, learning from their experiences and insights. By immersing themselves in the world of ethical hacking, students expanded their technical expertise and cultivated a strong ethical foundation, understanding the importance of responsible and ethical practices in cybersecurity. Overall, the industrial visit to the School of Ethical Hacking catalyzed academic and professional growth, empowering students to embrace the challenges and opportunities of the digital age with confidence and competence.

Faculty coordinators Sujata Ghatak, Aparajita Mukherjee, Ankur Biswas, and Poulami Ghosh

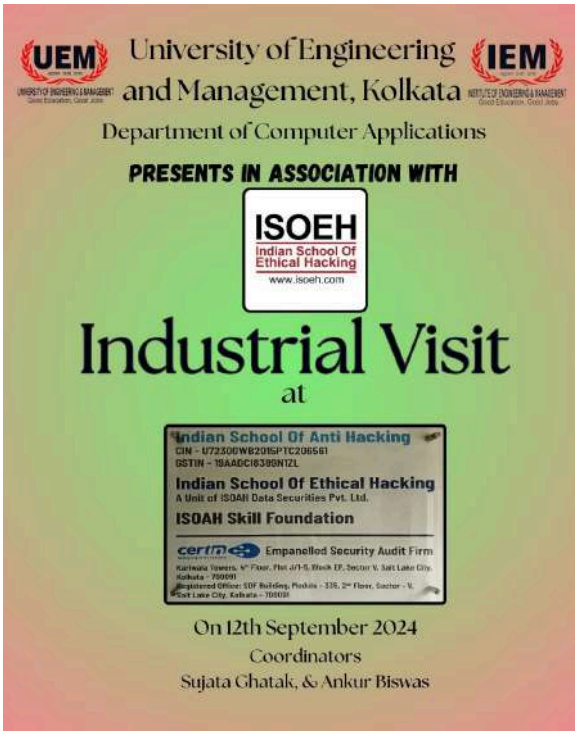
INDUSTRIAL VISIT

DATE: 12TH SEPTEMBER 2024 ORGANIZED BY: COMPUTER APPLICATIONS (CA)

TYPE OF EVENT: INDUSTRY VISIT

Faculty Coordinator: Ankur Biswas, Sujata Ghatak

Department of Computer Applications orgnized an Industrial Visit to Indian School of Ethical Hacking which is a unit of ISOAH Data securities Pvt. Ltd. at Sector V, Salt Lake. Around 60 students of MCA 1st Year participated in the visit to explore the dimensions in latest Cyber Security threats and ways to handle them. Some of the snaps are attached herewith.



INDUSTRY TALK

DATE: 9TH SEPTEMBER 2024 ORGANIZED BY: COMPUTER APPLICATIONS (CA)

TYPE OF EVENT: INDUSTRY TALK

Faculty Coordinator: Anirban Das

Department of Computer Applications (CA) organized an Industry Talk on 9th September 2024, 4:10 PM. Mr. Sumanta Banerjee,Strategy Consulting & Product Manager,Pyrovio delivered on the topic "Design Thinking Application in Careers"attended by 55 first year MCA students. The session had been interactive as well as hands on where in the students formed small groups in applying their Design thinking hats to construct simple structures using old newspapers.

