

INPHASE

Annual Magazine of EEE Department

April 2024

Emerging Technologies

Internet of Things Security
Cloud Security Evolution

Edition

20

Nostalgia
INNOVATION
Learning
Tech
FEELINGS
Future

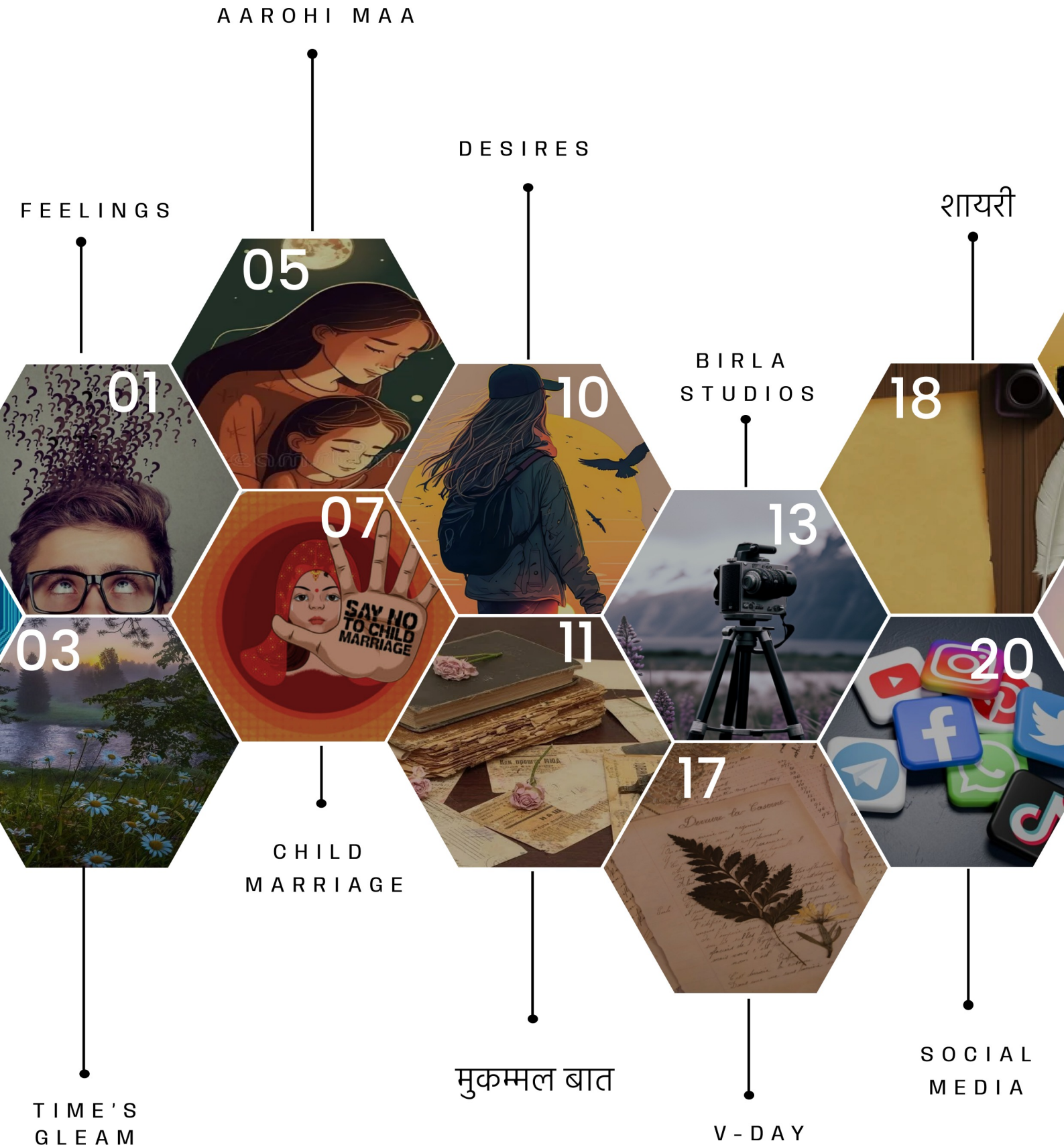
FOREWORD

As I skim through the articles of this edition of InPhase admiring the expansive range of content, I start writing this foreword with great pleasure, and with high hopes I present to you the 20th edition of InPhase. In this edition of InPhase, in addition to the technical articles, sizeable content includes discussion on societal issues, experiences of past and present students, poems, and showcase of arts. Students have expressed themselves by suitable means, writing down their feelings in English or Hindi effectively, composing poems, drawing and painting. The design team and content team have done a remarkable job. The past editions of InPhase have been memorable, and I congratulate the editorial team for maintaining the standard. Special thanks to the contributors and to the students, staff and faculty members who helped directly or indirectly in producing InPhase of the year 2024.



