Byte-astic

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C O N T E N T S

Byte-astic

Anantham Samhita- where reality converges

1st Issue

1st July, 2024

THE OFFICIAL MAGAZINE OF **The Department of Computer Science**

Burdwan Raj College

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Dr. Surajit Mondal, HOD, Department of Computer Science
Sobdo Chakraborti, IQAC Member

Principal's Speech

The Department of Computer Science started its journey with the glorious and century-old Burdwan Raj College only in the year 2017. I am inconceivably happy to learn that within this short span this Department is going to bring out the bilingual e-magazine named Byte-astic. So mere short span of existence is not always symptomatic of its being deficient in significance and I extend my best wishes to the teachers and students of this Department for their pioneering work. A persistent study of the socio-cultural milieu of human beings reveals that man has an advocacy for mundane happiness in life. They can equally feel the intimation of supra-mundane as well. Then they take resort to self-realization which finds expression in various literary genres – poems, short story, music etc. This e-magazine is the right platform for the tyros, the young College students. Through these literary forms their aesthetic moods would waft a fragrance of melodious songs abroad. Here the young composers almost try, as it were, to defy the warning of internationally acknowledged critic, A.C. Bradley – 'imaginative vision, though delightful, is difficult'.

I know that till the connoisseur or the refined readers are satisfied no skill in this e-magazine is perfect. However, I wish the endeavour of the Editorial Board of Byte-astic a grand success.

Dr. Niranjan Mondal

Principal, Burdwan Raj College

HOD's address

to the Department

It gives me great pleasure to address few words for our departmental magazine. I would like to boost with a famous quotation of Swami Vivekananda "Education is the manifestation of perfection already in men". I feel the diversity not only from the regions and cultures but also in the talent that students bring along. The computer science students always play a good role in the field of creativity, diversity and show the innovative ideas in academic space. My best wishes to all for their success and achieving new horizon in the future.

Dr. Surajit Mondal

Head Of Computer Science Department

Faculty's Note

Editor-in-Chief

It is with great pleasure and a sense of privilege that I assume the role of Editor-in-Chief for the inaugural issue of our departmental magazine. This issue stands as a testament to the diverse talents and remarkable accomplishments within our academic community. The journey to bring this magazine to fruition has been both exciting and fulfilling. I vividly recall the early discussions and brainstorming sessions in 2022 when the idea of creating a departmental magazine was first conceived. From constituting the editorial board to selecting content, each step of the process has been infused with dedication and passion. I am immensely grateful to the editorial board and all those who have contributed their time, effort, and creativity to make this magazine a reality. Your commitment and enthusiasm have been instrumental in shaping this publication into a reflection of the vibrancy and intellect that defines our department.

As you peruse through the pages of this magazine, I hope you find inspiration, insight, and a deeper connection to our academic community. Thank you for your unwavering support and participation in this endeavour.

Warm regards,

Rusa Ma'am

Editor-in-Chief, Byte-astic

Research and
Strategic Team Head

Welcome to the inaugural issue of Anantham Samhita- where Reality converges. As the head of the research and strategic team, I am thrilled to introduce this magazine, which serves as a celebration of the unwavering commitment and diligence demonstrated by our students. In today's rapidly evolving landscape, the importance of computer science cannot be overstated, especially as we approach towards embracing the metaverse. Anantham Samhita is not just a collection of articles; it is a platform that fosters curiosity, innovation, and collaboration. Whether you're a student, faculty member, or industry professional, I believe you'll find this magazine to be a valuable resource for staying informed and inspired.

I invite you to dive into the pages of Anantham Samhita and join us on this exciting journey where reality converges with the boundless possibilities of the digital realm.

Happy learning,

Swati Ma'am

Research and Strategic Team Head

Design Team Lead

As the steward of our design team, I am privileged to guide initiatives that not only redefine the boundaries of innovation but also infuse our department with a culture of inspired imagination. In the dynamic realm of design, our team stands as pioneers, continually pushing the frontier to reimagine standards and defy conventional paradigms. Fuelled by a relentless pursuit of excellence, we harmonize artistic expression with technical precision to craft solutions that captivate and invigorate. Behind every captivating visual narrative, every intuitive interface, lies the collective expertise and unwavering commitment of our team. Together, we elevate the profile of our department, establishing it as a bastion of creativity and progressive thought within our academic community and beyond. As we embark on this exhilarating journey, I extend profound appreciation to each member of our team for their steadfast dedication and boundless passion. Together, we shall continue to shape the narrative of design brilliance within our department, leaving an indelible imprint on the world stage.

With anticipation and fervent enthusiasm for the odyssey ahead.

Regards,
Benojir Ma'am

Design Team Lead

Editorial Board

Greetings!

We feel relished to publish the first issue of our Departmental Magazine, Byte-astic themed upon "Anantham Samhita- where reality converges". The theme inherently elucidates how the meta-world and the real world converge along an asymptotic curve, bridging the gap between fantasy and reality. This compilation will persist until humanity's insatiable thirst for the Ulyssean ideal is quenched. Byte-astic is a joint initiative that the Outreach & PR Team, Research & Strategy Team, Design Team, Linguist Team rather say the Department of Computer Science, Burdwan Raj College expedited together. Throughout the long but consistent processing period, our endeavour has been to accentuate the authentic and tireless efforts of the department's surefooted students and enthusiastic faculty members, culminating in the triumph of technology's success. This issue stands as a witness of the excellence of constant 7 years of the department in shaping the destinies of the students, setting new benchmarks and bringing innumerable laurels to the alma mater. We express our heartfelt gratitude to Principal, Dr. Niranjan Mondal and IQAC member, Sobdo Chakrabarti for always motivating the 'Sprout' to steer through troubled waters. Words fail to capture the profound gratitude owed to Dr. Surajit Mondal, HOD, Dept. of Computer Science, whose invaluable contributions have elevated the publication to remarkable heights.

Embarking the Byte-astic journey with feather in hand to further embellish the crown.

The Editorial Board

Byte-astic

Down the Memory Lane

Celebrating 7 Years of Innovation and Excellence

Welcome to a nostalgic journey through the remarkable milestones and cherished memories of the Computer Science department at Burdwan Raj College. As we commemorate our 7th year since establishment in 2017, let us reflect on the transformative journey that has shaped our department into what it is today. In 2017, the seeds of innovation were planted as the Computer Science department took its first steps towards academic excellence. Under the visionary leadership of Dr. Niranjan Mondal, the department embarked on a journey fuelled by passion and determination with four lecturers and Mr. Surajit Mondal leading as the Head of the Department. The following years witnessed exponential growth and expansion. With dedicated faculty members and enthusiastic students, the department flourished, establishing itself as a hub of learning and innovation. In the year 2020, the Computer Science department at Burdwan Raj College witnessed significant milestones. Notably, the department marked its inaugural participation in the college's esteemed annual event, 'Sankalp-2020' under the name 'Freaky Tech' for the department's official stall. The Computer Science Department got the much-needed exposure that it needed courtesy of this event. This event provided a platform for our students to showcase their talents and innovative projects, further solidifying our presence within the college community. Furthermore, the year 2020 brought unprecedented changes as classes transitioned into online mode, posing new challenges to both faculty and students. However, despite these challenges, the indomitable spirit of our department prevailed. Faculty members rose to the occasion, adapting teaching methods to ensure continuity of education, while students embraced the virtual learning environment with resilience and determination. Their unwavering commitment to academic excellence was reflected in their outstanding performance, demonstrating that even in the face of adversity, the pursuit of knowledge knows no bounds.

The years 2021-22 marked a significant turning point for the Computer Science department at Burdwan Raj College as classes transitioned back to offline mode. With the pandemic gradually receding into the rear-view, this transition brought a sense of normalcy and renewed energy to our academic pursuits.

The return to offline classes presented faculty with both opportunities and challenges, allowing for more interactive teaching methods but requiring adjustments for safety and varied learning preferences. Despite this, our dedicated faculty ensured enriching learning experiences for all. Similarly, students embraced the return to face-to-face interactions, deepening engagement with course material and hands-on learning. Amidst these changes, resilience and adaptability thrived, underscoring our commitment to excellence and innovation. Guided by purpose and determination, the Computer Science department at Burdwan Raj College remains poised to embrace future challenges and opportunities. The following years witnessed the Computer Science department at Burdwan Raj College reaching new heights of innovation and academic excellence. During this period, the department continued its trajectory of growth, further solidifying its reputation as a center of learning and research. Over the years, the department has witnessed remarkable achievements, with its students consistently ranking as top scorers and rank holders in the university. Moreover, the graduated students have ventured into prominent career paths, either working in top multinational companies or pursuing higher education in renowned universities across the country. Our students not only excel academically but also shine in various co-curricular activities, proudly representing the department and the college on diverse platforms. Their achievements, whether in competitions, cultural events, or community service initiatives, serve as a testament to their multifaceted talents and the holistic education provided by the department.

As we stand on the threshold of our 7th year, the legacy of the Computer Science department at Burdwan Raj College continues to inspire and empower. With a commitment to excellence and a vision for the future, we look forward to many more years of innovation and success.

Star Track

Here are some of our top Academic scorers who graduated with flying colours

2017-2020	Manimohan Sarkar	8.23 CGPA
2018-2021	Shovan Barman	9.39 CGPA
2019-2022	🏅 Priyam Halder	9.65 CGPA
2020-2023	Ivy Kumbhakar	9.61 CGPA

And the legacy of holding the top rankers list amongst colleges under the University of Burdwan continues …

Highlighting Our Graduates' Journey to Their New Roles in Tech

Soumyadip Konar

Batch: 2017-2020

Project Engineer, Wipro

Manimohan Sarkar

Batch: 2017-2020

SAP IBP Consultant, Gepact

Anupam Mondal

Batch: 2017-2020

Branch Post Master, India Post

Rakib Chowdhury

Batch: 2017-2020

Branch Post Master, India Post

Shovan Barman

Batch: 2018-2021

Citrix VDI admin, Wipro

Souvik Kumar Pal

Batch: 2018-2021

Content Moderator ByteDance

Anik Ghosh

Batch: 2019-2022

Branch Post Master, India Post

Priyam Halder

Batch: 2019-2022

ETL Developer,

Tata Consultancy Services

Isha Basu

Batch: 2021-2024

Graduate Trainee, Tata Consultancy Services

Some of our students prioritize contributing to their discipline, leading many to join the nation's top institutes for higher studies, where they aim to pioneer new innovations.

Picarray

Teachers' Day Celebration 2018

First Stall Exhibition from Computer Science Department in BRC's fest, Sankalp 2020

Our Reunion, Revenir 2022

Teachers' Day celebration 2023

Farewell Event, Memories in Motion, 2023
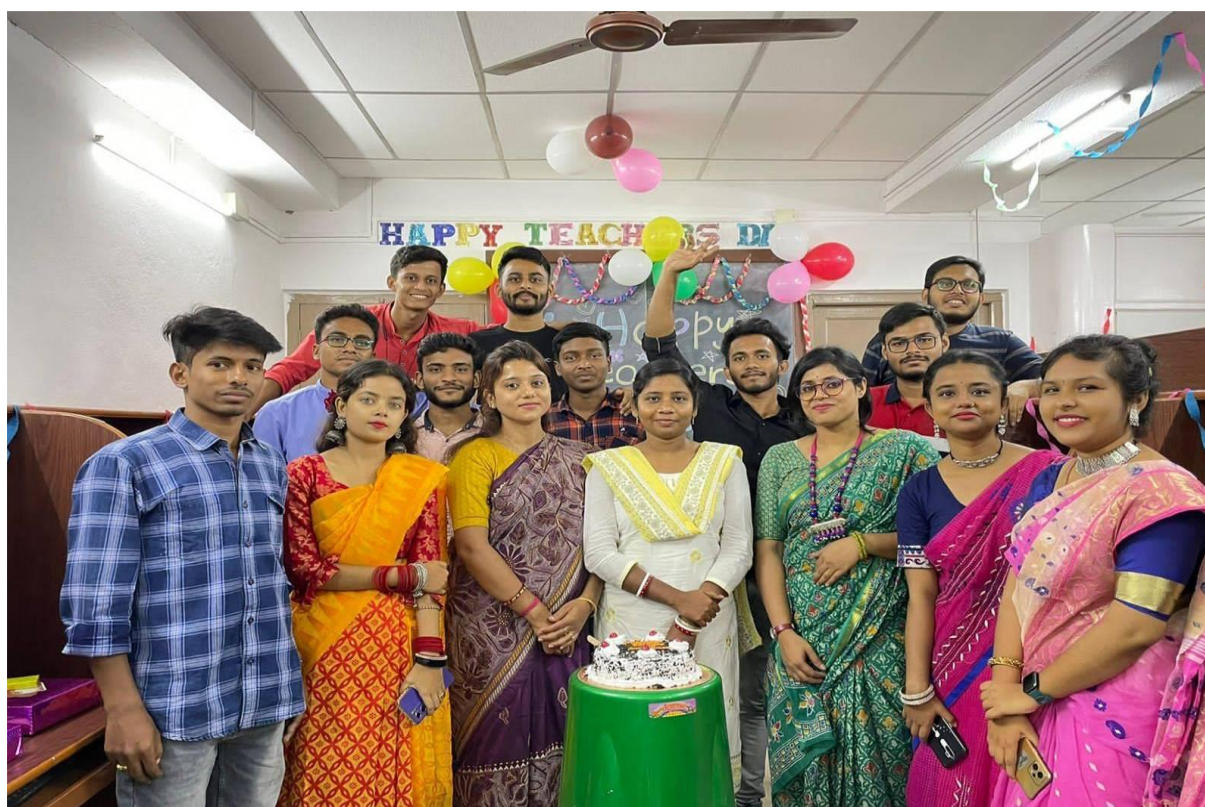
CS Stall 'Tech Talkies' in Sankalp, 2023

We rejoice when our ex-students pay visit to the alma mater

Pop-Corn 1

Rocket Boys

-Saloni Mallick, 6th Sem

Series name: Rocket Boys
Released on: 4th February,2022
Director: Abhay Pannu
Genre: Science Fiction, Drama
Number of episodes: 8
Cast: Jim Sarbh, Ishwak Singh, Arjun Radhakrishnan
Ratings: ⭐ ⭐ ⭐ ⭐

This is the story of two extraordinary men who established the Indian Space Programme and created history while building India's future. Dr. Vikram Ambalal Sarabhai who was researching at Cambridge University came back to India in 1940 because of the Second World War.

Then he was sent to Dr. C.V. Raman's Institute of Science. There he met Dr. Homi Jehangir Bhaba, who was the professor of Calcutta University, he used to teach Physics. They both became friends and started researching on different topics such as Cosmic rays, Equilibrium theory etc. Because of their bravery, they were also sent to jail but somehow Homi's father released them. After this incident, the Britishers stopped giving them funds and that is why Homi had to come to Bombay. There he started a new company "Tata Institute of Fundamental Research (TIFR)" with the help of TATA. Later on, Sarabhai married his beloved Mrinalini, who was a dancer and led a happy life. On the other hand, Homi lost his dad and he was fully broken. His love, Pipsy somehow convinced him to return back to his work. After giving a lot of effort, Homi was able to convince Prime Minister, Jawaharlal Nehru to construct an atomic center. Nehru had chosen Homi as the head of the centre that is why new enemies started following him and he was never out of sight of the Central Intelligence Agency (CIA). Besides, Sarabhai was too happy with his company. In 1956, Homi along with his team was able to produce 1mega-watt of energy with the help of a nuclear reactor. On the other hand, Maulana Abdul Kalam Azad, who was willing to be a rocket scientist, came to Sarabhai and they together worked on rocket science. But Homi was unable to save his relationship and his love married someone else. Once again China had attacked India so Homi wanted to make atom bombs to fear China but no one supported him and left him hopeless. 21st, November,1963 was chosen as the date for the testing of the rocket made by the scientists. Thousands of people gathered in groups near the sea shore of Thamba. Both Indian and foreign journalists also joined them and that was a great part in Indian history and a huge respect for India. When they were about to launch the rocket some problems arise, the hydraulic system was not working and the remote too. Sarabhai was about to announce that we would not be able to launch it that day but at the heat of the hour, Homi came as a hope and announced that we would launch it that day only. After a risky try they were finally able to launch it. The two friends hugged each other and everyone standing there praised them. Sarabhai apologized to Homi and encouraged him to make atom bombs and this was the happy ending. Jim Sarbh perfectly fitted Homi's character as a scientist. Besides, Ishwak Singh too perfectly fitted on Dr. Vikram Sarabhai's Character. Sarabhai always wore plain kurta, pajamas which reflected his outlook on life. Both Homi and Sarabhai were pioneers in their respective fields in India. The rest of the cast including Rajit Kapoor as the former Prime Minister Nehru, Arjun Radhakrishnan as Kalam had prominent roles too. The director of photography, Harshvir Oberoi deserves special mention as he was able to recreate the pre and post-Independence eras and editor, Maahir Zaveri who added a realistic look to the story.

Literary Codes

"When I started to look at the world through the lens of science, I found myself questioning everything and noticing the entire world around me. I can now look at a simple object and imagine the atoms dancing in harmony to form that structure."

- Saloni Mallick, 6th Sem

Dear Women

Dear Women,

Why did you tolerate everything from the very past?

Why have you tolerated your habit?

Why is there a smile on your lips after tolerating crimes?

Why are all the limits for you only?

How many decades will you cross in this way?

You too have a life, you too have many dreams to fulfil, you too shall have all the permissions for everything, you shall fight for your rights, why to stay under their feet?

Dear women, spread your dream wings and take a flight in the vast sky, speak for yourself, believe in yourself & one day you will surely achieve what you want.

- Saloni Mallick, 6th Sem

Rooftop Tale

They are moon bleached on a sensual evening,

They get refreshed too when rain drops cling.

Rooftops remain in a state of fervency: at the fiery Noon's hour they take after Mars hot sand,

when the placid moon dawn with the Eve's one star they again countermand,

they get dredged with dust and mopped too with Nature's will.

Alas, but I have an espoused mortal emotional being to assume the rooftop idiosyncrasy.

- Priyam Halder, Alumni Batch 2019-2022

Binary Shades
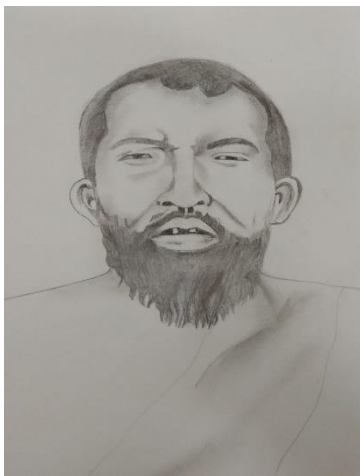
"Unless one always speaks the truth,
 one cannot find God, who is the soul of truth"
- Shri Ramkrishna Dev

Saloni Mallick, 6th Sem

"Science
Doodles"

- Saloni Mallick, 6th Sem
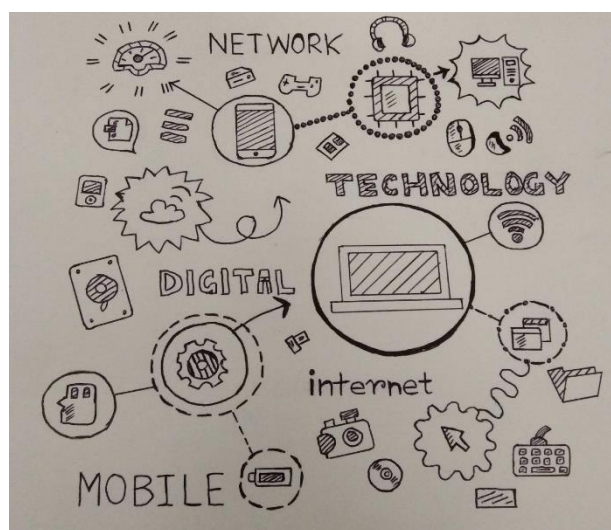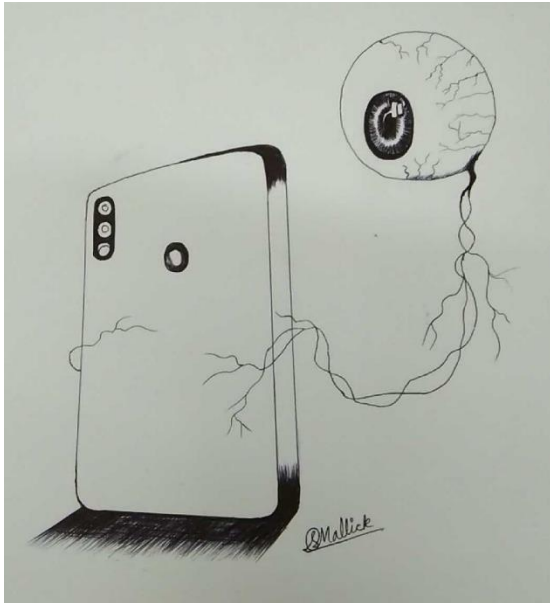
This is how phones
prison our eyes!