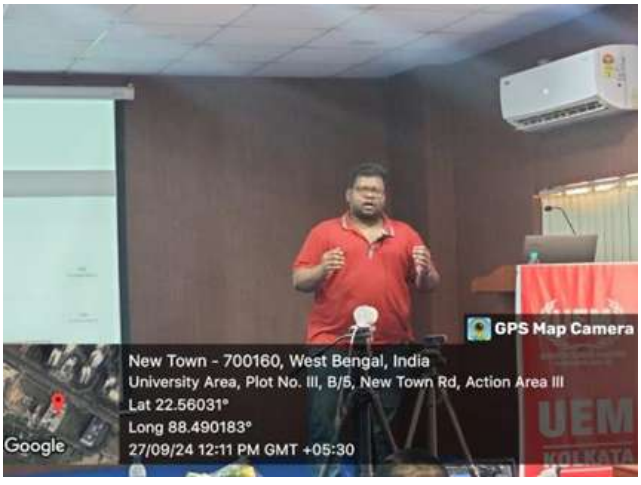
INDUSTRY TALK

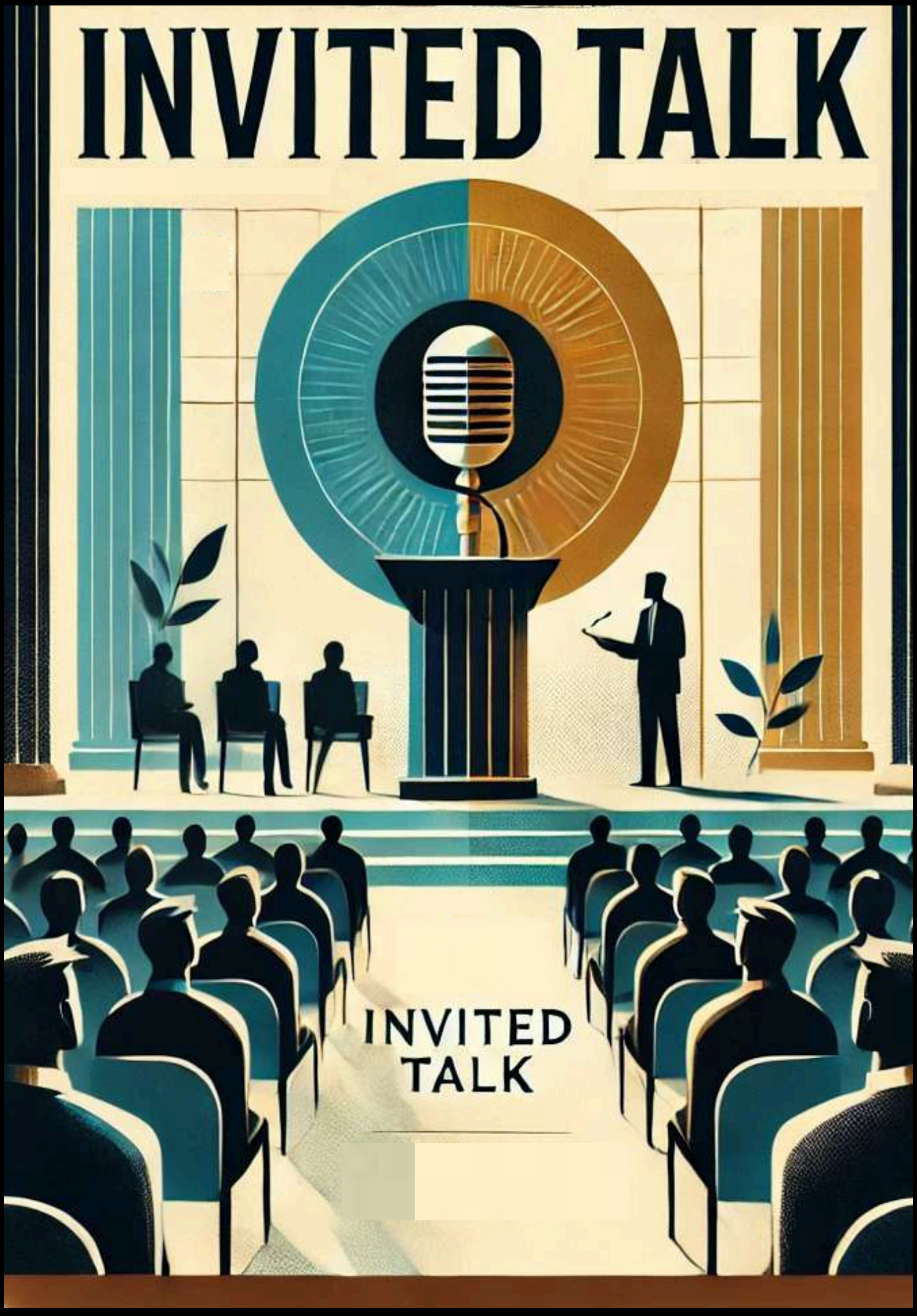
DATE: 27TH SEPTEMBER 2024

ORGANIZED BY: DEPARTMENT OF CSE (IOT, CS, BT), COMPUTER APPLICATIONS (CA) TYPE OF EVENT: INDUSTRY TALK

Faculty Coordinator: Kaustuv Bhattacharjee, Ankur Biswas

Computer Applications (CA) and Department of CSE (IoT, CS, BT) organized an Industry Talk on 27th September 2024, 11 AM at B3 Ground Floor FICCI Auditorium. Mr. Budhaditya Bose, Senior MDR, Security Analyst and Responder, IBM India Limited delivered an engaging session on various aspects of vulnerabilities encountered in the modern era and the possible way out from such scenario. 40+ MCA students and 150 + students from B.Tech CSE (IoT, CS, BT) participated in this lecture series.




INVITED TALK
INVITED
TALK

INVITED TALK

Date: 21st February, 2024
Organized by the Department of Computer Applications, UEM Kolkata

Type of Event: Invited Talk

Om B Khadka is an IT and development expert with a Master's in Information Technology and extensive experience in knowledge management and project leadership at HELVETAS Swiss Inter-cooperation Nepal. With a career spanning from technical support to strategic management since 1995, he has significantly contributed to leveraging technology for development initiatives.

Mr Om has delivered a talk on "Design Thinking and Innovations" with Kobo Toolbox in research and development in data science and analytics in particular. It is a free and open-source suite of tools for field data collection.