With best wishes
Harshal B. Nemade

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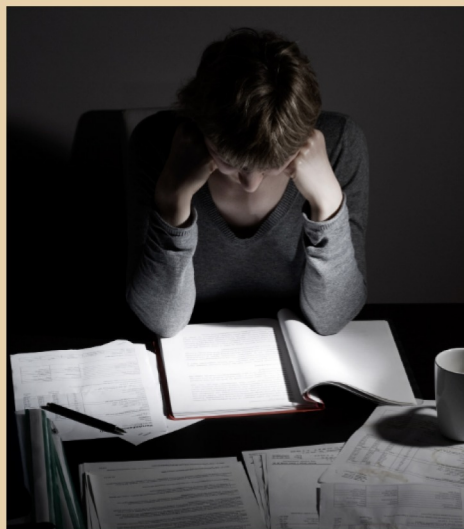
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CHRONICLES

कर्मपथ

DIGITAL TWIN
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FEELINGS

~Aditya Sunil Lambat



FEELINGS!!!!

Not mere a word, though simple to learn hear, understand, but still we currently have a high a time in actually getting it. Those were active when I was a child, but some phases of life changes our course towards approaching them. They still exists but they no longer prevail. Some may find difficult to express them, while others may have a high time in proving them.

Yaa, surely everyone has them. Some may not show, some may not be able to find. Today's generation is fighting for their feelings, proving themselves. During these two years of my JEE preparation, I have confronted various aspects of myself. My life in Kota, like any other ordinary aspirant was full of regret, disappointment, anger and various else 'feelings' which don't have a transformation in language.

The most dreadful day for a jee aspirant, in my guess, would be the final

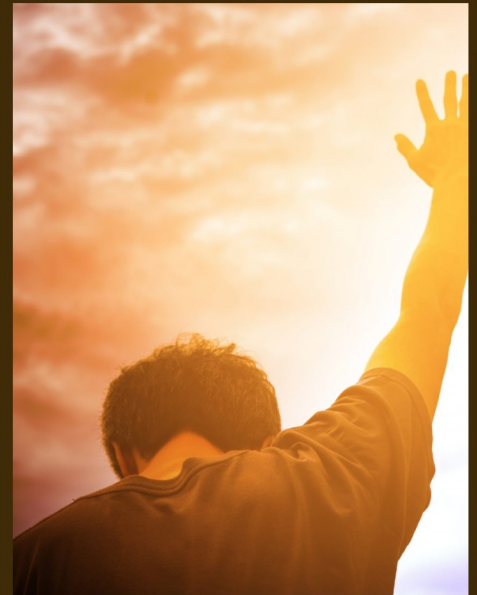
'JEE ADVANCED'. Literally every jee aspirant thinks of the day when thaey would be an 'IITIAN'. And here I am, studying in IIT Guwahati. The feeling is overwhelming. Yaa the perks of IIT are true- lot of exposure, fun events, new environment etc.. The perfect time at which I finished my exam, a sense of relief flown through my blood and I felt 'free'

Free from the burden of achieving it, free from stress and of course the realization that mess food will no longer haunt me. Now, when I look back at those two years and contemplate what actually I learned, makes me say, YES, it's not only about cracking a exam. It's kind of survival from the horrible experiences of being alone, surrounded by strangers, judging us at each point of time. That was the time, when i would feel indifferent to share my experiences even with my parents. Here comes the role of my friends in my life. These all experiences from 'me' turned to 'ours'. But the recent news makes me think in a complete different array. The increasing number of student suicides haunts me. Society , as usual goes with the easiest but the most stupidest thing to say - " HE WAS WEAK!!". suicide is never an option, yaa, it was not also for that student who committed it, until it was too hard to saturate within. It's not just about JEE, but also the different edges of Indian Education System.

Society never understands, it won't happen that they would accept you for what you are. Society is a killer without weapon. FEELINGS, even simple now, but what we failed to understand, what we didn't respected may cost a life.

What I myself learned is that, SOCIETY should not judge, but it will. We must respect 'our' feelings. Express your grievances, your regrets to your parents, friends, if not them use a pen . But let them come out, don't saturate them. We sometimes might believe that it doesn't matter, but yaa it does not here ,but somewhere else.