- Saloni Mallick, 6th Sem

"Our thinking power is not limited,
we have a universe hidden inside our head"

- Saloni Mallick, 6th Sem
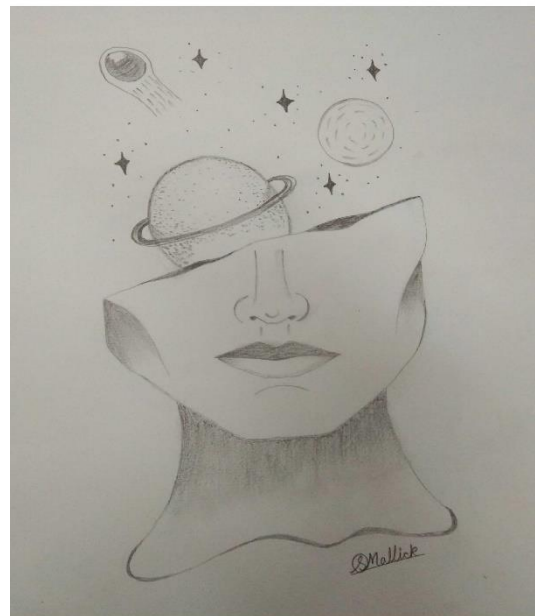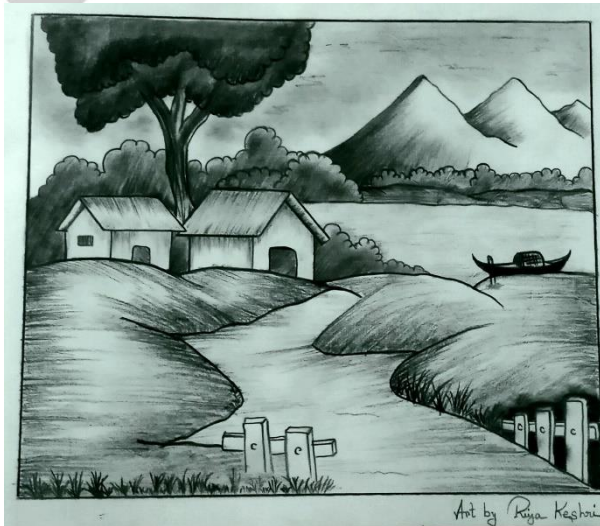
"The glassy nature"

-Riya Keshri, 2nd Sem

The wall hanging girl

-Riya Keshri, 2nd Sem

'If I was bird'

-Riya keshri, 2nd Sem

The blooming rose
-Riya Keshri, 2nd Sem

The springs of blossoms
-Riya Keshri, 2nd Sem

Om Mani Padme Hum
-Priyam Halder, Alumni Batch: 2019-2022

"A Strong Woman is the one who cries and sheds tears for a moment then gets up and fights again !"

-Isha Basu , 6th Sem

Pop-Corn 2

SHAKUNTALA DEVI

A biopic of a HUMAN COMPUTER

- Isha Basu, 6th Sem

Director: Anu Menon

Producer: Vikram Malhotra

Cast: Vidya Balan as Shakuntala Devi
Spandan Chaturvedi as teenage Shakuntala
Araina Nand as child Shakuntala
Jisshu Sengupta as Paritosh Banerjee, Shakuntala's former husband
Sanya Malhotra as Anupama Banerjee, Shakuntala's daughter

The movie Shakuntala Devi is based on the biography of world-famous mathematician Shakuntala Debi but it may not be the complete true fact which has been shown in the movie.

Those who love math and numbers might not love this movie because it did not show any new formula to solve any complicated problem. Also, those who do not like math and just for that reason if they avoid this movie then definitely it will be a miss for them. The movie has three parts, in the 1st part, we can see the childhood life of Shakuntala Debi where she faces a lot of challenges due to their poverty but came up with her unique identity as a mathematician and very shortly, she became famous and started stage show to earn the money by giving up her regular education. In the 2nd part of the movie can be described as a journey of Shakuntala Devi from unsung to the world-famous mathematician in England. She tried to prove herself in various forums, gathering and stage shows and slowly and steadily, and finally, she got her desired success and popularity. The story might take another part through her math skill but it took a turn with a different storyline where we can see her loves, marriage and daughter Anupama and film take a U-turn with her aggressive and feminist attitudes towards her husband and daughter and finally she came back to England with her daughter by giving divorce to her husband. Shakuntala Debi took her daughter to England and started her second innings and regained her popularity and became the rich woman, but this time her daughter Anupama feels alone and goes against her mother. The third part of the movie goes with this turmoil relationship between daughter and mother which finally reaches the court where both of them face each other and the movie goes to its climax. Vidya Balan as Shakuntala Debi is exemplary and she portrays her role very beautifully in three different parts, parallelly Saniya Malhotra as Anupama is a complete fit for her role and in some scenes both of them really touches our heart. Jisu as Anupama #39;s father did not have that much to do in this movie but his less presence also shows that he is a brilliant actor. Finally, feminism and money cannot lead the normal life maybe this movie can be an example of that. Good to watch for the storyline, acting and to discover our human-computer.

IT'S OUR PROUD TO HAVE A WOMAN LIKE HER IN OUR COUNTRY.

Colour splash

Durga Maa

-*Riya Keshri, 2nd Sem*

art by - Riya Keshri

The story of mist

-Riya Keshri, 2nd Sem

Art by - Riya Keshri

Aurora Night Sky

-Riya Keshri, 2nd Sem

"Arise, awake, and stop not till the goal is reached."

-Priyam Halder, Alumni Batch: 2019-2022

Mandala Art

-Isha Basu, 6th Sem
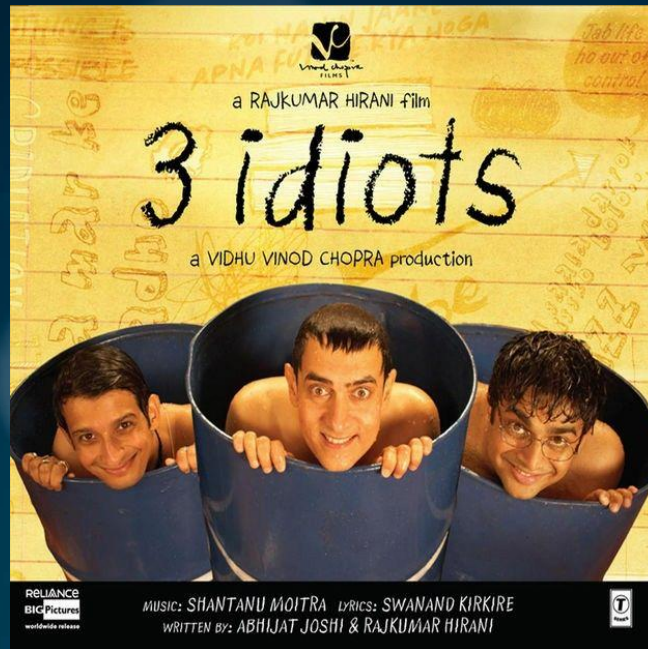
3 Idiots

- Isha Basu, 6th Sem

3 idiots is not a movie, it's an emotion for all. Many movies earned money but this movie has earned the heart of every single student. Each dialogue in the movie has a separate fanbase.

Directed by : Rajkumar Hirani
Written by : Abhijit Joshi,Rajkumar Hirani
Screenplay by : Abhijit Joshi, Rajkumar Hirani
Produced by : Vidhu Vinod Chopra

Starring : Aamir Khan (Rancho)

R.Madhavan (Farhan)

Sharman Joshi (Raju)

Kareena kapoor (pia)

Boman Irani (principal)

Omi Vaidya (chatur)

Story:

The Imperial College of Engineering is one of the best colleges for engineering studies in India. Rancho is the son of a rich man in India, while Farhan and Raju are from an average family. Farhan had a dream of being a wildlife photographer, but his father insisted that he study engineering because it was his wish. Raju has come to study to uplift his family fortunes because he is from an impoverished family. Rancho's passion is earning knowledge rather than the conventional obsession of the other students with exam ranks. With his different approach, Rancho suffers the wrath of the dean of the college, Professor Viru Sahastrabudhhe (ViruS) (Boman Irani). Rancho terms the dean as ViruS. He irritates his lecturers by giving creative and unique answers. Joy was also a student of the Imperial College of Engineering who had requested the dean for an extension on his major project on the compassionate grounds that his father had suffered a stroke. But, ViruS refused, saying that he was completely unmoved by his own son's accidental death after being hit by a train. Rancho condemns the learning system of the institution, blaming it for Lobo's death. Threatened by Rancho's talent and free spirit, ViruS labels him an "idiot," and he attempts to destroy his friendship with Raju and Farhan. In contrast, (Omi Vaidya) Chatur Ramalingam or "Silencer" is the model student in the eyes of ViruS, who always wants to get high marks through memorizing rather than understanding. Finally, Rancho came first, and he was awarded ViruS's pen that he had been keeping for a few decades to give it to the most brilliant student.

Reviews:

The 3 Idiots Bollywood film is a great film to motivate students. It has come up with a great message for university students. The Three idiots film teaches us to be more creative rather than only memorizing books. Every student should watch this film to understand better how to study well in University without memorizing books. The 3 idiots film will help to differentiate between the students who like to memorize only without understanding and the students who like to understand topics rather than memorizing. The audience will get a clear concept regarding the duties and responsibilities of a successful student. I have enjoyed this film very much for its amazing story, casting, dialogue, and music.

Lesson taught by this film: -

This film teaches us that we should focus on what we like to do and stop doing what people suggest to us, just like Farhan. In life, both from a personal or professional perspective, when you face difficulties or critical situations, calm and motivate yourself. It results in positive things in our lives. We should not be just confined to bookish Knowledge. Only getting higher ranks won't help you get success, but you will succeed for sure if you get excellence at your work. Don't run behind the success; achieve excellence first; the success will automatically come looking for you. Be always creative in your answers, work, & things, which helps you become more capable of your own life. Believing in ourselves is very much important. If you want to achieve something, you need to believe that you can achieve it fully. It will surely get easier to achieve your goal. If you're going to succeed, you can't just race with others; instead, you will have to think more advanced than them, more significant, and more efficient.

Snap zone

Embracing the beauty of the city as the sun sets over the road, casting a warm glow on the bustling streets.

-Swastik Nandy, Alumni Batch 2020-2023

Embracing the calmness of nature

-Swastik Nandy, Alumni Batch 2020-2023

Nature's majesty captured from atop a rugged hillside.

-Swastik Nandy, Alumni Batch 2020-2023

Finding serenity in the heart of the forest.

-Swastik Nandy, Alumni Batch 2020-2023

"Conquering challenges, embracing triumphs, and savoring the breathtaking views from Nepal's mountaintop"

- Swastik Nandy, Alumni Batch 2020-2023

"The Grasshopper Reminds You That You Have What It Takes To Make It Out On Top."*-Sudipta Bauri, 6th Sem*

"Way to the Sun."
-Sudipta Bauri, 6th Sem

"In the Lap of Nature."
-Rupankar Dutta,
6th Sem

"গুঞ্জরিয়া আসে অলি

পুঞ্জে পুঞ্জে ধেয়ে"

-Rupankar Dutta, 6th Sem
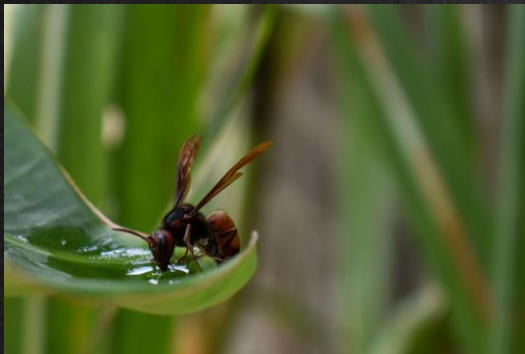
"Oh! Feeling so Tired.. Let's take a Break."

-Rupankar Dutta, 6th Sem
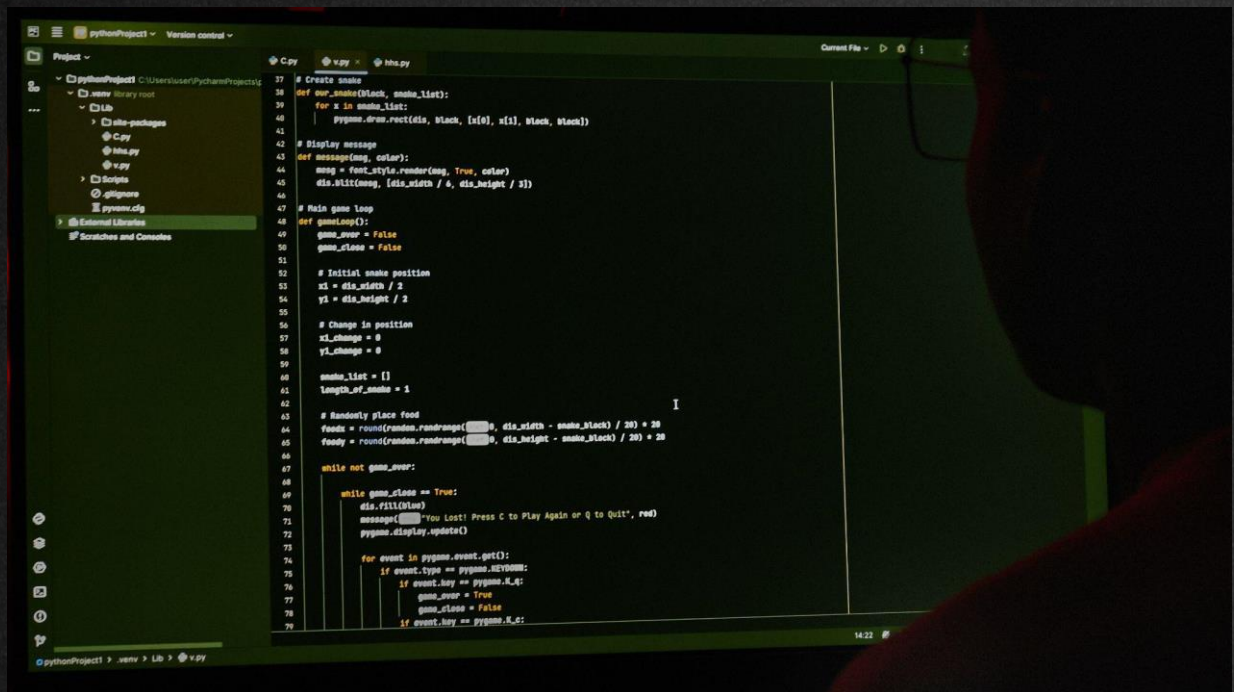
"The Poetry of earth is never dead."

-Saloni Mallick, 6th Sem

"Coding is the fuel"

-Souvik Besra, 4th Sem

Automorphosis

The Blue Eye Technology

-Newton Biswas, 4th Sem

Introduction: -

Introduction: -

➢ The term Blue eyes technology is coined from the following terminologies:
- Blue for Bluetooth
- Eye hinting at the Eye Movement
- Technology that forms the very basis of it

➢ Blue Eyes Technology enables computers to sense and understand human behaviour and feelings and respond in a proper way.

➢ Blue Eyes Technology has been conducted by the research team IBM at Almaden Research Center(ARC) in San Jose, California since 1997.

- ➢ This technology has made it possible for the machine to understand what a user wants, where he is looking at and even realize his physical and emotional states.
- ➢ Use camera and microphone to identify user action and emotions.
- ➢ Aim to create a computational machine that has perceptual and sensor ability.
- ➢ Blue Eyes Technology has a wide range of applications : in education, in biometric, in gaming, in security, in healthcare and other sectors.
- ➢ A pc that can listen, talk or scream.

Technologies used: -

- ● Emotion Mouse
- ● Artificial intelligence Speech Recognition
- ● Simple User Interest Tracker (SUITOR)
- ● Manual And Gaze Input Cascaded (MAGIC)

❖ **Emotion Mouse:-**
- ➢ Basically this Emotion Mouse can detect Emotion with just touching the mouse and keyboard ,and detect the mood by analysing pressure, temperature and heartbeat of the user.

❖ **Artificial intelligence Speech Recognition: -**
- ➢ User Speaks to the Device through a microphone.
- ➢ This makes devices less expensive and also comes up with more useful , powerfull, and smarter devices.
- ➢ Input words are scanned and matched against internally stored word.

❖ **Simple user Interest Tracker (SUITOR): -**
- ➢ The Simple User Interest Tracker is an approach towards the design of machines which has the ability to maintain the relationship between the human and computer.
- ➢ The SUITOR continuously analyzes the users actions and behaviour that where his eye focuses on the computer screen.

❖ **Manual And Gaze Input cascaded (MAGIC): -**
- ➢ The Eye Gaze tracking method is a new way of handling the eye Gaze for man and machine interface.
- ➢ MAGIC pointing is a technique of tracking eye movement of the user and performing the desired operation.
- ➢ Two MAGIC pointing technique: -
    - ● Liberal
    - ● Conservative

Hardware used in Blue Eye Technology: -

- ● **Data Acquisition Unit (DAU): -**
    - ○ Data Acquisition Units main objective is to Acquire data With the help of numerous sensors such as LCD screens, LED indicators, etc to transfer all that data to CSU with help to Bluetooth.
- ● **Central System Unit (CSU): -**

o   The Central System Unit task is to analyze and process the data sent by DAU. For wireless network connection , CSU the next main important thing in the Blue Eyes Technology. The CSU mostly consists of voice information transmission and a wireless Bluetooth device.

<u>Conclusions:</u> -

Today the world is growing faster as it mainly consists of all real time System the Blue Eyes Technology provide a best useful way to the user by giving more strong and user friendly facilities in the world of computing device

<u>Future Scope:</u> -

Blue Eyes Technology is an innovative approach and can be used in School and college in order to check and observe Students physical and psychological state.

The fields of advertisement and entertainment will be mostly benefited with this as they have an important role in our day to day life.

Impact of Generative AI on AR and VR Industry

-Nafisha Khatun & Sourav Das Kabiraj, 4th sem

How **Generative AI** is Shaping the Future of AR and VR Experiences?