He has shown how the web KoboToolbox application allows user design complex forms, deploy and download submitted data. Besides the interactive online form builder/designer a pre-designed XLS form can be uploadedon the Kobo Toolbox platform. Uploaded form or designed on online interactive application page saved as a draft for preview and testing before deployed for data collection. The session was with hands on exercise followed by a Q&A session with MCA 1st year students.

Faculty Coordinator: Prof. Dr. Anirban Das & Prof. Kaustuv Bhattacharjee

Mr. Samrat Nandi, currently working in one of the leading IT Services organizations, managing Risk and compliance at the enterprise level, and Mr. Somik Sen, currently associated with one of the Big4 Firm and working in Global Cloud Hosting portfolio; both representing Cloud Security Alliance (CSA) Kolkata Chapter, delivered a lecture on the topic namely "In-sights on Phishing" to students of MCA 1st year, UEM Kolkata in online mode. Around 90 students attended the session.

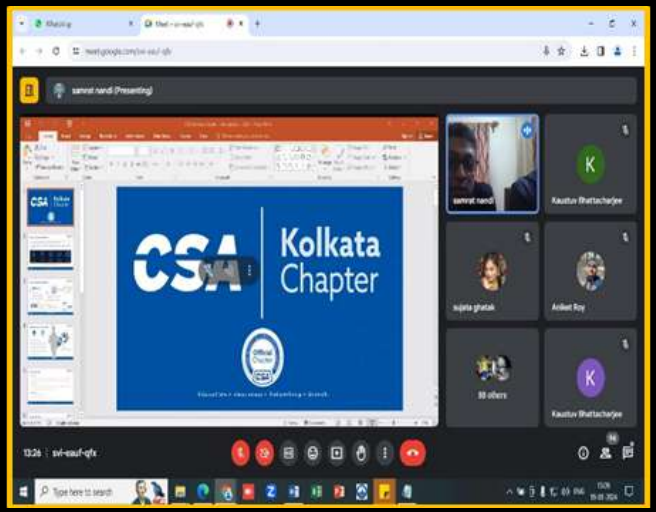
Date: 19th January, 2024
Organized by the Department of Computer Applications, UEM Kolkata

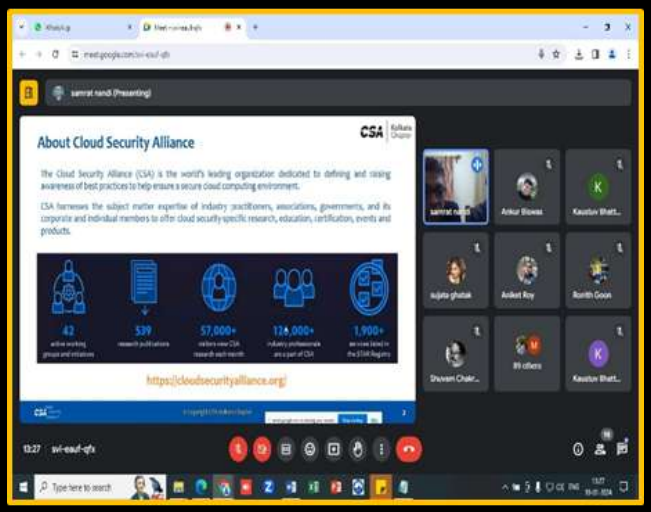
Type of Event: Invited Talk

INVITED TALK

The mind blowing lecture was absorbed by the students who attended the session with immense attention. The session raised interest among the students on various safety and security aspects during Online transaction, phishing mails, password security and various other security breaches and possible way outs to get rid of them. The lecture concluded with interactive Q & A sessions.

Faculty Coordinator: Prof. Sujata Ghatak & Prof. Kaustuv Bhattacharjee





Dr. Debashis De, a renowned Professor of Computer Science and Engineering, Maulana Abul Kalam Azad University of Technology (MAKAUT), West Bengal delivered a lecture on "Drone Security" to students of 2nd year, UEM Kolkata. Around 70 students attended the session.

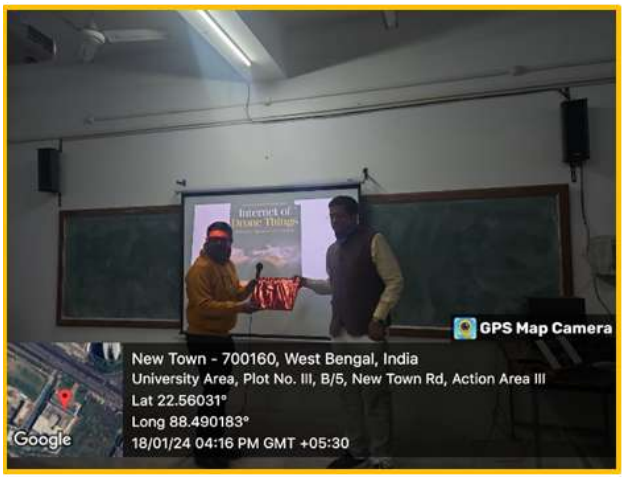
Date: 18th January, 2024
Organized by the Department of Computer Applications, UEM Kolkata

Type of Event: Invited Talk

INVITED TALK

The mind blowing lecture was absorbed by the students who attended the session with immense attention. The session raised interest among the students on various safety and security aspects of Drone technology, IoDT (Internet of Drone Technology) and so on. The lecture concluded with interactive Q & A sessions.