FEELINGS
indeed is a difficult word.....



TIME'S GLEAM

-Suhani Kalra

The novelties gleam,
Surreal it seems,
Time flies but with
evolutions,
The experiences and
resolutions,
The unexplored ways,
Life and its bays,
Though repetitive most
days seem,
yet routine still beams.
Well the novelties would
trace brighter passages,
In life's embrace,
an ever-changing grace.

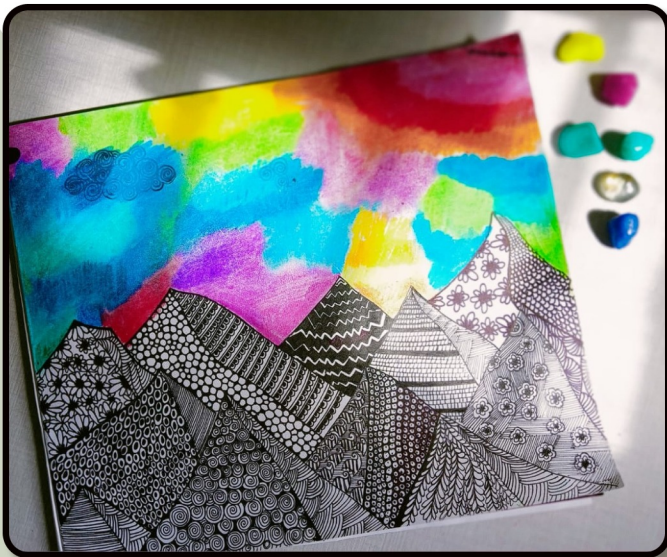
Arts & Creatives



~ Aradhya



~ Aradhya



~ Aradhya



~ Chhavi Nath

AAROHI MAA

~ Aarohi Kansal

Maa

Ekk ajeeb saa shor andar macha
hua hai
Naa jaane mere andar kaa woh
baccha kaha chhupa hua hai
Aaj yaad aari maa teri bhut
Tera baccha bhut sehma hua hai

Darr lag rha mujhe duniya ki bheed
se
Chupke khi kisi kone me ro rha hai
Sawalo se lad rha main
Itni bheed me bhi mujhe lag
rha akela hai
Teri yaad har pal aari aajkal
naa jaane kyu
Tujhe khone ke khayal se har
roz darr rha hoon
Me naa jaane kis raah par chlra hoon

Nhi hona mujhe bada
Mujhe toh bas teri god me sir
rkhkar letna hai
Thak gya hoon sabse aanson
chupaate chupaate
Maa mujhe toh bas abb tere gale lgke
jee bhar ke rona hai

Tu kehti ki me bhul gya tujhe
Abb tujhe kaise batao
Khaane kaa har ekk niwaala maine
kaise teri yaad karke
gale se utaara hai
Kapde dhote hue kitni baar teri
tasveer ko apni nam
aankhon me paaya hai
Beemar padha toh tere haatho ki woh
narmi yaad aayi
Tu nhi jaanti
Maine kaise khudko sambhaala hai
Tu kehti maine tujhe yaad ni kiya
Tu pooch mujhse maine teri yaad me
kitne aasuon ko
bahaya hai

Maa yahan sab mujhe samjhdaar
kehte
Par mujhe toh woh tera mujhe
naalaayak kehna hi yaad
aaya hai
Log kehte mujhe majboot yahan
Par mujhe toh woh tera aawaz tez
karne par mera rona
yaad aaya hai
Yahan koi mujhe rokta tokta nhi
Par mere mann me woh tera mujhe
sambhal kar jana, jldi

aana, gaadi tez mat chalana yaad aaya
hai
Sab kehte gumsum saa rhta too bada
aajkal
Abb kaise bataun unhe mera mann
abb lgta kahan hai

Subah uthta toh teri woh pyaari shkl
yaad
aajaati
Kaise tere haatho ki chaai me mujhe
santushti
mil jaati
Tune kaha tha na mujhse maa
Bahar ki duniya har kisi ko raas ni
aati
Tu shi thi maa
Mujhe yeh chaka chaundh ki duniya
tere bina sab
berang si nazar aati