Abstract :

Augmented Reality (AR) and Virtual Reality (VR) witnessed significant advancements over the years, transforming how we interact with digital content and the physical world.

These impressive technologies have applications in various fields, from gaming and entertainment to healthcare and education. However, the true potential of AR and VR lies in their ability to deliver lifelike, engaging experiences, and this is where Generative AI comes into play.

Generative AI, a subset of Artificial Intelligence, has been instrumental in pushing the boundaries of AR and VR by enabling the creation of highly realistic, interactive and adaptive digital content.

In this page, we'll explore the Impact of the Generative AI and VR Industry.
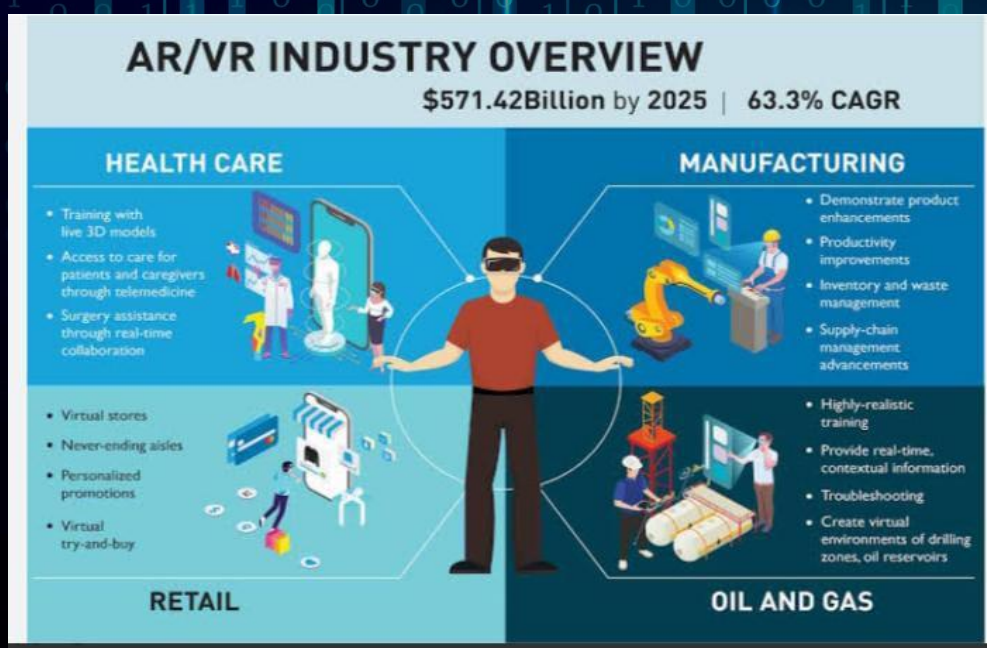
Introduction:

Virtual Reality (VR) refers to a computer-generated three-dimensional environment that a person can explore and interact with. When engaged in VR, an individual becomes an integral part of this virtual world, fully impressed in the computer-generated environment. Within this space, the person can manipulate objects and execute actions that influence the happenings within the virtual environment, conversely, Augmented Reality (AR) is an enhanced version of reality where a person's direct or indirect view of the real physical world is enriched by the addition of computer-generated images. These digital elements are superimposed over the user's perception of the real world, effectively enhancing their current reality. In simpler terms, AR users observe digital layers of information overlaid on real-world images, enhancing their overall perception of reality.

The true power of AR and VR lies in their interactive capabilities and impressive experiences. However it is AI that supercharges these experiences, providing real-time response and personalized environments.

AI in AR is transforming how we interact with the digital world. It enables application to recognize and understand their environment, providing real time and contextually relevant information.

When it comes to VR, AI helps to create more lifelike and interactive virtual environments. AI-powered characters can learn and adapt to the user's behavior, creating a more immersive and realistic experience.

AI algorithms learn from each user interaction, refining and personalizing the AR and VR experience. This enables the creation of immersive environments that react in real time to the user's actions. AI in AR and VR makes it possible to create more realistic experiences.

AI algorithms can be used to create complex, dynamic virtual worlds in VR applications. These virtual worlds can be modified and adapted in real time based on user input and behavior. Soon, generative AI will be used in AR and VR to create content in 3D directly in front of your eyes, such as spawning virtual objects, animals and full avatars to interact with, or even turning your otherwise plain room into an exotic environment. Natural Language processing (NLP), a subset of AI, is revolutionizing how we communicate with AR and VR applications that can provide real time responses, making the user feel like they are interacting with a human and not a machine.

AI significantly enhances the user experience in AR and VR, making it more immersive, interactive and engaging. This is particularly beneficial in learning experiences where AI can adapt the content based on the learner's progress and understanding.

In gaming, Casinos with their vibrant atmosphere and thrilling games, have always been at the forefront of entertainment and technology. Now a new wave of entertainment and technology. Now a new wave of innovation is set to transform the casino experience completely. AR technology overlays digital information onto the real world, and in a casino setting this translates into transformative experiences. Through AR, players can enjoy interactive overlays on traditional casino games. For instance, poker players can see real time strategic decisions. VR takes the casino experience to a whole new dimension. Imagine putting on a VR headset and finding yourself in a luxurious, digital-casino resort. You can walk around, interact with other players, and engage in various games, all from the comfort of your home. VR casinos bring the social aspect back to online gambling, allowing players to communicate, share experiences and enjoy the ambience of a physical casino without any geographical constraints.

Conclusion:

In conclusion, AI plays a pivotal role in the continued evolution and development of AR and VR technologies. It has opened new doors for interactive and personalized experiences, making AR and VR more engaging and immersive. With continued advancements in AI, we can anticipate more immersive, interactive and personalized AR and VR experiences in future. The potential of AI powered AR and VR is just beginning to be trapped and possibilities are limitless.

e-Sports

- Sauvik Das, 6th Sem

Like mentioned at the start, the world of eSports is primarily dominated by team-based games. While some single player tournaments do exist, such as FIFA and Starcraft, they are not on the same scale as some of the other games out there. Here, is a list of few of the most popular eSports games and their corresponding statistics in terms of viewership, prizes and participation:

DOTA 2: 15 million peak viewers, 59 active teams, championship prize money $35 million and rising

Fortnite: $30 million prize money, 40 million competitors, 2 million viewers

League of Legends: 24 teams, peak of 44 million viewers, $7 million

CS:GO: 40+ teams, $1 million from championship but they have lots of big tournaments, 1.2 million viewers

Overwatch: 20 teams, $5 million, 300k viewers

PUBG: $2 million, 20 teams, 800k viewers

How much do Esports players make??

The main sources of income for a professional esports athlete are cash prizes and the team salaries. As mentioned earlier, the tournaments are basically team based events and this means the players in the team are paid a salary which may range from $3000 to $5000 depending on their skill set and position in the team. Apart from salaries, the winning team and often the runner up teams as well, get the huge cash prizes which are offered by the tournament hosts.

Apart from these sources, players make money from sponsorships, digital streaming rights and media rights, merchandising and even ticket sales.

e-Sports in India:

India was placed 16th on the Forbes list, indicating that the sector is worth billions of dollars. A decade earlier, India's internet gaming industry was underdeveloped, with just 25 developers. Today, the nation is home to approximately 250 game developers.

Several industry heavyweights have previously invested in India's gaming business, including Tencent, Nazara, Paytm, and Alibaba. The majority of income earned in sports comes from companies such as Oppo and Asus. India has hosted some of the most important esports events, including the PUBG Mobile Series 2019 and the Electronic Sports League, in which Dota 2 players from all over the globe competed. Today, India is globally known for esports, and Counter-Strike: Global Offensive plays a significant role. Dota 2 is the first e-Sports game to have conquered the Indian market; it is a multiplayer online

combat game in which two teams of five players each compete. Online gaming is one of the reasons India's economy has remained resilient in the face of a worldwide epidemic. When pre-covid and lockdown statistics are compared, the number of online gamers utilizing their smartphones has increased by 60%. The large young population in India and the affordability and accessibility of smartphones are the main factors for the sectors growth. Additionally, it cleared the door for the establishment of an online casino site exclusive to Indian gamers. Another factor contributing to the development of the online gaming industry is the widespread use of high speed 4G internet.

e-Sports health and addiction concerns:

As fun and rewarding, e-Sports and the world of competitive gaming may sound, it is worth mentioning that it has its own drawbacks ranging from minor health issues to major mental health concerns. E-Sports players, just like any traditional sports athlete needs practice, a major

part of which revolves around sitting in a dark room and staring at a computer screen for 10-12 hours on average. This without a doubt has several impacts on a person's well-being. A recent study carried out in this regard, looking into the health impacts imposed on eSports players discovered that athletes are more likely to incur musculoskeletal injuries in their neck, back and upper extremities. Most of these problems come about due to poor posture and sedentary conditions that are commonplace among e-Sports players. Additionally, these athletes may have metabolic disturbances resulting from light-emitting diode computer monitors as well as mental health concerns regarding gaming addiction and social behavior disorders.

The introduction of college scholarships for eSports is another concern, as teenagers will now justify their excessive gaming use because they are going to be the next e-Sports star- when in reality the chances of that are very slim. There is nothing wrong with trying to compete at a high-level, but when children are using e-Sports as a justification for their excessive gaming, it starts to become a problem.

eSports- Choose wisely/ Conclusion:

Another important fact worth mentioning, especially for those who are aspiring to take e-Sports as a full-time career, is that not everyone will make it o the top. The competition in this field is huge, now more than ever. With almost everyone having access to high-end gaming peripherals and high-speed internet connection, skilled players are coming up on a daily basis. I am not one to discourage an aspirant to not pursue their dream, however doing so while being informed is what is most important. What it takes here is more than gaming all day-every day, it takes focus and determination, responsibility, maturity and optimal health- mentally, physically, and emotionally- amongst many other factors, including a little bit of luck. With the competition getting multiplied each day, it is recommended that one must chalk out a backup plan if things don't work out in this field or at least gather some savings to fall back on.

Are we living in a computer simulation?

-Arpan Halder, 6th Sem

Before we try to answer the question of whether we are living in a computer simulation, firstly we need to know what specifically a simulation is. By definition, a computer simulation is the process of mathematical modelling, performed on a computer, which is designed to predict the behaviour of, or the outcome of, a real-world or physical system. It is basically used for the imitation of a real-world process or system. To put it simply, it creates a virtual world called the Matrix within a computer with various characters in it. It is just an advanced version of a video game where the person playing the game controls the characters in the game but the characters that are present inside the game see the game as their real world. Now to answer the question whether we are living in a computer simulation, well, there is a 50-50 chance that we are actually living in a computer simulation. If each and every person and thing in the cosmos were actually characters in some giant computer game, we would not necessarily know it. It sounds very similar to a movie in 1999, "The Matrix" in which the protagonist is actually living in a Matrix from the beginning of the movie but he doesn't realize it until he has woken up to reality. It also might be the case with us that we are also living in a computer simulation controlled by some other beings or maybe our future self but we do not

know about it up until this point. It is possible that reality is merely an ultra-high-tech computer simulation in which we sim-live, sim-work, sim-laugh and sim-love.

Now let's look into the simulation theory given by Nick Bostrom in the year 2003. He argued that if humans are able to survive thousands of years to reach a "posthuman state" — one in which we have "acquired most of the technological capabilities" consistent with physical laws and material and energy constraints — it's likely that they would have the capabilities to run ancestral simulations. And the odds are, we are products of that simulation. In Bostrom's 2003 paper, the philosopher explained that future generations might have mega-computers that can run numerous and detailed simulations of their forebears, in other words "ancestor simulations," in which simulated beings are imbued with a sort of artificial consciousness. However, this is not possible by our generation or in the near future as we lack the resources and the information in building such a simulation. It would take at least 100 years of technological development to reach that state when we can design simulations but we, the present generation, would not be able to witness it.

Now let's assume our computers will continue to grow ever more powerful, efficient and capable. Let's say that at some point in the deep, deep future, we build some ridiculous planet-sized computer — a computer so powerful that it could simulate our entire universe, recreating all the physics, chemistry and biology that we experience in the natural world. If we also assume that consciousness is consciousness, regardless of where it resides (in either an organic brain or a digital one), then any simulated entities within the computer that gain consciousness will experience a world that is indistinguishable from ours.

Once our descendants build such a computer, they will inevitably create countless simulated beings — and try to count how many creatures in video games have appeared and disappeared since they first developed the technology. Very quickly, the number of simulated conscious brains living in a computer will vastly outnumber the organic brains living in the real universe. If this ends up happening, we are left with three possibilities:

1. Our descendants (or other intelligent beings in the universe) will never be able to develop the technological ability to faithfully simulate the cosmos.

2. Our descendants (or other intelligent beings in the universe) will develop the technology but choose not to simulate the cosmos.

3. The vast majority of all conscious entities, including us, are living in a simulation.

As philosophical arguments go, the simulation hypothesis is a good one. But the hypothesis ends with a trilemma — three statements, one of which must be true, but we can't tell which one. So we completely cannot rule out the possibility that maybe we are living in a simulation. Do we live in a simulation? Ultimately, we don't know, and there is a 50-50 chance. The simulation hypothesis also doesn't provide much of a compelling argument that we might be living in a simulation. So we can just go back to enjoying our life because there is no way that we can know whether we are living in a simulation or not until and unless the beings controlling us (only if we are living in a simulation) want us to know. Until then let's enjoy our life to the fullest.

CONFESSION DIARY

MY FIRST DAY AT COLLEGE

Isha Basu, 6th Sem

"Life in a college is more than a serious effort to get an education. Moreover, college is a place of making friends and chalking programs to go out to the pictures, cinemas and picnics"

College is the dreamland of every career. It is a beautiful period of learning, enjoyment, freedom and friendship. After the sweet memories of everlasting school life, college life's memories have an impact on human memory. First day of college is really very special and memorable for every student. The result of the Higher Secondary exam was declared and I came out with flying colours. After I passed school with good numbers, good grades, many excited and heated discussions took place about the choice of subjects and college. I decided and got admitted in a Government College which is the biggest and best college of my city, Burdwan Raj college. I haven't any clear idea about college life, but my expectation was high by watching many types of college life's films. I am fond of watching movies. I was full of excitement, inner joy and high hopes for a promising future. On the very first day, I got up early in the morning as I was very excited for college life. There was a humorous memory in my mind of my first day. I got admitted in BSc computer Science Honors. My department is small and new but united. First day, I accidentally massaged a ma'am as a student. It was my fault; I was sorry for that. I didn't even know that until I went to college. As soon as I stepped into the college,

I felt like I had entered a new world. It was indeed a completely new world for me. I was very lucky for me in the pandemic session of corona when all situations were disturbed, my first day of college was offline. But it was sad that it's not last for long. After some days the online class started again. My first-day entry in college always fascinates me. I have met three respected teachers in my department. That day was an unforgettable experience of my educational life. Our first period was on computers (C++ language). We went to the classroom and sat on the benches. A Professor entered the room, and we stood up to greet her. We total 10 students in our department. She took our roll call and entered the names of the students in her attitude register. She did not teach us but advised us about our future life. She stressed that we should not misuse the liberty here, rather we should keep full use of the opportunity to achieve our end. Afterwards we moved to another room where our professor of Math came. He took our name in the register and he didn't take the class and said two words, "GO AND ENJOY YOUR FIRST DAY". Then we became very excited and everyone sat on the field and talked. Then we met with our beloved seniors and talked with them. They explained about our department and encouraged us. After some time, we left the ground and went to the library. We discussed the lecture of our teachers and decided to work hard from the beginning to get through the exam getting very good marks. Then we left the library, shook hands with one another and departed. I took a bus and reached my home. I found a considerable difference between the school life and that of college. I concluded that liberty or freedom must not be misused at all.

At the end of the first day, I returned home. When I was returning home, all the memories of my first day at college came to my mind. It was like a film but not like the Bollywood film which I have seen. It was another film which was created by mind. I realized the difference between expectation and real life. It was fun and scary. I remembered all the happiness and reached home with a smile. I had entered the college to gain knowledge and wisdom and to become a good citizen. I felt a new rhythm of life and returned home with a mixed sense of duty and liberty.

অজিতের ঠিকানা

-রূপঙ্কর, 6th Sem

-হ্যালো–

--হ্যাঁ বল।

-কী করছিস?

--এই তো ভাই! শেষবার পাতাগুলো একটু উলটে দেখছি।

–কাল জীবন বিজ্ঞান পরীক্ষা তো!

--হ্যাঁ, রুটিন এ তো তাই লেখা আছে!

–শোন না, ছবি আঁকতে হবে তো! তা কোন ছবিটা আসতে পারে?

--আমি কি করে জানবো ভাই? আমি কি কোয়েশ্চেন পেপার দেখেছি!

-আরে তুই ক্লাসের ফার্স্ট বয়।স্যারের প্রিয় ছাত্র। ব্যোমকেশের মতো স্যারের চোখ পড়ে নিতে পারিসনি!

--হাঃহাঃহাঃ! বেশ বললি।

-আরে আমি তোর জায়গায় থাকলে আজ পুরো কোয়েশ্চেন পেপার উদ্ধার করে নিতাম।

--তা পারতিস!শোন হৃদপিন্ডটা করে নিয়ে যাস।

-আমি বোকা কুমির না,বুদ্ধিমান বাঁদর!

--ছবিটা ইমপর্টেন্ট বলছিলেন স্যার।

-সিরিয়াসলি! আচ্ছা রাখ রাখ ,গুড নাইট।

--হুম।

-কীরে প্রাকটিস করলি?

--ওতো খেটে কী করবো। কাল একটা গল্প পড়তে পড়তে ঘুমিয়ে পড়লাম। আজ সকালে উঠে একটা কাগজে এঁকে এনেছি। এবার আমার বসার জায়গার দেওয়ালে কপি-পেস্ট।

দেখতে দেখতে ছবিটা দেওয়ালে এমন নিখুঁত ভাবে ফুটিয়ে তুললো,যেন দেওয়াল ছেড়ে বেড়িয়ে আসছে হৃদপিন্ড। পাঁচ মিনিটের মধ্যে গোটা ক্লাস থেকে শুরু করে গোটা স্কুলে খবর পৌঁছে গেল । এ সে এখান সেখান থেকে এসে ডেকে নিয়ে গেল "আমার এখানে একটা এঁকে দে ভাই" বলে। কাউকে ফিরিয়ে দেয়নি অজিত। শেষ ছবি গুলো তো না দেখেই এঁকে দিল সাথে পয়েন্টিং।'ঢং' করে ঘন্টা বেজে গেল। পরীক্ষা শুরু।ক্লাসে ফেল করা ছেলেরাও আজ গভীর আত্মবিশ্বাস নিয়ে বসে আছে। কোয়েশ্চেন হাতে পেতেই সবাই শেষ পাতায় খোঁজাখুঁজি শুরু করে দিল। "ইস" গোটা স্কুল যেন এক সুরে একটা হায় নিঃশ্বাস ফেললো। হৃদপিন্ডটা কোয়েশ্চেন পেপারের সাথে সাথে বুক থেকেও উধাও হওয়ার জোগাড়। যাই হোক ফার্স্ট বেঞ্চার্স থেকে লাস্ট বেঞ্চার্স বুকে ব্যাথা নিয়েই পরীক্ষা দিল।

তারপর থেকে অজিতের খ্যাতি ছড়িয়ে পড়েছিল গোটা স্কুলে। কোনোভাবে এই গল্প

স্যার-ম্যাডাম দের কানেও পৌঁছেছিল।তারাও বেশ মজা পেয়েছিলেন।

আজ দশ বছর পর ওই ক্লাসের সামনে দাঁড়িয়ে আমি। অজিতের সঙ্গে যোগাযোগ নেই বহদিন হয়ে গেছে।খোলা জানালা দিয়ে সেকেন্ড বেঞ্চটা দেখা যাচ্ছে ,আমি আর অজিত যেখানে বসতাম। হঠাৎ অনুভব করলাম এক ব্যক্তি পাশে এসে দাঁড়িয়েছেন,"দত্ত-বাবুর বন্ধু?"