Faculty Coordinator: Prof. Sujata Ghatak & Prof. Aparajita Mukherjee



Dr. Sankhayan Choudhury, a renowned Professor of Computer Science, University of Calcutta delivered a lecture on "Cyber Physical System (CPS)" to students of MCA 1st year Section B, UEM Kolkata. Around 30 students attended the session.

Date: 17th January, 2024
Organized by the Department of
Computer Applications, UEM Kolkata

Type of Event: Invited Talk

INVITED TALK

The mind blowing lecture was absorbed by the students who attended the session with immense attention. The session raised interest among the students on Cyber Physical System (CPS), where computing is utilized to fortify and increase the efficacy of traditionally physical systems—smart grids for power generation and distribution are commonly cited examples. The lecture concluded with interactive Q & A sessions.

Faculty Coordinator: Prof. Sujata Ghatak & Prof. Somnath Banerjee

Dr. Samarjit Roy, Postdoctoral Scientist, Institut Ruđer Bošković, Zagreb, Croatia and Senior Research Scientist, SCIT, Eastern International University, Ho Chi Minh City, VN delivered a lecture on "Roof Computing: A Sustainable Schema for Secured Internet of Things" to students of MCA 1st year Section A, UEM Kolkata. Around 30 students attended the session.

Date: 16th January, 2024
Organized by the Department of Computer Applications, UEM Kolkata

Type of Event: Invited Talk

INVITED TALK

The mind blowing lecture was absorbed by the students who attended the session with immense attention. The session raised interest among the students on Networking of Devices, their connectivity through Internet and ensuring the security among the devices while they are connected through Internet. The lecture concluded with interactive Q & A sessions.

Faculty Coordinator: Prof. Sujata Ghatak & Prof. Poulami Ghosh

Mr. Sandeep Sengupta, CISA, Certified Ethical Hacker, Lead Auditor (ISO 27001 Info Security, BS 10012 GDPR / data protection, ISO 22301 Business Continuity) delivered a lecture on "Ethical Hacking and Information Security" to students of MCA 1st year of UEM Kolkata through online mode. More than 75 MCA students attended the session.

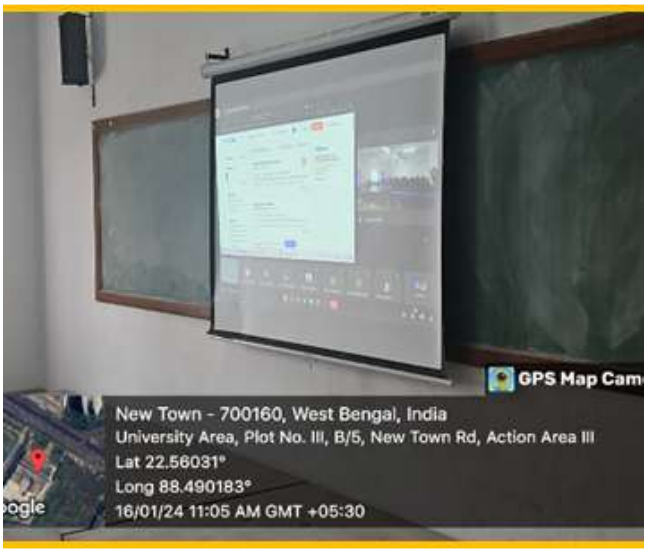
Date: 16th January, 2024
Organized by the Department of Computer Applications, UEM Kolkata

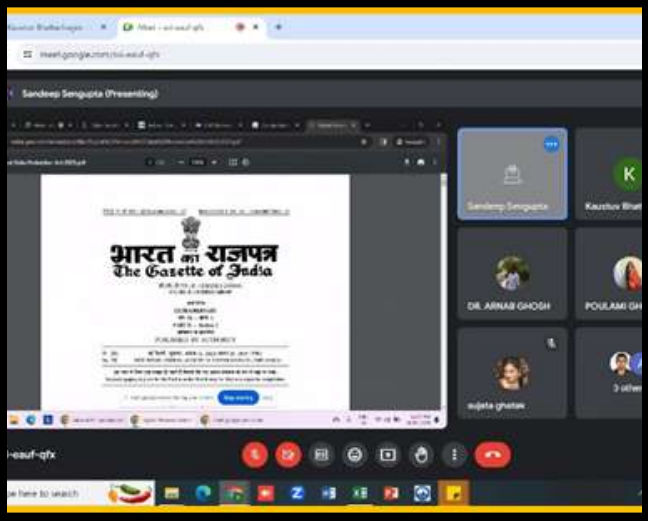
Type of Event: Invited Talk

INVITED TALK

The mind blowing lecture was absorbed by the students who attended the session with immense attention. The session raised interest among the students on Information breach along with potential vulnerabilities, Proactive mechanism, current challenges in front of Govt. of India, a possible law in enforcing corporates on data protection and privacy and similar topics; resulting in interactive Q & A sessions at the end.