Raat ko jab bistar par let taa toh
khayaalo se ghir jaata
Ghar se nikla tha apne liye ghar
banaane
Par yahan toh mujhe sab jail saa hi
nazar aata hai
Darr lag rha mujhe bhavishya se maa
Nhi ban paa rha me doosro ki tarah
Nhi kr paa rha kuch jisse tera sir
samaj me
uccha karwa doon
Tu phone lagati toh mann karta tujhe
sab bata
doon
Phir lgta ki kyu tujhe apni
nakamiyon ki saza doon
Tere paas apni hi tensione kum nhi
Jo mai apni bhi tujhe thama doon

Too kehti nhi mujhse par me teri
aankhon se padhleta hoon
Meri kaamyaabi ke sapno ko unme
tairta hua dekh leta hoon
Par maa mai kaise kahoon tujhe
Ki mujhe darr lag rha sabse
Ki me haar rha khudse

Maayus hokar baith jaata hoon roz
Kaise bataun tujhe
Ki tere liye kya kya sapne sajaa rkhe
maine
Tujhe nyi saadi dilaane se videsh
ghumaane lejaane tak
Aise kitne hazaaro sapne buna rakhe
maine
Maa tu vishwaas rkhna mujhpe
Duniya chhod de bhale haath mera
Too mere sir pe bas haath rkhde
Me ladoonga duniya se tere khwaabo
ke liye

Haar milegi toh phir se ladoonga
Maa me tera baccha hoon
Kisi keemat pe tera sir neeche nhi
hone doonga
Jo sapne dekhe maine tere liye
Unn sabko ekk din saakaar karoonga.

CHILD MARRIAGE

CAN FEMINISM PREVENT IT?

- Sukanya Deka



Feminism, a term coined centuries back, has revolutionized the concept of gender equality. Although it has become a focal point around which social activists have voiced their concerns since the years of its existence, there still seems a need to raise the bar of understanding its essence. In contrast, what needs to be magnified is that we are yet to grasp the virtue that all genders cannot exist independently but coexist. The human civilization has undergone development within the social, political, and economic sphere

which has been a mixed bag of positive and negative repercussions over the malleable divide of the genders. It is unfortunate that despite the world today witnessing major achievements in technology sector such as self-driven automobiles, automated machinery equipped with artificial intelligence and even humanoid robots like Sophia being awarded a Saudi Arabian citizenship, a country where the women natives of that land have been subjugated to male dominance since decades. Even till date a woman

must overcome numerous challenges to achieve the dreams she nurtures.

India called lovingly Bharat Mata has its own bag of historical accounts of the problems endured by women. As per the recent census data, the female literacy rate stands at 71.5%. Undoubtedly the number of girl students enrolling in primary schools have improved. There are a lot of aspects to consider under the umbrella of feminism, however here we would explore the rise of child marriage and how it can be curbed via feminism. Undoubtedly, people residing in cities have a stable access to technology and are versed with current ideologies. The idea of feminism must reach these under privileged sections so that there is an overall development from the grass-root level.

Let us bring your attention to Assam, a state located far east of the Indian subcontinent.

The child marriage rate in Assam is 31.8% rendering it as a hot topic for the society. Majority of child marriages in Assam are reported from tea tribes and poor migrant communities from Bangladesh. There are reports of under aged girls being trafficked to different cities and are either rendered as domestic help or are married off with a price. Teenage pregnancies that result from these marriages bring about further problems for the girls. These prove as a stain on

whatever progress the governments boast about regarding women emancipation.

Some of the major factors that have fuelled such adversities:

1. The schools in the rural area provide schooling up to class 8 or 10. Higher education is not much prevalent in those areas and the children are left with no scope to go ahead with their further studies.

2. Since the parents of these children are not formally educated hence, they are more inclined to invest their time and energy in manual labour as a source of income. Since they do not see people of their communities achieving higher positions in the administrative strata, they refuse to appreciate the value of education.

3. Due to its location, the annual perennial rainfall resulting in floods in the villages leading to wreckages of buildings. To fulfil the basic needs becomes a major priority for those affected families. There is a certain laxity on the part of government because the disaster can be capped.

4. Once a girl reaches puberty, she identifies herself as a woman. Being a benign homemaker is her goal. Decoding and providing feasible solutions to the problems is the need of hour. Prevention of child marriage should be a top priority



and all sections of the society should be alert as they all are stakeholders to it. A few examples of endeavour towards its prevention are:

1. The Bodhi Tree Foundation founded in Tamil Nadu aims to empower rural girls. It is a non-profit organization with a mission to bridge the rural-urban divide by empowering rural graduates, enabling them to become role models who can take charge of their lives and constructively contribute to the development of their communities through education, skills, opportunities, and entrepreneurship.