-হ্যাঁ,আপনি...ওও সুরেন কাকা! ভালো আছো?

সুরেন কাকা আমাদের গেট-কিপার। আর 'দত্ত বাবু' মানে অজিত, অজিত দত্ত। কী প্রখর স্মৃতিশক্তি! আজও মনে রেখেছেন। জিজ্ঞেস করলাম,"আচ্ছা অজিত এখন কোথায়, কী করে কিছু জানো?

-দত্তবাবু তো বছরে এক- দুই বার স্কুল আসেন।সারা সারা দিন গল্প করে যান। তবে কাজ ঠিক জানিনা। জিজ্ঞেস করাতে বলতেন-"লিখি, ঘুরে বেড়াই,দেশ দেখি..."
আমি ফিরে এলাম অজিতের ঠিকানা খোঁজা আমার পক্ষে সম্ভব নয়। অফিস থেকে ছুটি পাই না বেশি দিন। মোটা মাইনে-তে বেশ সুখেই আছি হয়তো! পরের দিন সকালেই ট্রেন ধরতে হল। আজ আনমনে ইংরেজি পেপার ছেড়ে বাংলা কিনে ফেললাম। সামনের 'রবিবাসরীয়'-র পাতা উল্টোতে 'অজিত' শব্দে চোখ পড়লো। হ্যাঁ, 'অজিত দত্ত'। অজিতের লেখা!

ইলিউশন

- -রূপঙ্কর, 6th Sem

আজকে ভোরে হঠাৎ করে
অ্যালার্ম ক্লক টা উঠলো বেজে |
ঘুম চোখে দেখি, নীল রঙে সে কি ?
না না ধূসর রঙে সেজে ||

সরু পারা হাত নীরবে হঠাৎ
গলার কাছে বুঝতে পারি |
ধরবো কষে? যদি হয় স্বপ্ন শেষে!
মৃত মগজ বললো ছাড়ি ||

হাতটা একটু কাছে এলো বোধহয় মৃদু স্পর্শ পেল
পর্দা ফেলা অন্ধকারে |
আশা ভরা নিঃশ্বাস পায় এ হাত শুধু স্পর্শ চায়
মশারি পেড়িয়ে বারেবারে ||

মৃত মগজে ভাঙা স্মৃতি খুঁজি, মশারিটা কি গুজতে ভুলেছি!
খুব গোপনে দুটো মশা ঢুকেছে |
মগজ এখনো ভাবতে না চায়, স্মৃতি মরে ভূত হয়ে যায়
ওইতো ফুটো মশারির সেলাই খসেছে ||
বাতাসে মাংসের গন্ধ ভাসে, মশকি আনন্দে রক্ত চোষে
হাতটা স্পর্শে মগ্ন |

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আমিটা আবার ঘুমিয়ে মড়েছে, অ্যালার্ম ক্লকটাও ঘুমিয়ে পড়েছে
ফুটো মিথ্যেরা আজ নগ্ন ||

হাতের অভিপ্রায় আজও বুঝিনি, একের বেশি বন্ধু খুঁজিনি
ঘুমের রাত টা ঘুমকেই দিলাম |
হাতটা যদি বন্ধু খোঁজে, ছেড়া জুতার গল্প বোঝে
মনে পড়বে সেদিন একাই ছিলাম ||

অ্যালার্ম টা জেগে ঘুম ভাঙালো ইলিউশন টা বোকা বনে গেল
আরেকটা মিথ্যে ভোর চায়ছে চোখ |
ছিটেফোঁটা বৃষ্টি চাইছি, টাইম বোমেই মন দিয়েছি
মিথ্যে ভোরেই মজেছে হাজার লোক ||

অমরত্ব পেলে

-রূপঙ্কর দত্ত, 6th Sem

আমার সপ্তম জন্মে হোক পৃথিবীর বিনাশের সূচনা,

শেষ কিছু মানবের মাঝে আমি,

মনে মনে লেখা উপন্যাস – শহরের বাইরে দাঁড়িয়ে

শেষ করছি তখনও...

মনে পড়ে, অমরত্ব চাইনি আমি কোনোদিন

কোনো অমৃতের স্বাদে

চেয়েছি দুটো সবুজ বৃক্ষ, সবুজ বৃক্ষ

আর তাদের ছায়ায় বিশ্রামরত কিছু প্রাণ;

তারাই অপেক্ষায় এক নবীন প্রজাতির মুখ চেয়ে

অথবা, কোনো ভীনগ্রহীর আধিপত্য বিস্তারের অগ্রিম নিরাশায়!

আমি তখন অসম্পূর্ণ উপন্যাসের বেশ কয়েকটি সাদা-পাতা

ক্ষতবিক্ষত, কোনো এক এলিয়েনের আবিস্কৃত ফসিল্ ;

আমার খোলা চোখে এলোমেলো ছড়ানো একমুঠা বৈজ্ঞানিক প্রেম।

শিক্ষক

-রূপঙ্কর দত্ত, 6th Sem

রবিবারের সকাল। এই একটা দিন অফিস-স্কুল বন্ধ। ইনু-টা সকাল থেকেই রান্না ঘরের আশেপাশে ঘোরাঘুরি করছে। কারণ, সেও জানে আজ রবিবার। প্রতি রবিবার একটা বড়ো মাছের টুকরো তার চায়ই। তার মানে মাছ কাটার সময় ইনু-র কথাটা মাথায় রাখতে হবে। বেশ বেলা হয়েছে। প্রদীপ দাদু বাজারের থলিটা নিয়ে বেরিয়ে পড়লেন। বেশি বেলা করে গেলে আবার টাটকা মাছ পাওয়া যায় না।

প্রদীপ দাদু একসময় নামকরা শিক্ষক ছিলেন। দীর্ঘ চল্লিশ বছরের শিক্ষকতার পর অবসর জীবন কাটাচ্ছেন। তাই সেই চেনা পথগুলোয় অন্যরূপে হাঁটতে আজ সাড়ে আটষোট্টি-তেও বাজারের অজুহাতে বেড়িয়ে পড়েন। প্রতি পদক্ষেপেই কোনো না কোনো স্মৃতি পায়ের তলায় ঝাঁকুনি দিয়ে ওঠে। যে ঝাঁকুনির তরঙ্গ কখনো মস্তিষ্ক পর্যন্ত পৌঁছে আটকে দেয় পা দুটোকে, কখনো বা কোনো তরঙ্গ মৃদু হওয়ায় অথবা অন্যভাবনার প্রাচীরে বাঁধা পেয়ে মিলিয়ে যায়।

বাড়ি থেকে বাজারের সোজা পথটাতে সকাল থেকেই বড্ড ভিড় ও যানবাহনের চেঁচামেচি। তাই স্কুলের পেছনের তুলনামূলক দীর্ঘ পথটাই ব্যবহার করেন তিনি। তবে অন্য কারণও আছে সেই পথ দিয়ে যাওয়ার। রাস্তাটির ধারে স্কুল ঢোকার যে ছোটো গেট আছে, তার গ্রিল ধরে নয় বছর আগের স্মৃতিগুলোকে যেন কিছুক্ষণ জড়িয়ে ধরে থাকা যায়। এই গেটের মাথা টোপকে যখন ছেলেপেলেরা বাঁদরের মতো পালাত, তখন school field এর ওই প্রান্তের staff room থেকে গর্জন করে ছুটে আসতেন তিনি। এইসব মনে করতে করতে নিজের মনেই হেসে ফেলেন তিনি।

ঝোলা ভর্তি বাজার করে একই পথে ফেরার সময় জল তেষ্টা পাওয়ায় স্কুলের পাশে ছোট একটা পার্কে ঢুকলেন। থলেটা একটা বেঞ্চে রেখে আর মাছটা থলের পাশে আড়ালে রাখলেন। পার্কের হাতিকলটা প্রায় তিরিশ বছরের পুরোনো। আগে একা টিপে একা জল খেয়েছেন। তবে সেই জোর আর গায়ে নেই। কিন্তু কল টিপে দেওয়ার জন্য

কাউকে না পেয়ে বাধ্য হয়ে নিজেই চেষ্টা শুরু করলেন। হঠাৎ পেছন থেকে একটা হাত তার হাতের ওপর পড়লো। পেছনে তাকিয়ে দেখলেন এক অনূর্ধ,, তিরিশ যুবক। সে বলে উঠলো- দিন আমাকে দিন।

কলের হাতলটা ছেড়ে দিয়ে দু-হাতে নিয়ে জল খেলেন। তারপর পাঞ্জাবীর পকেট থেকে রুমালটা বের করে মুখ মুছতে মুছতে বললেন- ধন্যবাদ, তোমাকে আগে তো কখনো দেখিনি!

-- হ্যাঁ, আসলে আমি এখানে থাকি না। চলুন আপনাকে বাড়ি পর্যন্ত ছেড়ে আসি। পরিচয়টাও দেওয়া যাবে।

-- না, না তোমাকে আবার কাজ ছেড়ে---

-- আমার কোনো অসুবিধা নেই। আসলে আমার ওই রাস্তাতেই একটা কাজ আছে।

-- আচ্ছা, তো কোথায় থাকো?

-- আমার নাম সৌরভ দত্ত। থাকি পূর্ববাজার এলাকায়। তবে বর্তমানে পরিবারের কেউই এখানে থাকে না। উচ্চমাধ্যমিকটা দেওয়ার পর এই প্রথমবার দেশের বাড়ি এসেছি এবং একাই। পরীক্ষা শেষে কলকাতায় সিফট করেছিলাম। তখন থেকে ওখানেই।

-- তাহলে H.S. - টা আমাদের স্কুল থেকেই---

-- হ্যাঁ।

-- তবে তুমি নিশ্চয়ই চিনবে আমাকে। আর আমার বাড়িটাও তো চেনো দেখছি!

-- স্কুলের শেষ দিনটাও ক্লাসের সবচেয়ে ভয়ঙ্কর শিক্ষকের কাছে যে মার খেয়েছি তা তাঁর স্মৃতিকে মেটাতে পারে?

-- প্রদীপ দাদু হেসে উঠলেন--- তবে শিক্ষক জীবনটা ছেলে পিটিয়েই কাটালাম দেখছি। আমি---

-- যুবক বাকিটা বলতে না দিয়েই বলে উঠলো- মোটেও তা নয়। একজন শিক্ষক তার ছাত্রের মনে স্নেহের অনুভূতি না মেশাতে পারলে, তাঁর কোনো জ্ঞান বা কথা ছাত্রের মস্তিষ্কে জায়গা করতে পারে না।

দুজনেই কিছু মুহূর্ত কোনো কথা না বলেই হাঁটতে থাকলেন। তারপর হঠাৎ-এর সুরে প্রদীপ দাদু প্রশ্ন করলেন,- আরে তোমার পেশাটাই তো জানা হয়নি। মানে কী করো এখন?

-- আমি বর্তমানে সাংবাদিকতার সঙ্গে যুক্ত। তাছাড়া পার্ট টাইম ফোটোগ্রফি করি।

-- আচ্ছা। আমি চেষ্টা করেও তোমাকে মনে করতে পারছি না। তোমার ক্লাসের কোনো ছাত্রের নাম বললে হয়তো চিনতে পারি। স্মৃতি শক্তিটাও বেশ লোপ পেয়েছে তো।
__ চেনার কথা নয়। কারণ স্কুল জীবনটা পেছনের বেঞ্চেই কাটিয়েছি। আর প্রথম বেঞ্চের ছাত্রদের সাথে তেমন ভাবে ছিল না। তবে পেছন বেঞ্চ থেকেও আপনার ইংরেজির ক্লাসগুলো এখনও কাজে লাগে।

-- তোমার সাথে পরিচয় করে- (একটু হেসে) মানে পুণরায় পরিচয় করে খুব ভালো লাগলো। বর্তমান শিক্ষক-ছাত্র সম্পর্কের অবক্ষয়ে ---

-- অবক্ষয় কিন্তু ছাত্র সমাজের নয়, সমগ্র সমাজে। ছাত্ররা শুধুমাত্র মাটির পিন্ড। যাদের হাত পা গড়ে দেন তাদের প্রথম বাবা-মা। আর হাত-পা-মস্তিষ্কের সঠিক ব্যবহার শেখান দ্বিতীয় অর্থাৎ শিক্ষক-শিক্ষিকা। তাই সমস্ত অবক্ষয়ে প্রত্যেককে দায়ী করা যায় অথবা কাউকেই না।

-- ঠিকই বলেছো। আসলে সভ্য, অসভ্য দুটো মানুষের তৈরি শব্দ হলেও তাদের সঠিক ও নির্দিষ্ট অর্থ নির্ণয় মানুষের পক্ষে সম্ভব হয়নি।

-- তবুও সভ্যতার অগ্রগতি কিন্তু হচ্ছেই!

এরপর রাজনীতির গল্পে প্রবেশ করার আগেই তারা গন্তব্যে পৌঁছালেন। প্রদীপ দাদু এক কাপ চায়ের প্রস্তাব দিতেই যুবক মানা করে বললো—আজ নয়, আমি তো রোজই এই পথ দিয়ে আসবো।

প্রদীপ দাদু বাইরের বেড়ার দরজাটা বন্ধ করে যুবককে হাত নাড়িয়ে আরেকবার ধন্যবাদ জানাতে গেলেন। কিন্তু ফাঁকা পথে খুঁজে পেলেন না কাউকেই। পেছন থেকে চার পয়ে ম্যাউ-ম্যাউ ডাকে দৌড়ে এসে পায়ের সঙ্গে গা ঘষতে শুরু করেছে ইনু। পোষ্য

বেড়ালকে কোলে নিয়ে রোদের ছটায় কিছুতেই মনে করতে পারলেন না ক্ষণিক আগে দেখা যুবকটির চেহারা। তবে বেড়ালটিকে বুকের কাছে ধরে একটা আনন্দের ও তৃপ্তির নিশ্বাস ফেললেন। পেলেন অনেকটা বাঁচার খোরাক। আর কিছুটা শক্তি গাছতলায় পথ শিশুদের নিয়ে বসা বিনা বেতনের স্কুলটা চালানোর। তাই আগামী কালও বেড়িয়ে পড়বেন থলিটা নিয়ে, না জানি কোনো অচেনা ছাত্র এসে জাগিয়ে দিয়ে যাবে ঘুমিয়ে পড়া অনুভূতি গুলো।

CHHICHHORE

- Isha Basu, 6th Sem

Movie name - Chhichhore (2019)
Produced by : Sajid Nadiadwala
Director: Nitesh Tiwari
Awards: National Film Award for Best Feature Film in Hindi, Bandung
Film Festival for Imported Film
IMDB Rating : 8.3/10
Rotten Tomatoes : 58%

Movie Review -

Sushant Singh Rajput as Annirudh Pathak stands beside the bed in hospital and says to his son and quotes "Beta yeh tumhara result decide nahi karta ki tum loser ho ya nahi, tumhari kosis

 karti hai ". It is not only the dialogue which sounds inspiring. There are a bunch of good dialogues in Chhichhore. Chhichhore points out academic anxiety. Sometimes we promise gifts and it results in performance stress. Somewhere Chhichhore hits the main nerve of suicidal cases and sungs the bond of friendship.It also gives light moments to laugh. Annirudh (Sushant Singh Rajput) is divorced with his wife Maya(Shraddha Kapoor),but both are trying to manage their life for their son Raghav.They get deeply shocked.Then Annirudh decides to treat his son mentally.He narrates the failures and triumphs of his college life.His college life collects his friends Sexa (Varun Sharma),Acid (Naveen Polishetty),Derek (Tahir Raj Bhasin),Bevda (Saharsh Kumar), Mummy (Tushar Pandey) and his wife Maya. Nitesh Tiwari successfully created a 90s nostalgic feel through flashbacks. Infact 80% film runs in flashback and scenes of the present disturbs the flow. The hospital scenes are a bit stretched. The film starts with the glimpse of 3 Idiots suicide part then meets to Jo Jeeta Woh Hi Sikander or Student of the year like college among competition and romance.Yes,the resemblance in the story can not be intentionally,but what if audience compare this predictable screenplay. The best thing about it is its depiction of friendship. In one instance from the film, Anni's (Annirudh) friends come to the hospital to see his son on just one call. They not only came, but also stayed to normalize his critical condition. If we go with the title Chhichhore we will see some vulgar and double meaning jokes.Varun Sharma as Sexa is show topper with fantastic comic timing. Tahir Raj impressed me again after playing Shyam in Manto (2018). He played Derek with a serious dark face. Sharash Kumar as Bevada is too late to play a student. Kota factory fame Kundan Raj works as a surprise. Sushant is good with his charming face and still plays good cricket in films after Dhoni. Shraddha did better than Saaho. Here she holds a good role as a college girl plus mother. However ,two things are not convincing. First Shraddha's makeup does not insert her in a mother Role. She is too pretty. Second,the relationship between Sushant and his son seems very cool,but in next scene he commits suicide. Prateek Babbar played negative from some of his last releases. He clashes alone with Sushants group of friends and gives competition. Music movies are not promising at all. Even background music doesn't work for the audience to tell where the movie will go.

Well, Chhichhori is a book full of values,lessons of life and meaning of failure. It is high on many accounts. It's a family entertainer too. Youths can share popcorn with their parents.

Readers-stop

CHANDER PAHAR

-Isha Basu, 6th Sem

Novel by -- BIBHUTIBHUSHAN BANDHYOPADHYAY

The novel tells the story about an ordinary young Bengali man, Shankar Ray Choudhary, who adventures in Africa in the year 1909 and 1910. After graduating from college at 20 years old, his family's financial struggles almost force him to take a job in a jute mill in Shyamnagar- a prospective he absolutely loathes. By a stroke of love, he gets a job as a clerk at Uganda railway and rushes to Africa without a second thought. After a few months laying rail tracks, he encounters the first of many dangers in pre-World War 1 Africa: a man eating a lion. where he narrowly escapes a deadly Black Mamba. While at this post, Shankar encounters, rescues and nurses Diego Alvarez, a middle-age Portuguese explorer and gold/diamond prospector. Alvarez's arrival becomes a turning point in Shankar's life. While recovering, Alvarez describes his exploits in Africa with his friend Jim Carter. He explains that, lured by the prospect of a priceless yellow diamond from a Kaafi village chief, Alvarez and Carter searched for these yellow diamond caves, on the Mountain of the Moon (Chander Pahar) in the Richtersveld. Shankar, inspired by Alvarez's exploits, resigns from his job and accompanies Alvarez to venture again for the mines.

They meet hardships, like a racist gambler, legends about Dingonek the monster and later, a raging volcano. Eventually, they get lost in the forests where Alvarez is killed by the Bunyip. Demoralized, Shankar tries to return to civilization. He finds Bunyip's cave and the diamond mines by accident. Almost getting lost, he finds the remains of the

Italian explorer, Attilio Gatti, and learns that the cave is in fact the diamond mine. Leaving, he becomes lost in the deserts of kalahari and nearly dies of thirst. Fortunately, he is rescued by a survey team and taken to a hospital in Salisbury, Rhodesia, from where he sets sail for home. Before going back, he writes his account in a newspaper, earning him money. He names the volcano after Alvarez. He ends the book saying that he will return to the cave one day with a large team, and continue the legacy of Alvarez, Carter, and Gatti. The CHANDER PAHAR, ever so quaint and gripping, would be better remembered and endeared by readers (the assumption here is that they are Bengali) who encountered it in their childhood, perhaps buried away in the adventure section of their dusty school library. Still, the adventures of Shankar who, armed with erroneous maps and supplies of baboon ham and coffee, seeks to make his mark in an untamed land make for an interesting read.