Faculty Coordinator: Prof. Sujata Ghatak & Prof. Ankur Biswas





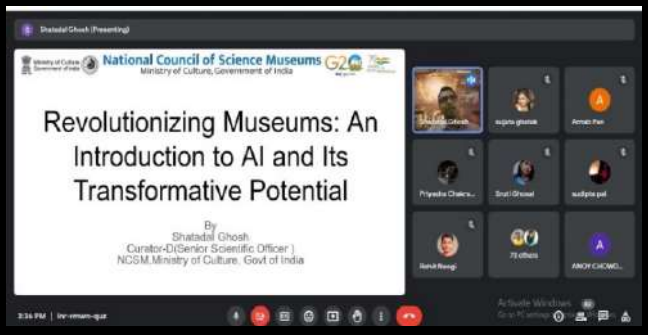
Mr. Shatadal Ghosh, Curator (Gr-A scientific officer) at National Council of Science

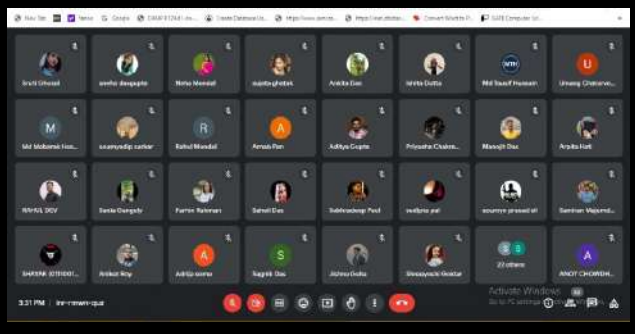
Date: 8th September, 2023
Organized by the Department of Computer Applications, UEM Kolkata

Type of Event: Invited Talk

INVITED TALK

Museums (NCSM), Ministry of Culture, Govt. of India delivered a lecture on "Revolutionizing Museums: An Introduction to AI and its Transformative Potential" to students of Computer Applications Dept. of UEM Kolkata through online mode. More than 85 MCA students from different years attended the session. The mind blowing lecture was absorbed by the students who attended the session with immense attention. The session raised interest among the students on Artificial Intelligence and its application in various Museum related activities, resulting in interactive Q & A sessions at the end.





Faculty Coordinator: Prof. Sujata Ghatak & Prof. Anoy Chowdhury

UNIVERSITY OF
ENGINEERING AND MANAGEMENT
PRESENTS

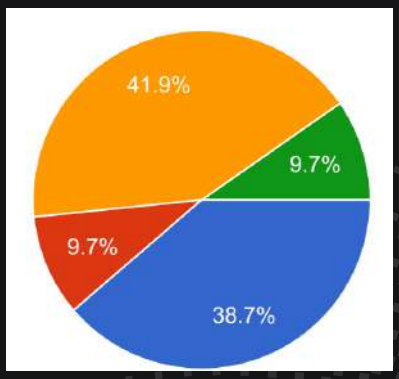
CODING OLYMPIAD

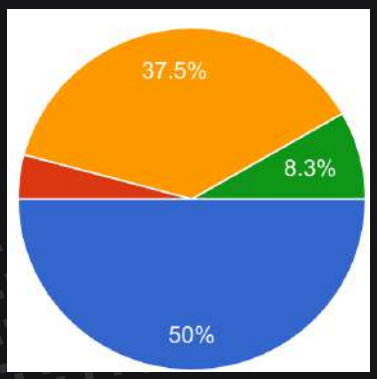
DATE: 30TH SEPTEMBER 2023
ORGANIZED BY THE DEPARTMENT OF COMPUTER APPLICATIONS (CA), UEM KOLKATA
TYPE OF EVENT: CODING COMPETITION