2. The government can set up centres in villages that provide awareness of schemes. Scholarships can be provided to students who perform well in the academics and co-curricular activities. There is one such living example of a school,

'Prerna Girls School' located in Uttar Pradesh. Founded by Dr Urvashi Sahni. The curriculum follows a feminist virtue with more focus on the right to not marry before age 18, right to pursue higher education, right to put forth their choice in taking up jobs outside their homes.

3. The Arohan scheme by Assam government (15 August 2022) aims at uplifting the secondary education in rural area. This is rather a progressive stand. The youth from urban areas should join hands and encourage the underlying idea of gender equality amongst the rural youth.

Finally, the question whether feminism is the key to suppress the act of child marriage, is inspected. By simply enacting laws, the government cannot bring this to an end. Feminism is rooted in very grassroot level of the society and singularly is insufficient to prevent it.

Therefore, it is in the hands of educated youth to come forward and help the girls of such communities to realize the idea of feminism so that they can claim their rights.

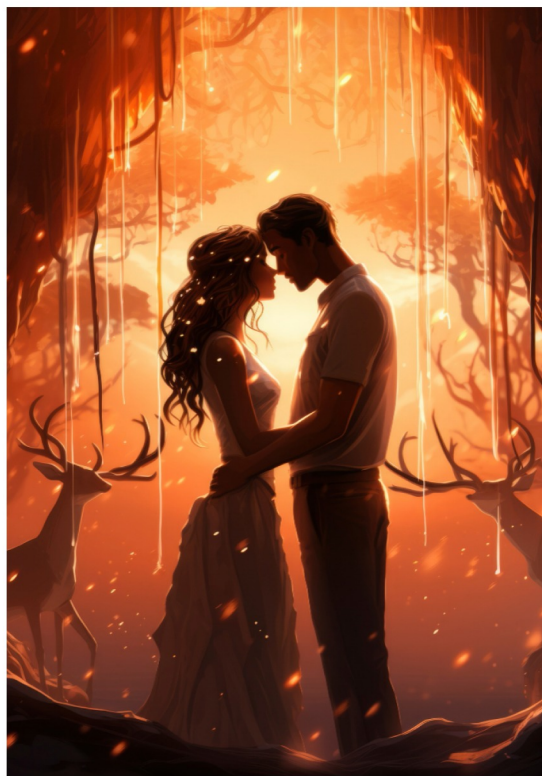
DESIRES

~ Teesha

Desire to encounter someone
whom i cannot meet..
Desire to be on midway with him
It's my way to be complete..

Desire to be on cloud nine
and blink my eyes thrice..
Desire to see him before me
shouting, "Hey Teesha, Surprise!"..

Desire to tell him a pretty story
Hidden love story of his and mine..
Desire to be the apple of his eye,
and always there i want to shine..



Desire to notice his every deed
Wanna see his happy and angry side..
Desire to be his bestie forever
that's more special than being his bride..

Desire to gift him a book with flower
whose fragrance will last for years..
Desire to be his affectionate smile
Desire to steal his unshed tears..

Desire to thank him by worshipping him
Can you suggest something better?
The one who came as god to me
For him, this is my Desires' letter..

मुकम्मल बात

~ Anurag

यदा कदा होने वाली
क्षणिक मुलाकातों में
क्या ही कहा जा सकता है
पर इंसान में कहने की तरकीब
और सुनने की नीयत हो
तो इतना तो कहा ही जा सकता है
कि अगली बार जब मुलाकात हो
इस बात की गुंजाइश रहे
कि एक मुकम्मल बात हो।

बातें आगे बढ़ें मौसमों के हाल से
और हम रुबरु हो सकें उस सवाल से
जिसे हमने दबाए रखा है
जिससे बचकर
हमने खुद को बचाए रखा है
कुछ बातें जो हमारे वहमों को कर दें फना
और बातों में हो ऐसी बेबाकी
जिनके के बाद कुछ न हो बाकी।

बातें जो हवा न दें किसी गुमान को
जो रोकें अंधी दौड़ को
और जन्में खोजी उड़ान को
बातें जो अकेलेपन की रिक्तता को
पाटने के लिए बुना हुआ फ़साना न हों
बातें जो बासी हो चुके जीवन को
काटने का बहाना न हों।

कुछ तुम कहो और मैं सुनूं
या कहूं मैं और सुनो तुम
और इस कहने सुनने से हो
कुछ नवाचार
कोई नवीन ऊर्जा संचार
या हो अमृत बरसात
जो कुछ भी सीखा है
सब कुछ भूल कर मिलो
तो हो कोई मुकम्मल बात।



BREAKING BARRIERS AND CREATING OPPORTUNITIES

My Experience as Self-taught Filmmaker
and Starting a Production House

~ Sudarshan Birla

Hi there! In this article, I'll be writing about my college life (filmmaking) experience, production house experience, and what I've learned from it.