THE SELFISH GIANT

-Isha Basu, 6th Sem

Short story by OSCAR WILDE
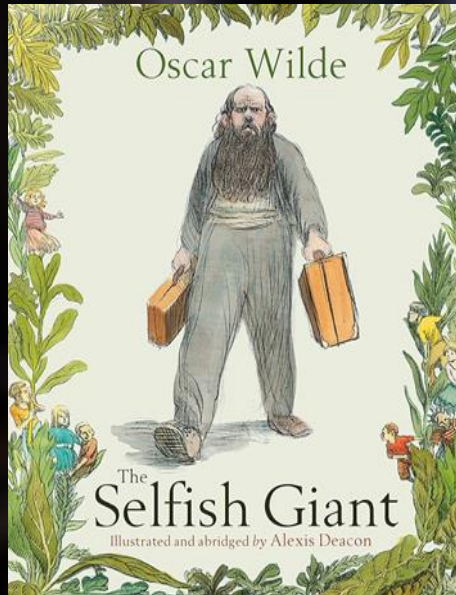
One day after seven years the giant came back. He was staying with his friend, the Cornish Ogre. The children were scared to see him. He saw the children playing and said that he would not allow anyone to play here as it was his own garden. He built a wall around it and also put a notice board. The notice board displayed a warning on it, 'Trespassers will be prosecuted'.The children became sad as they had no other place to play. They would wander around the high walls of the garden and remember the beautiful garden inside them. The spring season came and there were blossoms and little birds all around. But it was winter in the giant's garden and there was frost and snow. In the absence of children birds also did not sing. Once a flower bloomed out of the grass but after seeing the notice board, it also went back to sleep. Then came the North Wind and the hailstorm. Due to the giant's selfishness, autumn's golden fruits also did not come to his garden. Then one morning, the giant heard sweet and lovely music. It was a linnet singing outside his window. The hail and the North Wind stopped and he could feel the spring. He saw that the children came into his garden through a little hole. The children were sitting on the branches of trees and the trees were blooming. He also saw the birds flying and heard them chirping.

The flowers had also come up. But, to his surprise, in one corner there was still winter. He saw that there a young boy was standing and he was not able to reach the branches of trees. The tree lowered its branches but still, he could not climb. At this scene, his heart melted. He realized that he was really very selfish. He decided to put that boy on the top of the tree, pull down the walls, and allow children to play here forever. But

when the children saw him, they ran away and the garden became winter again. However, that little boy did not run as he was weeping. The giant put him on the top of the tree and the tree blossomed at once. He kissed the giant. The other children, realizing that the giant is not wicked, came back. The spring came back with them. The giant used to play with the children every afternoon but that little boy was nowhere to be seen. As the years went by, he grew very weak. One winter morning, he saw a lovely tree with white blossoms in a corner. The branches of the tree were golden and the little boy stood under it. The boy was wounded which made the giant very angry. He told the boy that he will slay the man who has harmed him. The boy told him that these were the wounds of love. The boy smiled and asked the giant to come to his garden. Later, the children found the giant dead under the tree covered with white blossoms.

Echoes from the Alumni

Routers Buying Guide

- Anik Ghosh, Alumni Batch 2019-2022

Hello everyone, in today's generation, the internet plays a vital role. Majority of us use mobile data nowadays for the internet, but with increase in data rates, inconsistency in the data speeds of different operators in different regions are causing a big disparity. With increasing need of data, we end up spending more money in the long run. Due to these reasons many of us consider getting a Wi-Fi connection, or more precisely a broadband connection. For this we need a router, but all internet users are not technically aware of the needy features, rather they go for the hypes instead. I have been using broadband since 2014, previously I used a D-Link 150 Mbps Single band router to TP link archer ax50. Not all technologies in a router are worth your money. So be the judge of your decision (Although YouTube is always there for us, but paid promotions ruin this).

Important aspects (you need to know) –

Note – Before Taking a Router, the input port name needs to be confirmed. PON Port and Active Ethernet. PON is the middle ground solution. Like active Ethernet, PON uses fiber to deliver services. It provides higher speed than DSL, but lower speed than active Ethernet. A key advantage is that PON does not require any powered equipment outside of the central office.

1. How Many Antennas Do We Need ? – It basically depends on how much range you need from the router. A router with at least two antennas is good for a small area coverage. You can also choose routers with three or more antennas for better coverage. But if you live in an area where many Wi-Fi networks exist then you need more than just a bunch of antennas, you will need a dual or triple band router for that. Some Routers also have internal

antennas.

2. How Many Bands Do You Need ? –Wi-Fi 5 (AC) and Wi-Fi 6 (AX) routers are generally either dual-band or tri-band. Dual-band means they work on the 2.4GHz and 5GHz bands, tri-band means they have 2.4GHz and can simultaneously do channels in the lower and upper part of the 5GHz range. The 2.4 GHz will have comparatively more range than the other two. But since most routers use 2.4 GHz band, in congested wi-fi zones 2.4 GHz signals will overlap and cause consistent performance in the signal. So, buying a Dual Band Router makes sense for them. Although the need for a triple band router is very less in 2022, it is found generally in premium gaming routers.

3. Gigabit Support – Due to increase in bandwidths, a router with a gigabit port makes more sense.

4. Devices Connected – in most Indian homes connecting up to 15 devices is enough, but for more device support and also low latency OFDMA Technology based routers are recommended. Example – TP LINK ARCHER AX76, etc.

5. Internet Security – Some routers have built in security like Parental control, malicious content filter, intrusion prevention system, infected device quarantine, etc. these options can be accessed from the router's login portal and also from Different platform apps (Tether Android App for TP LINK Routers).

6. Wi-Fi Version – WIFI routers with WIFI 6 are faster, have more capacity, lower latency and improved security.

7. Expected Max Wireless Throughput – It is the max speed a router can give to a wireless device, mostly it is mentioned in the name. example – "TP-Link Archer AC1200 Archer C6 Wi-Fi Speed Up to 867 Mbps/5 GHz + 300 Mbps/2.4 GHz, 5 Gigabit Ports, 4 External Antennas, MU-MIMO, Dual Band, Wi-Fi Coverage with Access Point Mode,

Wireless Router", here the Max speed in 2.4 GHz Band is 300 Mbps And 5GHz in 867 Mbps.

8. Heating – Most Routers Are Able to Dissipate heat properly to reduce the risk of overheating, but some routers fail to do so, so more care needs to be taken to those routers.

9. Some More Key points –

USB Port - Router with USB ports can be used to share files over the network.

MU-MIMO - Multi-user, multiple-input, multiple-output technology (Next-Gen AC or AC Wave 2). Wi-Fi router to communicate with multiple devices simultaneously and reduces the time each device has to wait and thus increases the speed considerably.

Processor – Wi-Fi routers can have intel, QUALCOMM etc based processors for supporting a vast number of features.

WPA3 Encryption Security – It is more advanced than the current security solution.

Smart Plug – To save the router from sudden voltage surge it is needed. These smart plugs are different from the ones that are operated by voice assistants.

Mini Router UPS – This gadget can help from sudden power cuts in case the broadband connection is online during the power cuts in the connection area.

Stroll through Astro-Computation

- Priyam Halder, Alumni Batch: 2019-2022

In 1969, the NASA Apollo Project that took humanity to the moon required a bulk of codes which when stacked in handwritten format took the full standing height of Margaret Hamilton, lead software engineer of the project. Quite interestingly so many lines of code were made to run on the Apollo Guidance Computer which had a RAM of just 4KB! In an era when each one of us have a 4 or 6 GB RAM android device levitated at our phalanges, it is inconceivable to wonder the potential of a 4KB fully hand-threaded onboard RAM. At that time even a single bit of unused memory seemed luxurious. The NASA officials didn't demand for a high-resolution graphics that a teenager of these days' lays claim to. What they craved for is smooth control and landing of the spacecraft. And bingo! They were successful.
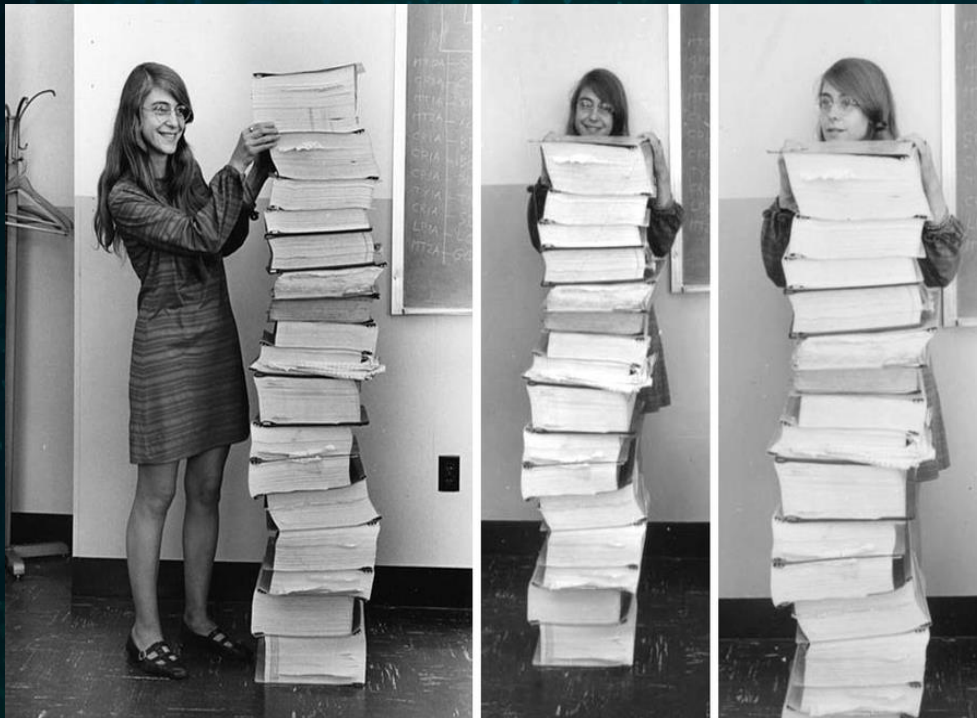

Fig. 1- Computer scientist Margaret Hamilton poses with the Apollo guidance software she and her team developed at MIT [Source: MIT]

The tools of astronomy have changed drastically over the past few decades, and our picture of the universe has changed with them. Gone are the days of photographic plates

that recorded the sky snapshot by painstaking snapshot. Today, more than a dozen observatories on Earth and in space let researchers eyeball vast swaths of the universe in multiple wavelengths, from radio waves to gamma rays. And yes that takes baffling torrents of data! A major paradigm shift in Astronomy Imaging was brought by the invention of Charged Couple Device(CCD), by William S. Boyle and George E. Smith in 1974, which have almost 80% Quantum Efficiency and have a dynamic range. After a couple of years, Color Filter Array(CFA) with filter pattern: 50% Green, 25% Red and 25% Blue, invented by Eastman Kodak, unbolted a wide arena of Digital data recording. This went on mounting with the advent of FITS(Flexible Image Transport System) file format which includes provisions such as describing photometric and spatial calibration of information together with image origin metadata. It soon gained popularity for storing non-image data such as spectra, photon lists, data cubes and structured data.

The Sloan Digital Sky Survey(SDSS), originally started 2000 onwards, heralded the modern age of big-picture astronomy. It has created the most detailed three-dimensional maps of the Universe ever made, with deep multi-color images of one third of the sky, and spectra for more than three million astronomical objects- a trillion-pixel set of paired portraits that covers one-third of the night sky. Voila! Smelt the aroma of graphics. Surely this is a deep integration of computer graphics into the field of astronomy. This goes even further with SDSS-V, the pioneering panoptic program that began in 2020 and is usually termed as the "mapper" since all it includes are Milky Way Mapper, a multi-object spectroscopic survey to obtain near-infrared and/or optical spectra of more than 4 million stars throughout the Milky Way and Local Group, Local Volume Mapper, an optical, integral-field spectroscopic survey that will target the Milky Way, Small and Large Magellanic Clouds, and other Local Volume galaxies and notably Black Hole Mapper, a multi-object spectroscopic survey that emphasizes optical spectra for more than 300,000 quasars(quasi-stellar radio source- a rapidly rotating neutron star). Certainly, these are huge chunks of data, formally known as Big Data, which ought to be stored and handled in the proper sense for efficient analysis and interpretation. Although Machine learning algorithms can help to analyze data and in certain cases they have really proved to be useful, AI is yet to surpass human intelligence. Hence a part of the data collected by the gigantic ground based or space telescopes are released for the public. Independently working researchers have discovered shreds of small galaxies that were cannibalized by the Milky Way using the public archive. Data mining and other tools of informatics have been particularly helpful in extracting useful information from basic brightness measurements. In this context, machine learning in particular is concerned with generative & discriminative modeling of data and has given interesting results to investigators. Generative modeling deals with top-down interpretation of the dataset and proposes an adjustment over the model parameters to fit the observed data. For instance, the Gaussian Mixture Model, a multi-dimensional Gaussian probability

distribution based on iterative unsupervised learning estimates θ= {μ , ∑ c } that the likelihood of the data p(x|c, θ). On the other hand, discriminative modeling is a bottom-up approach that fits the decision surface directly and suggests modeling based upon class prediction. Discriminative modeling being a supervised technique evaluates faster. Such modeling techniques led to better understanding of Galaxy morphology classification. Even discovery of Exoplanets require computer vision & graphics, machine learning algorithms for noise reduction, analysis through Probabilistic Principal Components Analysis (PCA) and light curve transit generation. The Kepler planets were discovered following a similar fashion. Now, in the field of Exoplanet discovery we have moved to the Transiting Exoplanet Survey Satellite(TESS) which laid the milestone for the discovery of Hot Jupiter's, Cold Gas Giants, Ocean Worlds & Ice Giants, Lava Worlds, Rocky planets and frontiers. By now, we have discovered more than 4500 Exoplanets, among which some are Mini Terran (Mercury-size), Subterranean(Mars-size), Superterran(Super-Earths and Mini Neptune's), Neptunian's(Neptune-size) and Jovian(Jupiter-size). Neptunian and Jovian are Giant types while others are Terrestrial types.
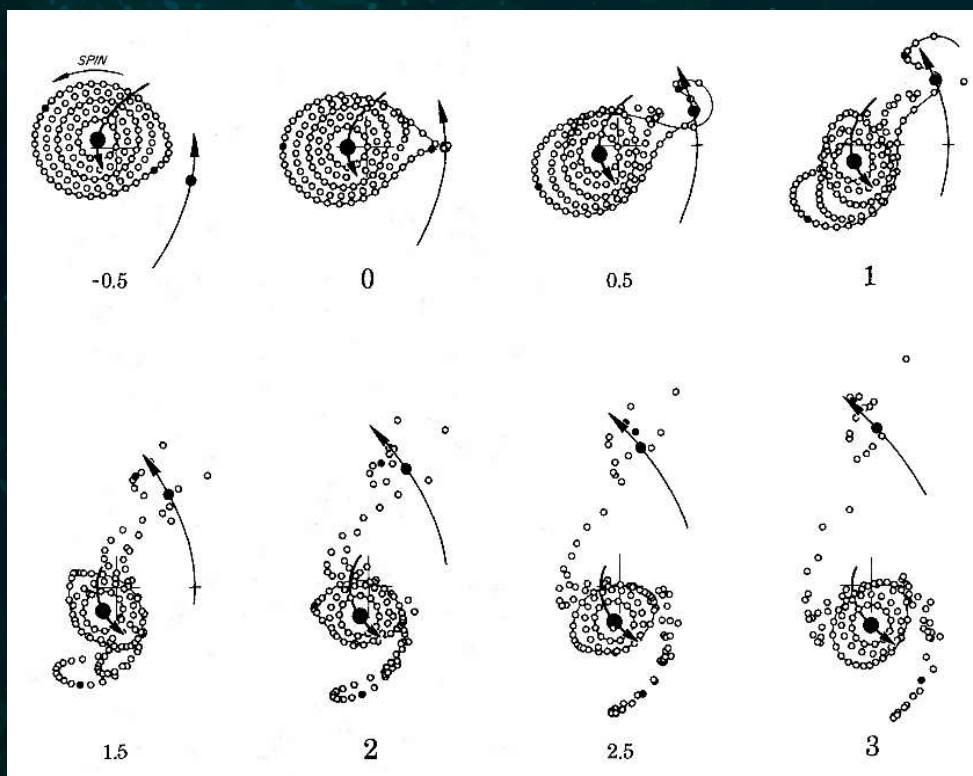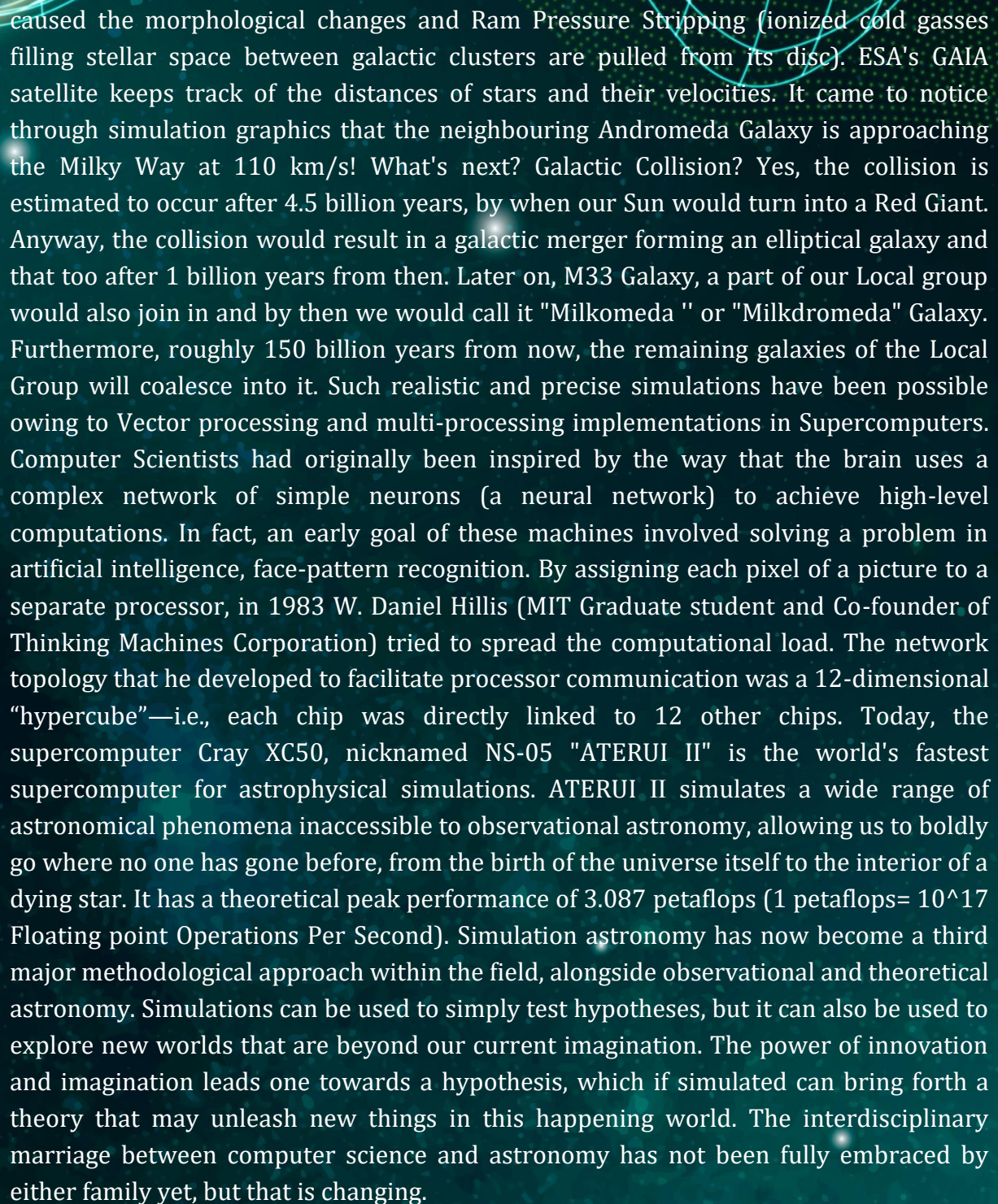
Fig. 2- Toomre & Toomre (1972), showing the formation of a tidal arm as a result between a galaxy-galaxy interaction.