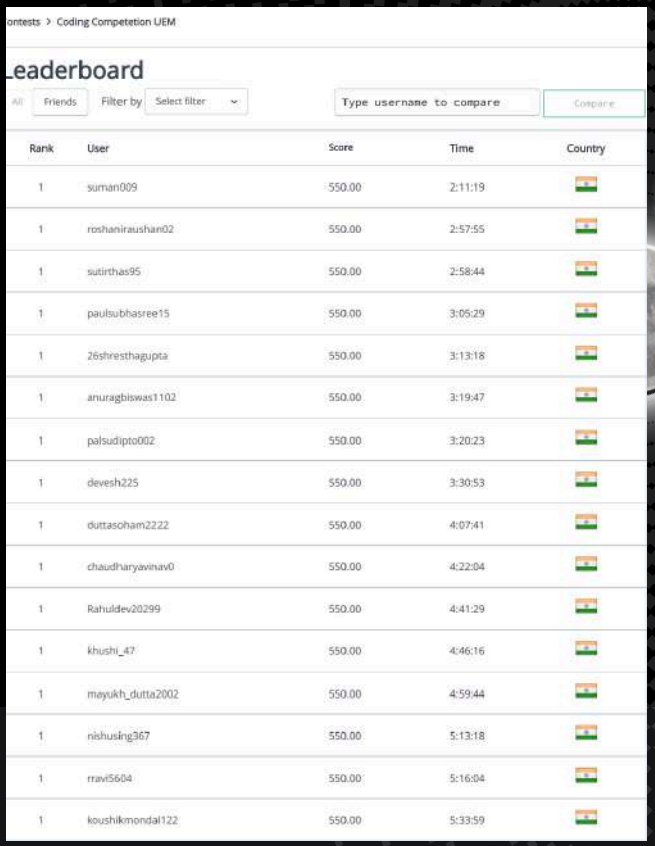
DEPARTMENT OF COMPUTER APPLICATIONS CONDUCTED A CODING COMPETITION ON THE HACKERRANK PLATFORM. THERE WERE TWO COMPETITIONS INCLUDED IN THE EVENT:

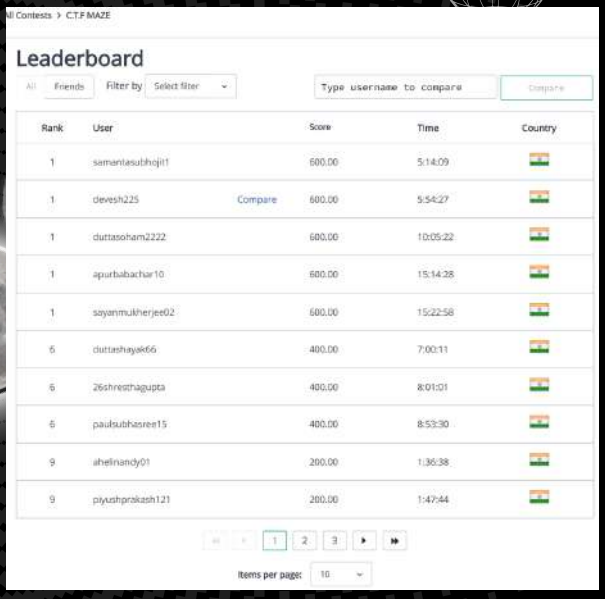
- CYPHER (CAPTURE THE FLAG): THERE WAS A TOTAL OF 6 CHALLENGES. EACH OF THE STAGES WAS INTERLINKED. THE FLAG CAPTURED (SOLUTION TO CHALLENGE) IN ONE STAGE WILL PROVIDE THE OPENING FLAG (INPUT) FOR THE NEXT STAGE.THE RANKING WAS MADE ON THE BASIS OF THE HIGHEST POINTS EARNED WITH THE LEAST AMOUNT OF TIME.
- X-MIND (CODING COMPETITION): THERE WERE 10 CHALLENGES. THE PARTICIPANTS HAD TO SOLVE A MAXIMUM NUMBER OF CHALLENGES WITHIN A STIPULATED AMOUNT OF TIME. THE RANKING WAS MADE ON THE BASIS OF THE HIGHEST POINTS EARNED WITHIN THE LEAST AMOUNT OF TIME.