So the story begins with my first year. That's the time to explore different fields. For me, it involved getting into the world of filmmaking, which I found fascinating and exciting. As soon as I got into it, the pandemic happened and everything stopped. It felt like there was no excitement left at all. I was bored at home, binging Netflix and it felt miserable. That's when I made a choice. To do something crazy that had no significance to anyone else but me. I gained some basic knowledge of filmmaking and came up with a story idea.

However, this story demanded a larger team, so I saved it for the right time.



After a while, I came up with another idea that instantly struck the right chord. But, I had no team. So I contacted a friend from my hometown, and we agreed to begin planning. We collected a group of friends and persuaded them to join us because we were eager to get started (and they were, too:D). We planned and shot our first music video. Nooooo, I wish it was that simple.



When I started working on it, I had dilemmas considering this path and now I feel, it's completely normal to have second thoughts. It's natural if you feel uncertain and hesitant about committing to a path that involves risks and uncertainties. However, it's important to remember that second thoughts don't necessarily mean you're making the wrong decision. In fact, second thoughts can be a sign that you're taking the decision seriously and that you're aware of the potential challenges and obstacles ahead :)

So, despite the challenging circumstances, we released our debut music video. Everyone seemed to appreciate it, which gave me a little push into creating more widespread projects. Now that I had experience, I went and pursued my dream project. Our team gathered together, expanded the crew, and made another music video. The cycle was then repeated. When I returned back to college, the second wave of covid started.



Lockdown happened again, and I had less free time because it was my internship season, but I couldn't help but create and experiment with my art. I had to muster up some courage to decide to dedicate my time to filmmaking. With the new team and a new set of challenges, we pulled off another music video which is one of our best works so far

In each of my previous initiatives, I've had to rely on the generosity of our team members and friends to help us with equipment, places, and other essentials. It was a humbling experience, but it taught me the importance of being resourceful and making do with what we had. We were also able to secure sponsors for our initiative. Everything was going swimmingly, and I didn't want to come to a halt. When everything was returning to normal after the second wave and everyone was returning to university, I decided to stay at home and work on my first short film.

Later on, I moved to a different city to explore filmmaking more. I assisted some directors in the industry and learnt from them. I made some new friends over there, expanded my network, and started new projects from scratch.

In spite of the challenges that I faced, I remained focused on my vision and goals. I was passionate about producing high-quality content and working with talented individuals. One of the things I am most proud of is the team that I have built. Working with others is crucial in any creative industry, and I believe we have been able to do it effectively. I have worked with over 100+ team members, and each project we take on is getting bigger and bigger.

Our recent short film has been nominated under 100 out of 1700 short films made in the Indian Film Project. We managed to screen 5 major projects on big screens including cinema halls like PVR. The production is also working on different upcoming aftermovie projects and short films. It was an incredible feeling to see my vision come to life.

Fun fact: I barely knew any of my team members. They were new to me and they really helped me a lot in terms of EVERYTHING. I feel this is the most important thing when it comes to building a team that has passion and believes in your vision.

"Art is a journey into the most unknown thing of all - oneself." - Carl Jung



I could not have accomplished what I have without the support of my college friends. It was truly inspiring to see the dedication and passion they had for me. They have been an integral part of my journey, and I am grateful for their unwavering support and dedication.

I'm keeping a couple of things in mind as I move forward with Birla Productions. To begin, having a great team will always be critical to our success. Second, if I want to continue to grow and innovate, I must continue to take chances and try new things. Finally, I must never forget why I founded this company in the first place. My art is pushed forward by my passion and vision.



Looking back, I am proud of what we have accomplished. Starting a production company with no budget was not easy, but it taught me the value of hard work, determination, and persistence. I learned to be resourceful, build relationships, and stay true to my vision. I am excited about what the future holds for Birla Productions.

Brownie points to you if you follow me on social media and want to create something extraordinary together!!!