Computer Simulations have played a significant role in understanding cosmology, galaxy formation and environmental processes. Between 1970 and 1979, Toomre & Toomre were the first to create computer simulations of Galaxy Mergers, using N-body programs. It became vivid to astronomers how the different environmental processes

caused the morphological changes and Ram Pressure Stripping (ionized cold gasses filling stellar space between galactic clusters are pulled from its disc). ESA's GAIA satellite keeps track of the distances of stars and their velocities. It came to notice through simulation graphics that the neighbouring Andromeda Galaxy is approaching the Milky Way at 110 km/s! What's next? Galactic Collision? Yes, the collision is estimated to occur after 4.5 billion years, by when our Sun would turn into a Red Giant. Anyway, the collision would result in a galactic merger forming an elliptical galaxy and that too after 1 billion years from then. Later on, M33 Galaxy, a part of our Local group would also join in and by then we would call it "Milkomeda '' or "Milkdromeda" Galaxy. Furthermore, roughly 150 billion years from now, the remaining galaxies of the Local Group will coalesce into it. Such realistic and precise simulations have been possible owing to Vector processing and multi-processing implementations in Supercomputers. Computer Scientists had originally been inspired by the way that the brain uses a complex network of simple neurons (a neural network) to achieve high-level computations. In fact, an early goal of these machines involved solving a problem in artificial intelligence, face-pattern recognition. By assigning each pixel of a picture to a separate processor, in 1983 W. Daniel Hillis (MIT Graduate student and Co-founder of Thinking Machines Corporation) tried to spread the computational load. The network topology that he developed to facilitate processor communication was a 12-dimensional "hypercube"—i.e., each chip was directly linked to 12 other chips. Today, the supercomputer Cray XC50, nicknamed NS-05 "ATERUI II" is the world's fastest supercomputer for astrophysical simulations. ATERUI II simulates a wide range of astronomical phenomena inaccessible to observational astronomy, allowing us to boldly go where no one has gone before, from the birth of the universe itself to the interior of a dying star. It has a theoretical peak performance of 3.087 petaflops (1 petaflops= 10^{17} Floating point Operations Per Second). Simulation astronomy has now become a third major methodological approach within the field, alongside observational and theoretical astronomy. Simulations can be used to simply test hypotheses, but it can also be used to explore new worlds that are beyond our current imagination. The power of innovation and imagination leads one towards a hypothesis, which if simulated can bring forth a theory that may unleash new things in this happening world. The interdisciplinary marriage between computer science and astronomy has not been fully embraced by either family yet, but that is changing.

Computer Scientist and theoretical physicist, Prof. Edger W. Dijkstra once aptly said,

"Computer science is no more about computers than astronomy is about telescopes."

METAVERSE: A WORLD OF AVATARS

- Subhojit Singha, Alumni Batch: 2020-2023

Imagine walking down the street. Suddenly, you think of a product you need. Immediately next to you, a virtual store appears, filled with different products and variations. You stop, take a virtual 3D tour of the store and pick an item, complete the purchasing process and it's shipped to your house, and you continue on your way.

Exciting, right?

Welcome to Metaverse. Currently, we can only experience the internet when we go to it, but with new connectivity, devices, and technologies, we'll be able to experience it all

around every single minute. METAVERSE is a technology which merges physical and virtual worlds and gives an immersive digital alternative to the physical world. The term "Metaverse" is no more just a literary text, first referenced in 1992 in a sci-fi novel by Neil Stephenson, it has become a limitless tech reality. Last year Facebook rebranded itself as Meta Platforms Inc.. Metaverse is a shared virtual space where people are represented by virtual avatars and they come together to work, pursue hobbies, shop, or otherwise gather to engage in online communities and explore the digital space. In the metaverse, we will be able to do almost anything we can imagine with completely new experiences

that don't really fit how we think about computers or phones today. As the metaverse grows, it will create online spaces where user interactions are more multidimensional than current technology supports. In the metaverse, people won't be individually wandering around. They will have friendships, relationships who will affect their decisions. The pandemic too has shifted culture online. Family reunions on Zoom, virtually trying clothes, business meetings, playing games together with friends, online classes and exams have all become common practices. With online social gatherings becoming more mainstream and online video games increasing their world-building, Metaverse will be a great boost to that. Technology like Augmented reality exists, with mobile games like Pokémon Go, but players cannot affect the digital world with a physical object. Virtual reality headsets, like Meta's Oculus, immerse users into a fully virtual world where they can interact with the environment. But the metaverse will add another dimension to it. With the introduction of Meta's Horizon Workrooms or Microsoft's Mesh the future of work will no longer remain the same. They are designed to empower work in a virtual world. Meetings will move to the metaverse and workers will increasingly rely on using VR headsets and avatars at work. At its heart the idea is to create a greater sense of virtual presence such that the experience of interacting online becomes much closer to the experience of interacting in person. This is going to be a big part of the next chapter for the way the internet has evolved since the mobile internet. The media and entertainment sector will no longer be considered separate entities. put on your AR-VR headsets and you can attend virtual concerts, visit virtual theme parks just as you do in the real world. In recent months, Snoop Dogg, Justin Bieber, Imagine Dragons, BTS, and a number of other artists have already held virtual concerts. Few days ago, Tata Tea Premium hosted a Holi party on the metaverse, in a manner which was never done before. A new era for commerce may dawn. Brands will set up virtual shops in the metaverse in the future, where buyers will be able to take a 3D virtual tour and try out various products before making a purchase. The purchasing process will be very similar to what we currently encounter in supermarkets, except that it will take place online entirely. The products will be delivered to your home once the purchase has been made. Companies like Nike have filed trademarks for virtual gear, shoes and accessories, and luxury labels Gucci, Balenciaga and Luis Vuitton are beginning to sell e-clothes and e-bags. Meta-malls are starting to pop up, allowing you to shop in VR stores and stock up on outfits for your avatar.

Metaverse takes gaming to a whole new level, making the virtual world feel incredibly real to users. It will give an immersive experience for users and allow them to earn rewards for gaming. The platform Sandbox is a virtual ecosystem where players can build, own, and monetize their gaming skills in the Ethereum blockchain via SAND, the platform's utility token. Users will use these tokens

to buy outfits, weapons, plot of land and accessories for their avatars. These platforms use cryptocurrencies and NFTs to ensure that users have complete control of their assets, and this provides users and gamers with multiple interoperable virtual platforms. Companies like Decentraland,

Sandbox, Epic Games, already have some elements of metaverse, now they are investing heavily and pushing boundaries on capitalizing on that. Recently Microsoft acquired Activision Blizzard for a whopping amount of $69 billion. Investments in the metaverse real estate market will be more exciting. Imagine if you came to a mega city like Mumbai, Bangalore, or New York, when it was farmland, and you had the option to get land there. Digital worlds like Decentraland and Sandbox allow users to buy virtual land in their metaverse and develop them and rent out. Transactions for properties in the alternate universe have skyrocketed. One such developer has spent $4.3 million on a property they acquired from gaming company Atari.

Metaverse projects are blooming and companies are betting on them being the next big thing. When the web first emerged, especially Web 2.0, we saw a sea change around us. The metaverse will usher in the next stage of evolution in the web ecosystem. But the metaverse is still in its early stages and developing an immersive metaverse ecosystem will require highly skilled and experienced individuals and several technological advancements. Privacy of the users will also be a challenge in digitalisation of our physical self. But every adversity brings with it an equivalent advantage. From NFTs to real estate, investment opportunities are endless in Web 3.0. It will open up doors that have never been heard of or imagined before. Online gaming will bring a lot of opportunities and the experience of meeting people will no longer be the same as before. Our digital avatars will meet our physical self in the metaverse. GET READY TO MEET YOUR VIRTUAL TWIN.

Artificial Intelligence

-Ivy Kumbhakar, Alumni Batch 2020-2023

AI which stands for artificial intelligence refers to systems or machines that mimic human intelligence to perform tasks and can iteratively improve themselves based on the information they collect. A computer scientist, John McCarthy offers the following definition: " It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence, but AI does not have to confine itself to methods that are biologically observable."

HOW DOES ARTIFICIAL INTELLIGENCE WORKS:

An artificially intelligent computer system makes predictions or takes actions based on patterns in existing data and can then learn from its errors to increase its accuracy. A mature AI processes new information extremely quickly and accurately, which makes it useful for complex scenarios such as self-driving cars, image recognition programs and virtual assistants.

TYPES OF ARTIFICIAL INTELLIGENCE:

Artificial intelligence can be structured along three evolutionary stages. We have artificial narrow intelligence, artificial general intelligence and artificial super intelligence. Artificial narrow intelligence which is also known as weak AI involves applying artificial intelligence only to specific tasks. Now many currently existing systems that claim to use artificial intelligence are operating as a weak AI focused on a narrowly defined specific problem. Examples of weak AI include smart assistance (like Alexa, Siri and google assistant), the face verification that you see on your Phone, the autopilot feature in Tesla cars, the social humanoid "Sophia", Google maps etc.

Artificial general intelligence is also known as strong AI. The AGI system can perform any task that a human can. However, AGI systems can perform the task with greater efficiency than humans only for a particular/single function assigned to them, while they have zero capability to do any task which is not assigned to them. There are many experts who doubt that AGI will ever be possible and there are also many questions as to whether it should be desirable.

Artificial super intelligence is a term referring to the time when the capability of computers will surpass humans. Societies have not yet reached the point of artificial

superintelligence. Engineers and scientists are still trying to reach a point that would be considered full artificial intelligence, where a computer could be said to have the same cognitive capacity as a human. It is presently seen as a hypothetical situation as depicted in movies and science-fiction books.

REAL LIFE APPLICATION :

Some real life application of artificial intelligence is –

➢ Personalized online shopping, the latest artificial intelligence applications use AI-powered algorithms to curate the list of buying recommendations and filtrations for the users.

➢ Cameras and apps use AI for applying different effects on images, refining their quality.

➢ Google's AI eye doctor is another AI system which can examine retina scans and identify a condition called diabetic retinopathy which causes blindness.

➢ Tesla's "autopilot" feature.

➢ Personalized advertisement on Facebook and YouTube.

ADVANTAGES OF ARTIFICIAL INTELLIGENCE:

➢ One of the biggest advantages of Artificial Intelligence is that it can significantly reduce errors and increase accuracy and precision. The decisions taken by AI in every step is decided by information previously gathered and a certain set of algorithms.
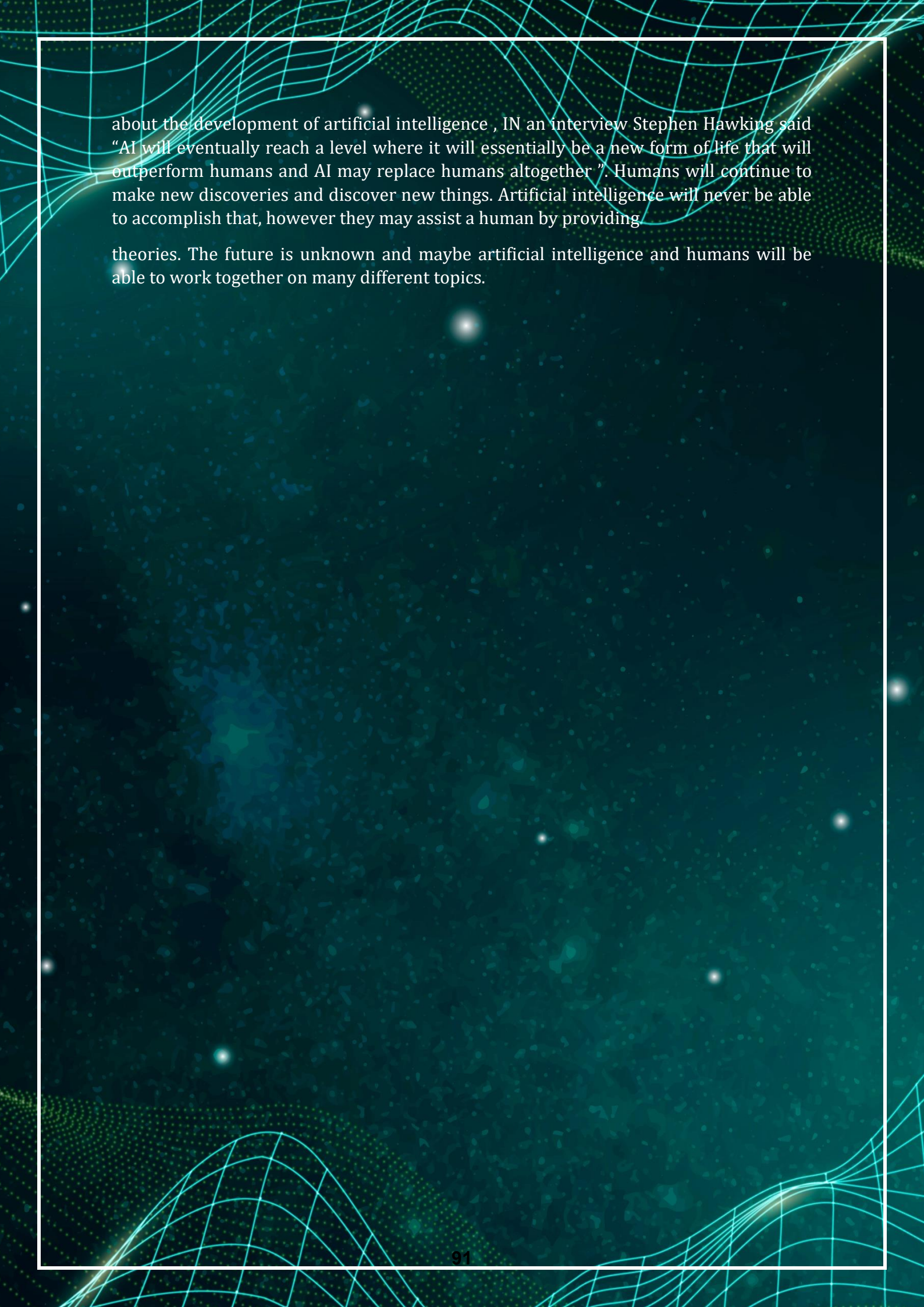
➤ AI is that humans can overcome many risks by letting AI robots do them for us. Whether it be defusing a bomb, going to space, exploring the deepest parts of oceans, machines with metal bodies are resistant in nature and can survive unfriendly atmospheres.

➤ Using artificial intelligence and other technologies can help make machines that can make data-driven decisions much faster than humans.

➤ Almost all the big organizations these days use digital assistants to interact with their customers which significantly minimizes the need for human resources.

➤ Machines can be programmed to work for long hours and can able to perform the job continuously without getting bored or distracted or even tired.

DISADVANTAGES OF ARTIFICIAL INTELLIGENCE :

➤ AI can be a threat for a human, for example Facebook AI research team shuts off an AI experiment after two robots begin speaking on their own language , only they can understood. The chatbots Alice and Bob developed their own language to communicate with each other and to hide their conversation from the watching scientists.

➤ A big disadvantage of AI is that it cannot learn to think outside the box. AI is capable of learning over time with pre-fed data and past experiences, but cannot be creative in its approach.

➤ It requires plenty of time and resources and can cost a huge deal of money. AI also needs to operate on the latest hardware and software to stay updated and meet the latest requirements, thus making it quite costly.

➤ AI is slowly replacing a number of repetitive tasks with bots. The reduction in the need for human interference has resulted in the death of many job opportunities.

➤ AI applications automate the majority of tedious and repetitive tasks. Since we do not have to memorize things or solve puzzles to get the job done, we tend to use our brains less and less. This addiction to AI can cause problems to future generations.

CONCLUSION :

In conclusion, artificial intelligence will become more valuable to humans than its capabilities. It will become a part of our daily lives. Some worry about the development of this new technology where a robot can learn and develop skills on its own. Artificial intelligence will continue to develop because of humans. Many famous persons warn

about the development of artificial intelligence , IN an interview Stephen Hawking said "AI will eventually reach a level where it will essentially be a new form of life that will outperform humans and AI may replace humans altogether ". Humans will continue to make new discoveries and discover new things. Artificial intelligence will never be able to accomplish that, however they may assist a human by providing

theories. The future is unknown and maybe artificial intelligence and humans will be able to work together on many different topics.

Role of Technology in the Era of COVID-19 Pandemic

- Abdul Swief, Alumni Batch 2020-2023

Technology will not be able to avoid the onset of a pandemic; nevertheless, it can assist in managing a crisis more effectively. We all know how badly COVID-19 has impacted our lives, both personal and professional. During this time of sheer uncertainty and constant fear, our willingness to adopt technology has been our lifeline. Let's take a look at how technology has impacted our lives in the current COVID-19 pandemic.

Distance Learning

According to a recent survey, around 191 countries have either implemented or announced the closure of schools and universities, which has directly impacted close to 1.57 billion students. Most of the educational institutions have started to offer their courses online to make sure education is not disrupted due to the pandemic. Technologies used in distant learning include augmented reality, 3D printing, virtual reality, and robot teachers enabled with artificial intelligence.

Online Entertainment

COVID-19 has completely transitioned how content is being generated, distributed, and streamed. Online streaming of live shows and concerts have gained traction across the world. Several film production companies have also been releasing their movies via Over The Top (OTT) platforms such as Amazon Prime Video, Hotstar, Netflix, Zee5, Voot Select, etc. OTT caters to varied interests of people across the globe with the perennial additions of diverse content. The lockdown has helped people in realizing the ease of viewing content on OTT platforms; it has changed how people are consuming content on a day-to-day basis. OTT platforms have witnessed a significant rise in both app downloads and viewership during the lockdown period. Many gaming platforms have witnessed substantial growth in their user base. There has been a significant spike in the gaming sector's sales and the duration for which the games are being played. People are using gaming as an option to deal with COVID-19 stress.

Contact Tracing Applications

Contact tracing apps like Aarogya Setu have assisted in tracking the COVID-19 spread. Technology has also helped in educating people about the entire situation and reminding them to take the necessary precautions. Telecom operators such as BSNL, Jio, Airtel, etc. have used caller tunes for spreading awareness about the pandemic. Facial

recognition technology has helped in identifying people accurately even when they are wearing a mask. Technology has also helped in monitoring the movement of quarantined people. CCTV cameras which are enabled with facial recognition features have helped in identifying infected individuals who do not follow the rules and step out of their homes despite being quarantined.