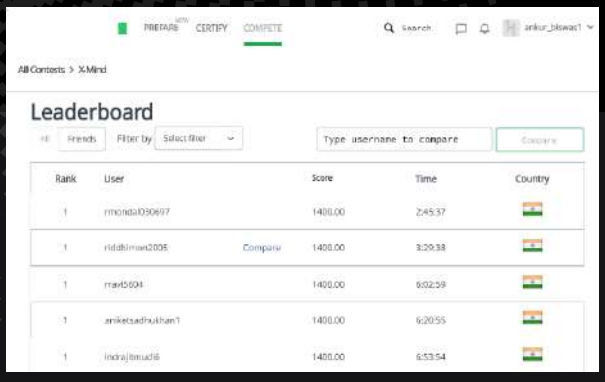
RESULTS





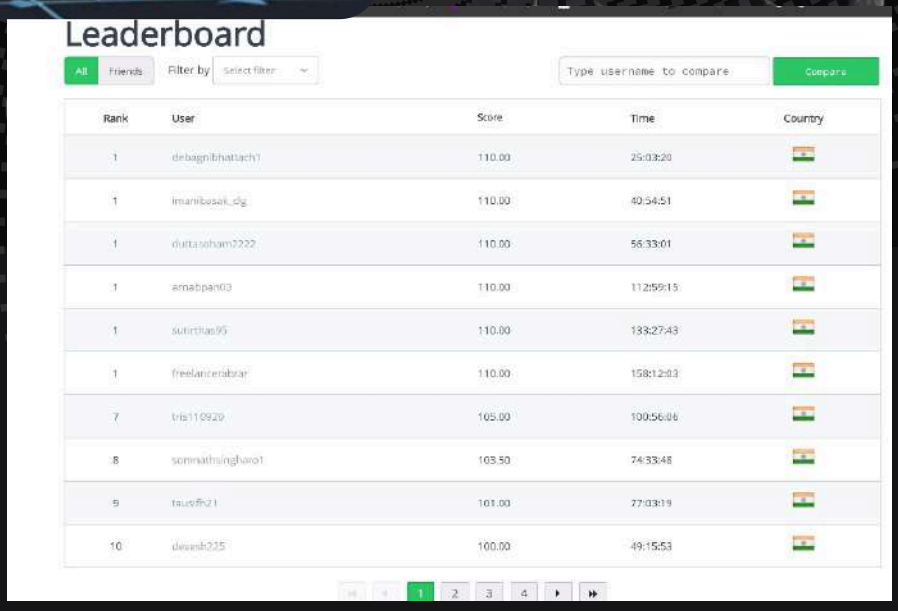






Faculty Coordinator: Ankur Biswas & Anoy Chowdhury

SEMICOLON



Faculty Coordinator: Ankur Biswas & Sujata Ghatak

The session was conducted by CSA Kolkata chapter comprising industry experts from the leading organizations like IBM, TechMahindra, PwC and EY. This workshop was based on Cyber Security and Cloud Computing where the topics covered were Cloud Security, Zero Trust, Beyond Passwords, Ethical Hacking and Career Map, Cyber Security skill sets and Industry Outlook, Hacking Demo through VAPT. The success of the event was reflected by 230 odd enthusiastic participants, 50 of them are from MCA. The key differentiator of the workshop had been few hands-ondemos using Kali Linux in simulating the hacking scenarios through VAPT-Vulnerability Assessment and Penetration Testing. The session ended with active participation and interactive session.

Department of Computer Applications (CA) and Computer Science (CS) in collaboration with UEM Kolkata ACM Student Chapter organized a Workshop on Cyber Sphere: Cloud and Security Workshop on 16th March, 2024 Saturday, 11 AM.

Faculty Coordinator

Prof. Kaustuv Bhattacharjee

Workshop on Design Thinking and Innovation

WORKSHOP

Department of Computer Applications (CA) and Computer Science (CS) in collaboration with UEM Kolkata ACM Student Chapter organized a Workshop on Design Thinking and Innovation on 2nd September, 2023 Saturday, 11 AM.

Date: 2nd September, 2023
Organized By: Department of Computer Applications (CA) and Computer Science (CS) in collaboration with UEM Kolkata ACM Student Chapter
Type of Event: Workshop

This workshop was based on various approaches of Design Thinking and Innovation. 2 budding entrepreneurs namely Mr. Sabyasachi Ganguly and Kaustav Roy conducted the workshop sharing their journey since inception. The speakers had been welcomed by faculty co-coordinators and event organizers with mementos. The success of the event was reflected by 150 odd enthusiastic participants (36 students of MCA). The key differentiator of the workshop had been extensive question-answer session, Quiz and competition. During the workshop, participants were awarded with 5 T-shirts, 10 Coffee Mugs and 60 Stickers based on their performances in various competition/Quiz being conducted during the Workshop. All participants were presented participation certificates.