Instagram: www.instagram.com/birla_sb/

LinkedIn: www.linkedin.com/in/sudarshanbirla/

Twitter: twitter.com/birla_sudarshan

Youtube: [@birla_sb](https://www.youtube.com/@birla_sb)

Birla Productions:
www.instagram.com/birlaproductions/

A Letter to Myself : V-Day

~ Aman Paul

Gratitude washes over me for our time together, even if fleeting. While our paths may diverge, a memory of affection's embrace lingers, etching itself as a cherished experience. Yet, the echoes of longing whisper a truth: another encounter could ignite a flame I might not wish to extinguish.

So, with love in my heart, I choose solace in separation. For within, the scars of past storms reside, whispers of sleepless nights, anxieties' grip, and a body etched with silent pleas. Communication's bridge, fragile across distance, could not bear the weight of unspoken emotions.

Therefore, I embrace the bittersweet beauty of solitude, seeking joy in self-discovery. Though our tapestry remains unfinished, the threads of shared moments forever enrich the fabric of my being.

शायरी

~ Mansi Agarwal

विद्या

दुनिया में दो तरह के विद्यार्थी होते हैं,
एक जो विद्या का सही अर्थ समझते हैं
और दूसरा जो विद्या की अर्थी निकाले हैं ।

वक्त

वक्त ने किया ऐसा दुखी सितम,
कल तक था जो मेरा आज बन गया एक गम ।

कमी

जिम्मेदारी तो निभाई दूरी पूरे दिल से
मगर कोई देखने वाले भी तो चाहिए ।
क्या कमी रह गई हमसे,
यह बताने वाला भी तो चाहिए ।

अर्जी

किस मोड़ पे ले आई जिंदगी
रास्ते तो दिखते हैं. मगर मंजिल नहीं,
बड जाऊँ आगे, कर लूँ फिर से दिल्लगी,
मगर पीछे छूटे हुए हिस्से की अर्जी नहीं ।

चुनाव

दिल से जिसको चाहा उसने हमें नहीं चाहा,
दिमाग से सांचके हाँ भरी तो दिल नहीं माना ।
चुन लेते दोनों में से किसी एक को
अगर मुश्किल ना होता दोनों में हँस पाना ।