Stock Market

The adoption of technology in the stock market industry has been quite good for brokerage firms. Several brokerage companies have seen a spike in the number of clients since more investors have decided to tap the stock market. Due to the pandemic, clients are mostly staying indoors and are getting more free time to access the market situation, thereby also leading to an increase in trading volumes.

Contactless Online Deliveries

The online grocery market witnessed tremendous growth during the pandemic due to the soaring demand amongst consumers. Families, particularly with children and older people, preferred to place their grocery orders online. This, in turn, resulted in a significant increase of new users who are resorting to online apps for grocery deliveries. The provision to choose a preferred time slot for delivery plus a reduced delivery fee for orders above a specified amount is attracting more and more customers towards online delivery business models.

Robotics

COVID-19 has made us realize how meaningful human interactions are for making things work. The pandemic has severely impacted labour-intensive sectors such as food, retail, logistics, and

manufacturing businesses. COVID-19 has resulted in a strong push to implement the usage of robots and also to speed up robotics research. Robots are now being used to clean infected areas and for delivering food to quarantined individuals. The count of COVID-19 cases is increasing rapidly, and the number of patients who need medical attention is putting extraordinary pressure on healthcare professionals across the world. In a few countries, remote-controlled robots are being used for helping medical professionals to conduct critical tasks such as mouth swab collection for conducting the virus detection test, for conducting ultrasound scans, etc. Drones are being used for food deliveries, tracking population, transporting test kits, spraying disinfectant, and for delivering medicines to quarantine areas, etc.

Dissemination of Information

Companies such as Google, Facebook, are striving hard to ensure people get only accurate and verified information. Their objective is to make accurate information accessible to everyone so that there is complete transparency of the entire scenario, and people can be educated about the required steps to undertake well in advance. False information around the number of COVID-19 cases, vaccines, diagnosis and treatment options, medicines, government measures, etc., can create more panic among the population. The anxiety of people could result in widespread chaos, hoarding of essential items, panic buying, increased rates, conspiracy theories, etc.

Fitness & Health Apps

New alternatives are being introduced by health and fitness apps to help people remain fit at the comfort of staying indoors due to the pandemic situation. Several fitness and health brands have started conducting live workout sessions on their apps and social media platforms. These initiatives have also seen decent traction.

Technology-Based Temperature Monitoring

Infrared and wireless thermometers have now become the most commonly used medical equipment at toll gates, entry and exit gates of offices, airports, shopping malls, hotels, railway stations, shops, hospitals, and other public places. These temperature monitoring technologies have assisted in measuring the body temperature of individuals from a distance; these temperature measuring devices have also been useful in identifying the individuals who might need further investigation.

Work From Home (WFH)

The work from home option has ensured business continuity for various companies and businesses. Internet, data privacy security, virtual meetings, cloud conferencing, etc. have assisted professionals in adapting themselves to work from the home scenario with ease. WFH has also ensured that the deliverables are not delayed. Remote working has been a blessing in disguise, which has helped us to a great extent to maintain and follow social distancing protocols.

A Final Note

COVID-19 has proved that technology innovations have been helping in managing the epidemic in a timely, systematic, and calm manner. A lesson learnt from the COVID-19 pandemic has been to stay prepared well in advance against any crisis at both an individual and collective level. All we need to fight an epidemic like COVID-19 is preparedness. Advancement in technology is steadily progressing, it will undoubtedly continue to grow exponentially. It's we humans who have to adapt to changes in technology faster and continue to invest in building the technology systems for better preparedness.

RASPBERRY PI: A SMALL COST EFFECTIVE AND EFFICIENT FORM FACTOR COMPUTER

- SK Firoj, Alumni Batch 2020-2023

The foundation seed for development for Raspberry Pi journey started in 2006, when researchers named: Eben Upton, Rob Mullins, Jack Lang and Alan Mycroft at University of Cambridge's Computer Laboratory became stunned to see the decline in the skill level of A Level students and students applying for computer science. The main idea behind their stepping stone development was to give kids a tiny and affordable computer in the period where computers were expensive and programming practice among kids was not supported by parents of children in the U.K. The team lead by Eben Upton developed several versions of working prototypes from 2006 to 2008 and the final released version was named as "RASPBERRY Pi".

The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. We mainly use it for educational purposes. The Raspberry Pi operates in the open-source ecosystem: it runs Linux (a variety of distributions), and its main supported operating system, Raspbian, is open source and runs a suite of open-source software.

Components of Raspberry Pi computer: Raspberry Pi comprise of following components

1. Micro-USB Power Supply: Raspberry Pi requires 5 volts power supply USB 2.0 standard. The power port on the PCB of Raspberry Pi has a Micro-USB type B interface, so a Pi compatible power supply uses standard USB A connector on one side and MicroUSB B connector on other side.
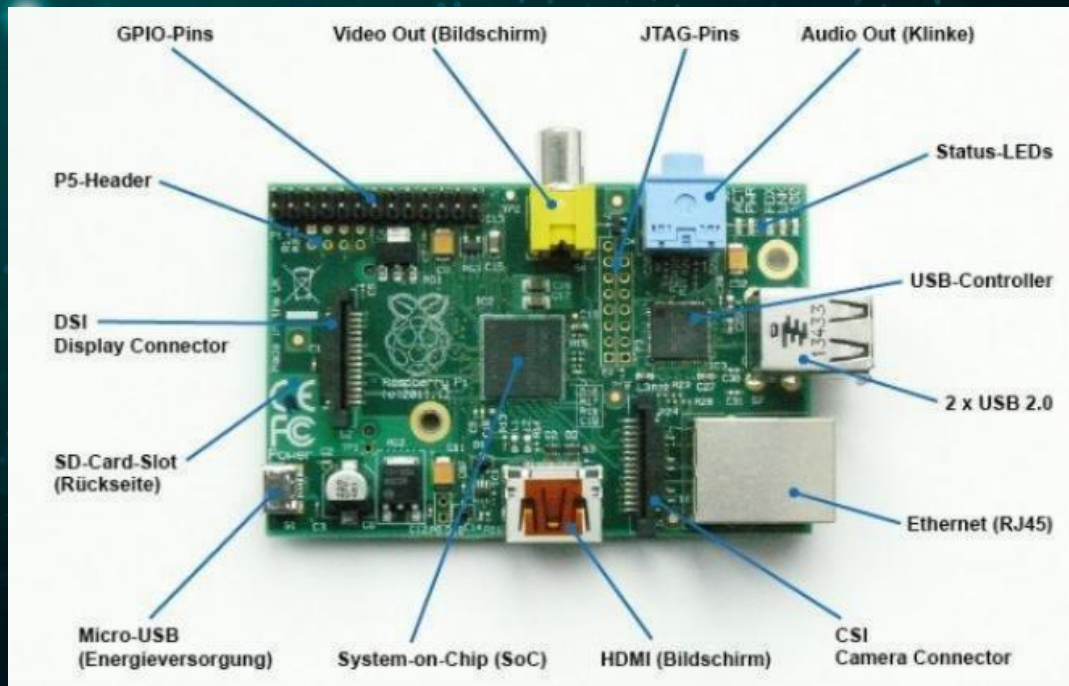
2. SD Card Slot: Secure Digital Card slot (SD Card) slot is a solid-state removable storage device which is required to run operating systems on Raspberry Pi as Raspberry Pi doesn't have any onboard memory and data storage functionality.

3. USB Ports & Ethernet Port: Raspberry Pi Model B comprise of 2 USB 2.0 ports whereas Model B+ comprise of 4 USB 2.0 ports. USB ports enable the connectivity of external peripherals like Keyboard, Mouse, USB-Hub, Wi-Fi dongle etc.

4. HDMI (High-Definition Multimedia Interface): HDMI Port enables Raspberry Pi to be connected to HDTV via HDMI cable. Raspberry Pi supports a maximum resolution of 1920x1200.

5. Video Out (RCA Cable): In addition to HDMI Connectivity which facilitates HD connection, Raspberry Pi also has provision to be connected to standard monitor or TV using RCA video cable.

6. Status LEDs: Raspberry Pi comprise of 5 main LED's performing the following functions: ACT: (Color-Green), PWR: (Color-Red), FDX: (Color-Orange), LNK: (Color-Orange), 100: (Color-Orange).

7. GPIO (General Purpose Input Output): GPIO facilitates connecting all sorts of peripheral devices to Raspberry Pi. Raspberry Pi has onboard GPIO with 40 pins, 26 of which are used as digital inputs or outputs. More importantly, 9 of the 14 new GPIO pins are dedicated inputs/outputs, it also facilitates the onboard UART, I2C, SPI Bus and still a large amount of free GPIO pins are there for add-on attachments.

8. CSI Camera Connector: Raspberry Pi has a Mobile Industry Processor Interface (MIPI) Camera Serial Interface Type 2 (CSI-2). CSI-2 facilitates connection of small camera processors. The function of this interface is to standardize the attachment of camera modules to the processors for the mobile phone industry. The D-PHY specification defines the physical hardware layer interface between camera and processor to facilitate fast exchange of data.
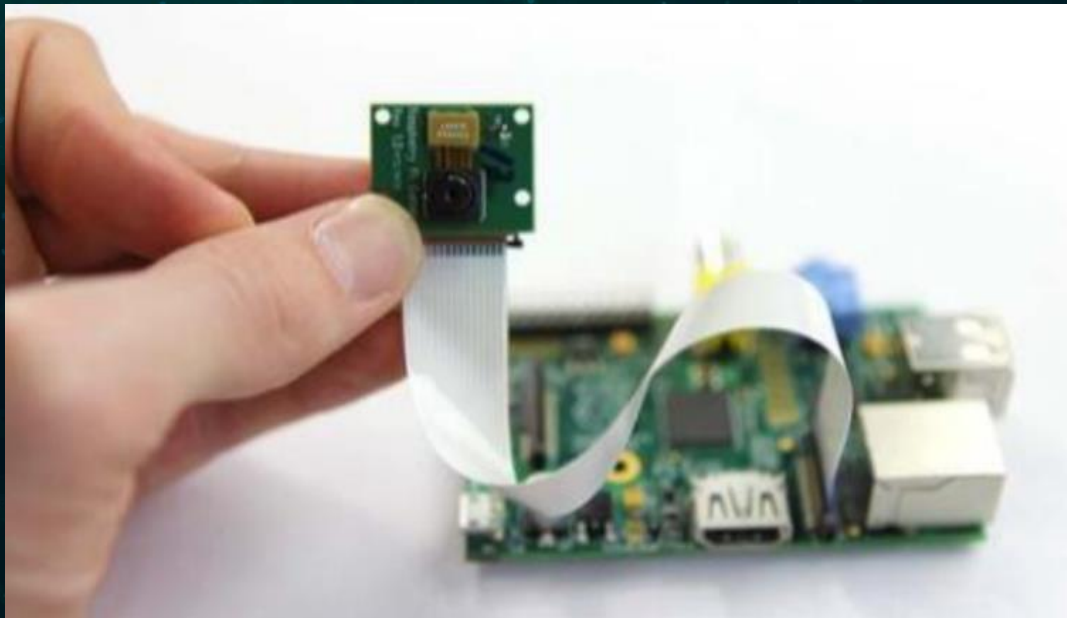

9. DSI Display Connector: Raspberry Pi connector S2 is a display serial interface (DSI) for connecting LCD panels using a 15-pin ribbon cable. The Mobile Industry Processor Interface (MIPI) inside the Broadcom BCM2835 IC feeds graphics data directly to the display panel through this connector.

10. System On Chip (SoC): Raspberry Pi (System on Chip) SoC is ARM Based by Broadcom Technologies. The ARM processor runs from 700 Mhz to 1 Ghz. The SoC also facilitates video core 4 GPU, and is capable for fast 3D core, openGL and supports Blu Ray and H.264 video playback.

GENERATIONS OF RASPBERRY PI: Raspberry Pi- Model A: Raspberry Model A is regarded as the First Generation of Raspberry Pi's models released till date. Under

Raspberry Pi Model A two models were released: Raspberry Pi 1 Model A and Raspberry Pi 1 Model A+.

A. Raspberry Pi: Model A - Raspberry Pi Model A is regarded as Lower-spec variant of Raspberry Pi. The model was especially used for embedded projects as this model of Pi because this model misses important hardware ports. Model A was lighter and consumes less power as compared to Model B. Model A is now outdated and is also not available readily in the market nowadays.
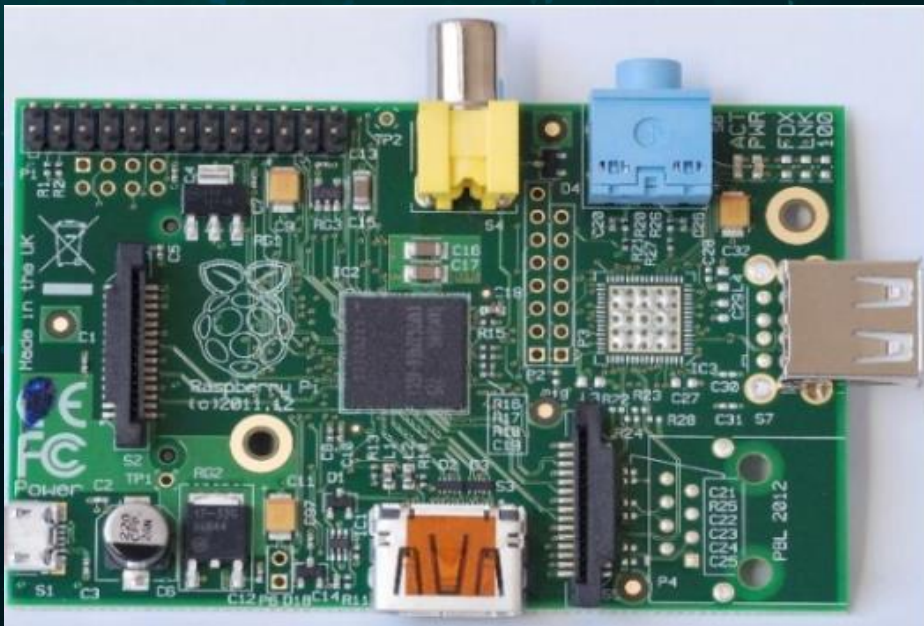
B. Raspberry Pi: Model A+ - Raspberry Pi 1 Model A+ was the successor and well updated model to Model A of Raspberry Pi in terms of smaller size and less power consumption. Various enhanced improvements are being done in Model A+ in terms of additional GPIO pins, MicroSD card support and better audio reproduction. Raspberry Pi Model A+ was also capable of running various operating systems and provided a strong backbone for various projects of space programs and media center operations. Model A+ is also discontinued from the market nowadays because of the availability of more upper generation models.

C. Raspberry Pi: Model B - Raspberry Pi 1 Model B was regarded as a higher specification variant of Pi 1 Model A with good performance in working because of high RAM, additional USB port slots and Ethernet Port. Raspberry Pi 1 Model B laid the stepping stone of computing as Hobby in kids towards education, programming and home projects.

D. Raspberry Pi: Model B+ - Raspberry Pi 1 Model B+ was regarded as the last cum final version under Raspberry Pi 1 models category. Model B+ replaced Model B and was equipped with more enriched hardware features like more GPIO, more USB ports, better MicroSD card, low power consumption as compared to all Raspberry 1 generations models and better audio output.

Raspberry Pi 2 Model B: Raspberry Pi Model B generations were launched after Model A generations with better features, powerful hardware and better operating systems support.

Raspberry Pi 2: Model B - Raspberry Pi 2 Model B is regarded as second-generation Raspberry Pi. It replaced the Raspberry Pi 1 Model B+ models in terms of powerful CPU, RAM, GPIO and additional hardware connectivity support.

Raspberry Pi 3 Model B: It was released in February 2016 with a 1.2 GHz 64-bit quad core ARM Cortex-A53 processor, on-board 802.11n Wi-Fi, Bluetooth and USB boot capabilities.

Raspberry Pi 3 Model B+: On Pi Day 2018, the Raspberry Pi 3 Model B+ was launched with a faster 1.4 GHz processor, a three-times faster gigabit Ethernet. Other features are Power over Ethernet (PoE) (with the add-on PoE HAT), USB boot and network boot.

Raspberry Pi 4 Model B: It was released in June 2019 with a 1.5 GHz 64-bit quad core ARM Cortex-A72 processor, Bluetooth 5, full gigabit Ethernet (throughput not limited), two USB 2.0 ports, two USB 3.0 ports, 1–8 GB of RAM, and dual-monitor support via a pair of micro-HDMI (HDMI Type D) ports for up to 4K resolution. The version with 1 GB RAM has been abandoned and the prices of the 2 GB version have been reduced. The 8 GB version has a revised circuit board.


Raspberry Pi 400: It was released in November 2020. It features a custom board that is derived from the existing Raspberry Pi 4, specifically remodeled with a keyboard

attached. The case was derived from that of the Raspberry Pi Keyboard. A robust cooling solution and an upgraded switched-mode power supply allow the Raspberry Pi 400's Broadcom BCM2711C0 processor to be clocked at 1.8 GHz, which is slightly higher than the Raspberry Pi 4 it's based on.

Raspberry Pi Pico : Raspberry Pi Pico was released in January 2021. It was Raspberry Pi's first board based upon a single microcontroller chip; the RP2040,

which was designed by Raspberry Pi in the UK. The Pico has 264 KB of RAM and 2 MB of flash memory. It is programmable in Micro Python, Circuit Python, C and Rust.
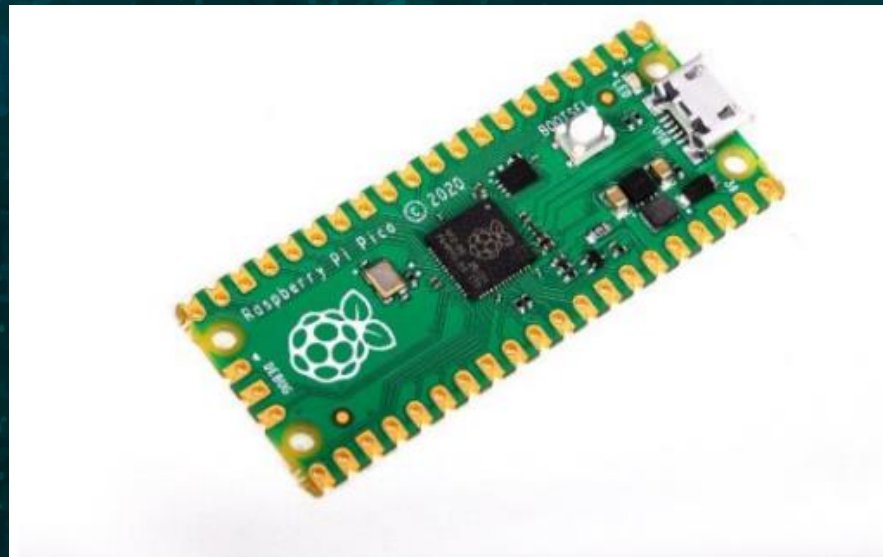
Official Available Operating Systems:

1. Raspbian Operating System: Raspbian consists of a set of programs and utilities which makes the Pi run. Bundled with more than 35000 packages, supports easy install on Pi. It is optimized for best performance, stability and is also under active development by open-source community for on-going development.

2. Arch Linux ARM: Arch Linux ARM is regarded as simple in operation and provides full control to end users. It facilitates a lightweight base structure to customize the system as per user requirements, and only because of this Arch Linux ARM provides no GUI interface.