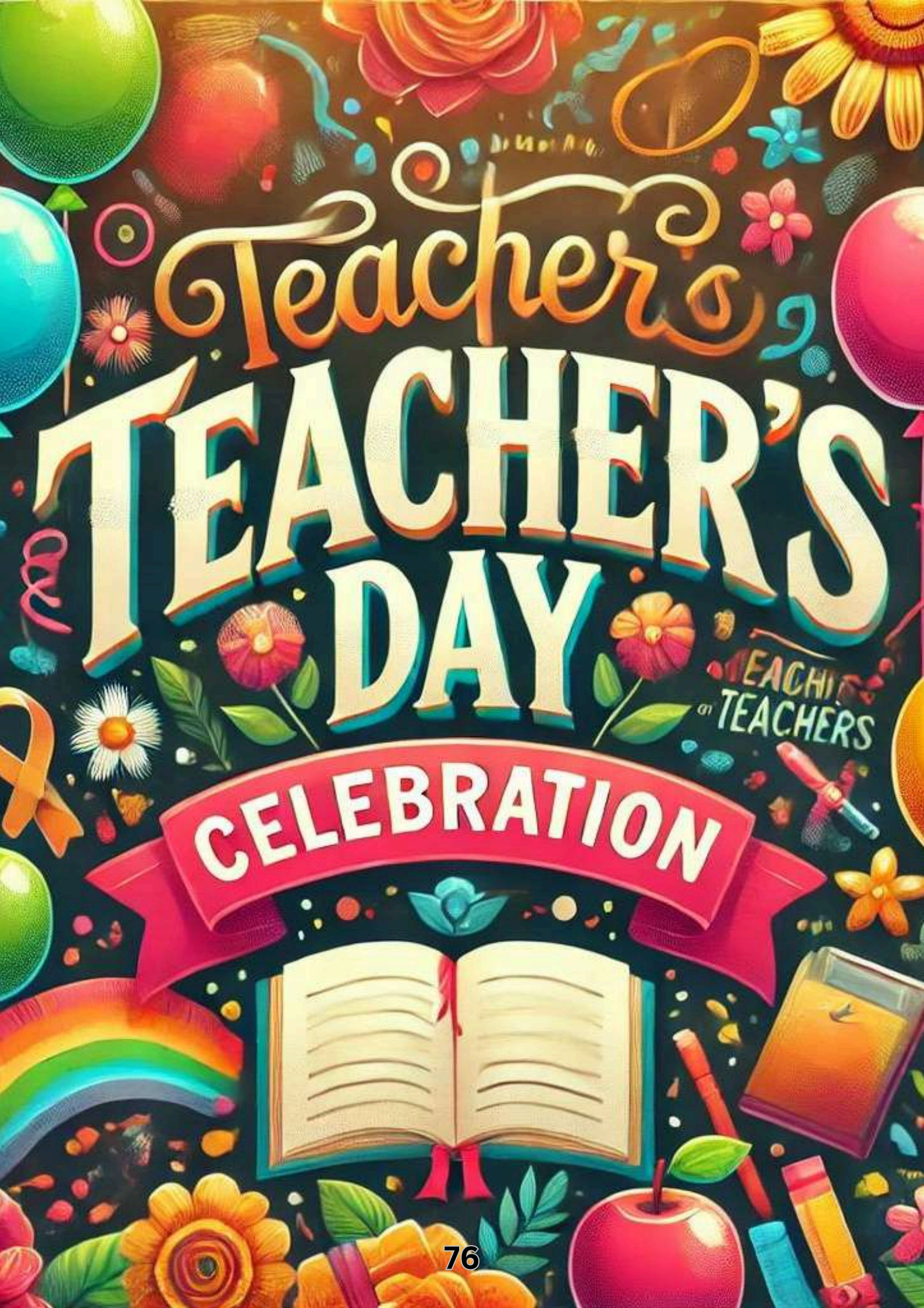
DevSprint: App and Web Development Workshop

WORKSHOP

Date: 14th September, 2024
Organized by: Department of Computer Applications (CA) and ComputerScience (CS) in collaboration with UEM Kolkata ACM Student Chapter
Type of Event: Workshop

UEM Kolkata ACM Student Chapter in collaboration with Department of Computer Applications (CA) and Computer Science (CS) conducted a Half a Day Workshop DevSprint on App and Web Development on 14th September, Saturday to gain insights into Web Development fundamentals, master App Development Essentials, delve into the Latest Technologies and Frameworks and Discover Best Practices and Industry Standards.
Mr. Swapnil Chattejee, Technical Lead at Fortmindz and Mr. Narendra Nath Chatterjee, Android developer at Stockgro conducted the session, being attended by 200+ students.

Faculty Coordinator: Kaustuv Bhattacharjee


Teacher's
TEACHER'S
DAY
TEACHERS
CELEBRATION

Teacher's Day Celebration (2024)

Teacher's Day Celebration

Teacher's Day Celebration

UNIVERSITY ACHIEVEMENTS

CERTIFICATE

OF ACHIEVEMENT

University of Engineering & Management (UEM), Kolkata, West Bengal

2024 AWARD

For Participation in GHRDC MCA Colleges Survey 2024

Awarded

5th Rank in the Category of Outstanding Excellence

1st Rank in the State of West Bengal

2nd Rank in the Eastern & Central Region

Presented by

Global Human Resource Development Centre Pvt. Ltd.
New Delhi

Mekhla Sinha
Executive Director

MCA RANKING

CERTIFICATE

OF ACHIEVEMENT

University of Engineering & Management (UEM), Kolkata, West Bengal

2023 AWARD

For Participation in GHRDC MCA Colleges Survey 2023

Awarded

3rd Rank in the Category of Outstanding Excellence

1st Rank in the Eastern & Central Region

Presented by

Global Human Resource Development Centre Pvt. Ltd.
New Delhi

Mekhla Sinha
Executive Director

STUDENTS' ACHIEVMENTS

COMPUTER APPLICATIONS DEPARTMENTAL MAGAZINE