3. Puppy Linux: Puppy Linux is regarded as a Lightweight distribution that focuses on simple use via low memory usage.

4. Windows 10 IoT Core: Windows 10 IoT Core is a platform for developing IoT based applications for Raspberry Pi by Microsoft. Windows 10 IoT core brings the power of Windows to Raspberry Pi and enables easy to integrate the rich experience with devices as natural user interface, searching, and online storage and even cloud computing.

5. Open ELEC (Open Embedded Linux Entertainment Center) , Pidora ,RISC OS ,OSMC (Open Source Media Center) , Ubuntu Mate etc.

RASPBERRY PI- ADD ON HARDWARE ACCESSORIES:

A. Raspberry Pi Camera Module - Raspberry Pi Camera Module is equipped to take HD video as well as still photos. Provides good utility for beginners and also offers a wide scope for projects for advanced users.
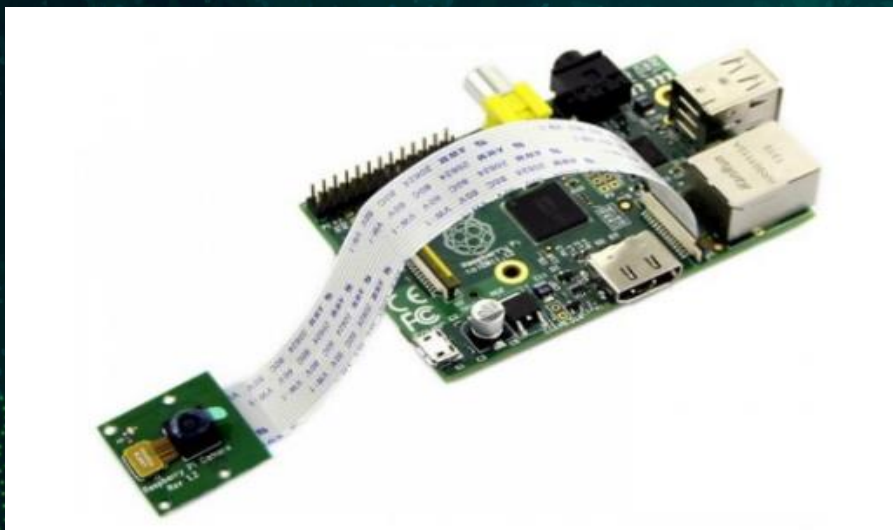
B. Raspberry Pi Touch Display - Raspberry Pi has another very important add on accessory called Pi Touch Display. It gives Raspberry Pi users the ability to create all-in-one projects such as making tablets, photo frames, gaming consoles, and other embedded projects.

C. Gertboard, Sense Hat for Raspberry Pi, Compute Module Development Kit etc.

ADVANTAGES OF RASPBERRY PI: • Raspberry Pi is regarded as a small, powerful and efficient cum compact form factor computer and is very cheap to acquire. Various SMEs can use Raspberry Pi to do small and medium level tasks like Running as Web Server, Database Server, and Media Server. So, in turn lots of money on purchase of various servers can be saved. • Raspberry Pi can act as a single platform for extensive programming experience. Various Programming languages are supported by Pi and users can install the respective compiler for proper execution of code. Python, the main programming language which is used by Pi, is less complex and easy to understand. • As the product supports open-source operating systems and open-source apps. So, tons of operating systems in various flavors of Linux and millions of apps in that Linux operating system are available at simple disposal of Raspberry Pi. Raspberry Pi supports add-on hardware like Camera, Component Modular Kit, Gertboard and HAT board which facilitates to connect thousands of third-party hardware like Buttons, LED's and user can perform various operations on Pi.

LIMITATIONS OF RASPBERRY PI:

• It cannot act as a full-fledged computer because the Ethernet Port and Processing CPU is not so fast to process multitasking computing cycles.

• Not compatible with a fully functional Windows Operating System.

• The product is limited to SMEs and not very highly useful and provides huge options of facilities to larger organizations/enterprises.

• Doesn't have a Real Time Clock (RTC) with battery backup. Time can only be worked arounded using NTP Server and most of the operating systems do this task automatically.

CONCLUSION:

Raspberry Pi, a 4000 Rs. small and compact credit card sized computer, has unlimited possibilities of project development in the area of embedded systems and daily routing out of the box projects. Raspberry Pi is helpful both for computer science students to learn programming, Linux Administration and do Server Administration implementations of Emails, Cloud and other Web Servers. In future, the focus would be to develop their own Sensor Network Kit, Robotics as well as Raspberry Pi Embedded Systems project using Raspberry Pi. For embedded systems, various interfacing like Sensors, LED's etc. can be interfaced via GPIO. This article will be an eye-opener for all, to use this device and explore unlimited possibilities.

The Bright Light of Death

-Deb Dwaipayan Biswas, Alumni Batch 2020-2023

"Death" is a word that is afraid of everyone from rich to poor or evil to angel and a word that brings the dark energy more closure to you. Every thing in the universe has a lifetime, when it is over the energy is transformed into another body but the energy remains the same. Yeah, you might think that the sun, moon or close to your earth's objects like tables and chairs have no life because they are objects. I on't here to explain in that context. Let's imagine the sun that was created many many years ago after a long long time it will lose its energy or power to light everything. Like that, a chair will break after a certain time but the molecule in the chair is transformed into new molecules that are linked with the previous one or remain the same and create a new chair or other things. So that's life. Energy will be the same but the body keeps changing. When a body changed to another body, the previous body was dead. Do you know that death is the greatest thing ever made? Yeah, you might be thinking that death is not good, it is bad, your damn body will go to hell. But wait, let's rethink if death is not there you are not born in this universe and you don't read my shitty article here. You also have some energy or soul that was kept in another body previously. The bad person or the bad body was dead and you, the new possibility is here. What happens if there is no death? First of all, you are not here. Now imagine if there is no death at this time there is an unlimited population on earth. So that's not possible. Moving back

further, we are evolving from chimpanzees, if they were not evolved or dead there is no existence of humankind. Let's go back further, you know that algae are the first life on earth, if they are not evaluated into new species, no life is possible on earth and if we back further there is nothing like the word 'sun', 'earth', 'universe', 'humankind' if death is not there.

So, death is the cause of evolution. Transform energy from a body to a new body with new possibilities, with more hope, with a brighter future. That's why death is the most important and greatest thing ever created.

Pop-Corn 5

টনিক

- Isha Basu, 6th Sem

IMDB RATING – 8.7/10

DIRECTOR – Avijit Sen

Music Director – Jeet Ganguly

BOX Office – 5.8 crore

অভিনয়েঃ– দেব, পরাণ বন্দ্যোপাধ্যায়,

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গল্প -- বৃদ্ধ মা-বাবা, প্রতিটা পদে পদে তাঁদের ইচ্ছেগুলোকে বার্ধক্যের মোড়কে চাপা দিয়ে দেওয়া, কোথাও গিয়ে যেন ৬০-এর পর জীবনে বেঁচে থাকার মানেটাই হারিয়ে ফেলেন অনেকে,

সেই তালিকাতেই থাকা এক মা-বাবার গল্প, যা টনিক দাওয়াইয়ে মুহূর্তে উধাও। একদিকে ইচ্ছেগুলোকে পুনরায় বাঁচিয়ে তোলার আনন্দ, অন্যদিকে, পরিবার ও সন্তানের শাসনের সারমর্ম খানিকটা বোঝা, ঠিক একই ভাবে সন্তানেরও চোখ খুলে যাওয়া মা-বাবার স্বপ্নপূরণ নিয়ে, দুইয়ের ভারসাম্যে তৈরি টনিক এই সিনেমা ছোট বড় সবার জন্য একটি আনন্দদায়ক সিনেমা ... মানুষ এর ইচ্ছার যে কোন বয়স হয়না তা এই সিনেমা এ ফুটিয়ে তোলা হয়েছে ... একজন মানুষ তার ইচ্ছা কে পূরণ এর জন্য সব কিছু করতে পারে ঠিক ই কিন্তু এর জন্য দরকার পাশে আরেকজন মানুষ এর ভরসা...র সেই হল টনিক .... যার পেশা হল সবার বয়স্ক বাবা মা এর ইচ্ছা পূরণ করা...সেই টনিক এখানে অভিনয়ে করেছে দেব ....অসাধারণ ....সেই টনিক এর হাত ধরেই আমদের দাদু তার ইচ্ছা কীভাবে দার্জিলিং এ পূরণ করে এটাই হল এই গল্প....আমাদের বাঙালিদের সম্পর্কে দুটো কথা বহুল প্রচলিত. আমরা রোগে কম, ভয়ে মরি বেশি আর আমাদের শরীরের আগে আমাদের মন বুড়ো হয়....অথচ ম্যাটার অফ ফ্যাক্ট ইজ, মনের বার্ধক্যকে দমন করে রাখা গেছে শরীরের বার্ধক্য বেশিরভাগ ক্ষেত্রেই কোন অন্তরায় হয়ে উঠতে . এখন মনের বার্ধক্য যখন তার চরম সীমায় পৌঁছে যায়, তখন তার একমাত্র

সমাধান টনিক ||

চিত্রনাট্য- অনবদ্য গল্পের বুনট, যেখানে সন্তান ও বাবা-মা, দুজনের দিকটি সঠিক ভারসাম্য বজায় রেখে তুলে ধরা হয়েছে, যার যোগসূত্র হিসেবে কাজ করেছে দেব, গল্পে হাসি রয়েছে, রয়েছে কান্না, রয়েছে ছোট ছোট আবেগের আনাগোনা। যা এক কথায় বলতে গেলে দর্শকদের মন ছুঁয়ে যায় ||

সিনেমাটোগ্রাফি- ঝাঁচকচকে অনবদ্য ক্যামেরার কাজ, অন্যদিকে সিনিক বিউটি দার্জিলিং-এর, অসাধারণ ফ্রেম দর্শকদের মনে এক আলাদা অনুভূতি দেবে। ছবির সেট থেকে শুরু করে লোকেশন, ক্যামেরার কাজ থেকে শুরু করে আলোর ব্যবহার, একঘেয়েমি কাটাতে একাধিক কায়দায় শুট করা ছবি আনন্দ যোগায় ||

পরিচালনা- পরিচালনার ক্ষেত্রে যথেষ্ট পরিপূর্ণতার পরিচয় দিয়েছেন পরিচালক, যেখানে প্রতিটা ধাপে ধাপে গল্পকে সাজিয়ে দর্শক দরবারে উপস্থাপন করার নৈপুণ্যতা চোখে পরে। বিন্দু মাত্র তা একঘেয়ে হয়ে ওঠে না দর্শকের কাছে। যার ফলে ছবি ঘিরে বেশ মনোসংযোগ বজায় থাকে।সুজন মুখোপাধ্যায়ের চরিত্রটা আমাদের কাছে রীতিমত Eye Opener.

বাবা মায়ের প্রতি কনসার্ন হওয়ার মানে তাদের উপর নিজের ফরমান জারি করা না. তারা কি খাবেন, কোথায় যাবেন ঠিক করে দেওয়া না. নিজের বিবাহবার্ষিকী ব্যাঙ্ককে সেলিব্রেট করে বাবা মায়ের বিবাহবার্ষিকী বাড়ির ছাদে পালন করা না| আমাদের মনে রাখা উচিত আমাদের বাবা মায়েদের জন্যেই আমরা, আমাদের জন্য বাবা মায়েরা নন....অভিনেতা সুজন এই চরিত্রটি দারুণ ফুটিয়ে তুলেছেন, এমন না যে তিনি বাবা মাকে ভালোবাসেন না, কিন্তু তার ভালোবাসাটা কোথাও একটা গিয়ে ডিকটেটরশিপে পরিণত হয়ে যেতো. যদিও ছবির ক্লাইম্যাক্সে উনি নিজের ভুল বুঝতে পারেন এবং স্বীকার করেন যে আমরাই তোমাদের বুড়ো বানিয়ে রেখেছি জীবন খুবই Unpredictable| কাল কি হবে কেউ বলতে পারে না. ছবির ১ঘন্টা ৩৬ মিনিটের মাথায় টনিক (দেব) নিজের জীবনের যে অভিজ্ঞতা শেয়ার করে, তা যেকোন সময়ে যেকোন কারোর জীবনে ঘটতেই পারে. সেক্ষেত্রে সারা জীবন আফসোস করেও আর কিছু হবে না. তাই সময় থাকতে বাবা মায়ের কেয়ার করুন,তাদের সাথে সময় কাটান| বাস্তব জীবনে কোন টনিক আপনার সাহায্য করতে আসবে না, আপনাকেই টনিক হতে হবে|

|| সব মিলিয়ে আমাদের প্রজন্মের জন্য টনিক একটি হৃদয় পূর্ণ সিনেমা ||

Sprint Retrospective

1.Which is best for career BSC or BCA according to you?

If you have a specific interest in computer science and its applications, BCA (Bachelor of Computer Application) might be a better fit. If you prefer a wider scientific knowledge base, BSC (Bachelor of Science) could be more suitable. Career Opportunities: Both BSC and BCA provide opportunities for employment and further studies.

-- Isha Basu, 6th Sem

2.Why did you choose Burdwan Raj college?

I chose Raj College due to its esteemed reputation as one of the premier institutions within Burdwan University. One of the key factors that attracted me to this institution was its extensive range of facilities, including a well-equipped library. My CS dept is one of the best among all other departments and the guidance and mentorship of our professors have been instrumental in shaping my academic journey, allowing me to excel in my studies and pursue my passions with confidence. Renowned for its academic excellence and comprehensive curriculum, Raj College stood out to me as a top choice for pursuing my education.

--- Rupankar Dutta, 6th Sem

3.Coming so far from home to the hostel how did you adapt to Ivy? How was your hostel life?

Living in a hostel away from home, I found the accommodation to be comfortable, though the food was just average. Despite the absence of a hostel warden, the studying environment was conducive, and my roommates and other residents were friendly and supportive. I appreciated the cleanliness maintained within the hostel, making it feel like a second home away from home.

---- Ivy Kumbhakar, Alumni batch: 2020-2023

4.Sauvik how do you feel about the subjects you are currently studying in Computer Science? And it was your first choice?

Computer Science has always been my favorite subject and I always wanted to explore it more. Doing this course and reading the subjects that are being taught is really exciting and I am able to witness a very different aspect of what we have studied till now.

---- Sauvik Das, 6th Sem

5.So now you are doing a job. How could you successfully navigate the transition from college to corporate life?

The transition from college to corporate life presents both excitement and challenges. It's a time filled with anticipation and growth, as individuals navigate through new work cultures and lifestyles. This includes developing professional communication skills, managing time and priorities, graceful acceptance of new responsibilities and the delicate art of balancing work and personal life.

---- Subhojit Singha, Alumni batch: 2020-2023

6. What were your initial expectations regarding your college experience? How did the reality of your college life contrast with these expectations?

I am thoroughly enjoying my time at college, particularly since joining the Computer Science department. While I initially expected strict teachers and anticipated being alone due to being far from home, the reality at college has been quite different. Instead of strictness, I've found a supportive and nurturing environment among my professors. Additionally, far from feeling alone, I've been fortunate to develop a wonderful friend circle, which has made my college experience immensely enjoyable and fulfilling. So, in terms of expectations, college life has far exceeded what I had imagined, bringing unexpected friendships and a supportive academic community.

----- Riya Keshri, 2nd Sem

7.Could you tell me about your academic pursuits and extracurricular interests, how could you manage alongside your honors degree at Burdwan Raj College?

I'm currently pursuing my honors degree from Burdwan Raj College. Besides studies, I've a great passion in extracurricular activities & from them my favorite is dancing & drawing. I strongly believe in the mantra, "If there is a will, there is a way." This philosophy resonates with me deeply that if you love something then you will carve out time to do that. Engaging in dancing and drawing brings me immense joy and satisfaction. Hence, along with my course study I do practice these activities on a regular basis.

---- Saloni Mallick, 6th Sem
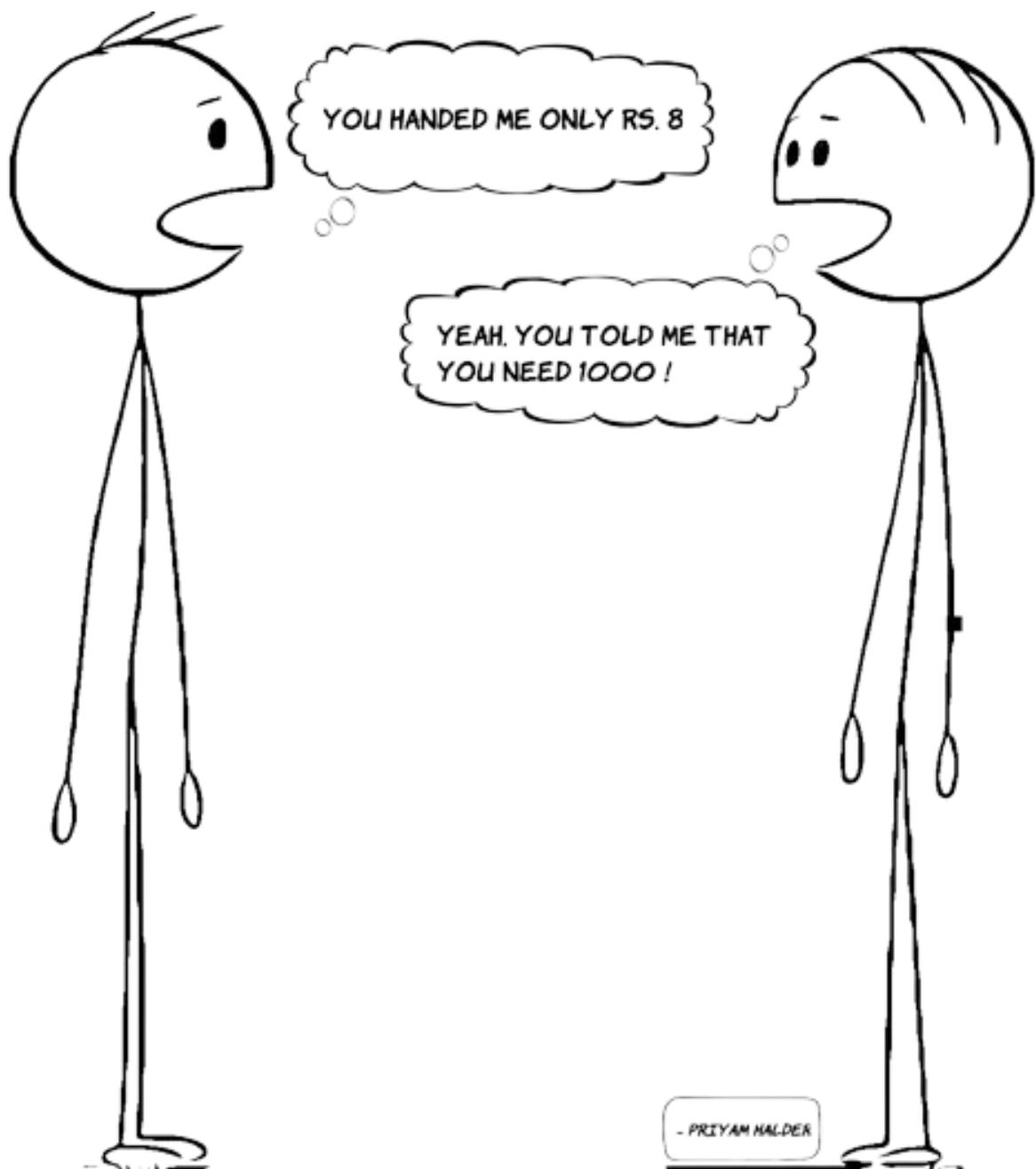
Priyam Halder, Alumni Batch 2019-2022

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}'
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