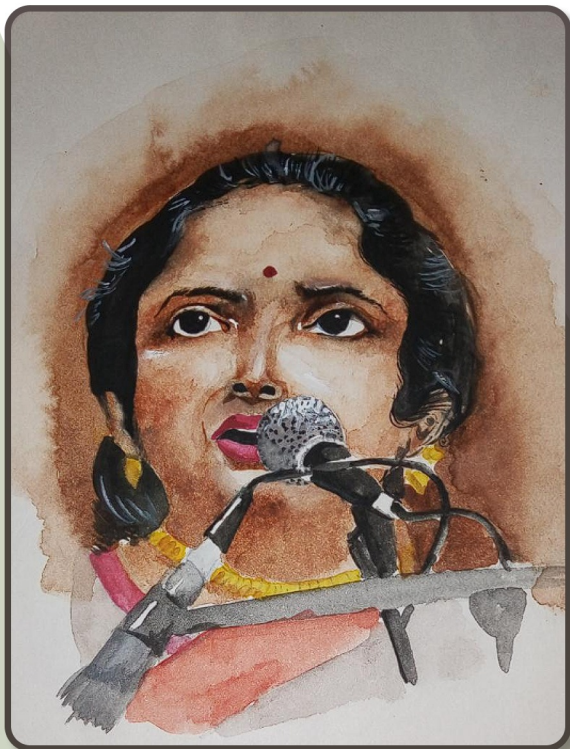
Arts & Creatives



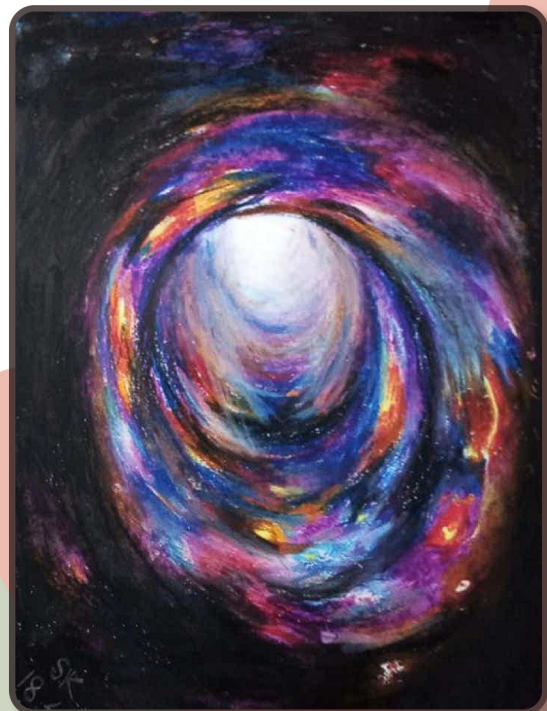
~ Dheeraj Chandra



~ Dheeraj Chandra



~ Souraja Kundu



~ Souraja Kundu

Social Media

Navigating the Shadows of Connectivity

~ G Prashams



In the ever-expanding landscape of our digital age, social media stands as a force connecting people across continents. While the platforms promise unprecedented connectivity and information sharing, exploring deeper reveals a complex terrain with hidden costs. Let's go on a journey into the multifaceted world of social media, where the joys of connection coexist with challenges that merit attention.

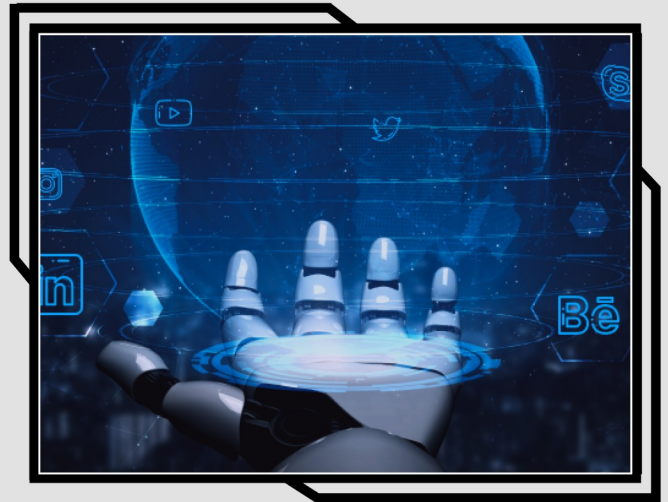
Think of social media like a giant digital dance floor, where algorithms are your dance partners, following the rhythm of your clicks and likes. They seem friendly, customizing your experience. But beneath this, there's a more complicated routine. These algorithms not only decide what you see but also subtly guide how you engage, keeping you scrolling without fully realizing their impact. For instance, if you're into fitness, the algorithm fills your feed with workout posts, making you more interested. This dance between users and algorithms shows how our digital experiences on social media are shaped in ways we might not notice at first glance.

Social media apps are carefully made to grab your attention. They use easy-to-understand designs, lively colours, and smooth navigation. Things like endless scrolling, personalized feeds, and notifications make you want to keep using the app. Cool pictures and videos that start playing on their own add to the appeal. The app is made to be easy to use, so you stay on it for a long time, satisfying the human need for connection and instant satisfaction. The app's addictive quality is on purpose – it's designed to make you stick around.

In the vast landscape of social media, a less-than-friendly force lurks: surveillance capitalism. Coined by Harvard professor Shoshana Zuboff, this economic model silently thrives on the commodification of personal data extracted from online interactions. As users innocently click, like, and share content, their actions covertly translate into a currency of information, traded behind the scenes. A prime example is the world of targeted advertising, where tech giants meticulously analyse user behaviour to create detailed profiles for advertisers,

resulting in eerily precise ad targeting. This covert data collection raises critical questions about privacy in the digital era, emphasizing the need for increased transparency and ethical considerations as society grapples with the consequences of this pervasive economic model.

Imagine social media as a vibrant party where people enthusiastically share their stories and photos. However, beneath the surface, the quest for likes and comments, while seemingly fostering connections, can paradoxically lead to feelings of loneliness and stress. This dichotomy becomes particularly pronounced when considering the impact on mental health, especially among younger individuals. An illustrative example is the perpetuation of delusional beauty standards on social media platforms. Users are bombarded with curated images of flawless appearances, often enhanced by filters and editing tools. This constant exposure to an



idealized version of beauty can create unrealistic expectations, fostering feelings of inadequacy and contributing to a sense of isolation.

Social media algorithms often create echo chambers, forming digital bubbles that amplify our existing beliefs and contribute to societal polarization. For example, in left-wing echo chambers, users encounter content reinforcing progressive ideologies, while right-wing spaces prioritize conservative principles. As users engage more with like-minded content, algorithms intensify these echo chambers, unintentionally deepening divisions between different ideological groups. This dynamic, limits exposure to diverse perspectives and hinders constructive dialogue, highlighting the unintended consequences of online spaces.

Think of personal privacy like a valuable treasure, and social media as the ground beneath it. The ongoing surveillance built into these platforms slowly wears away at our



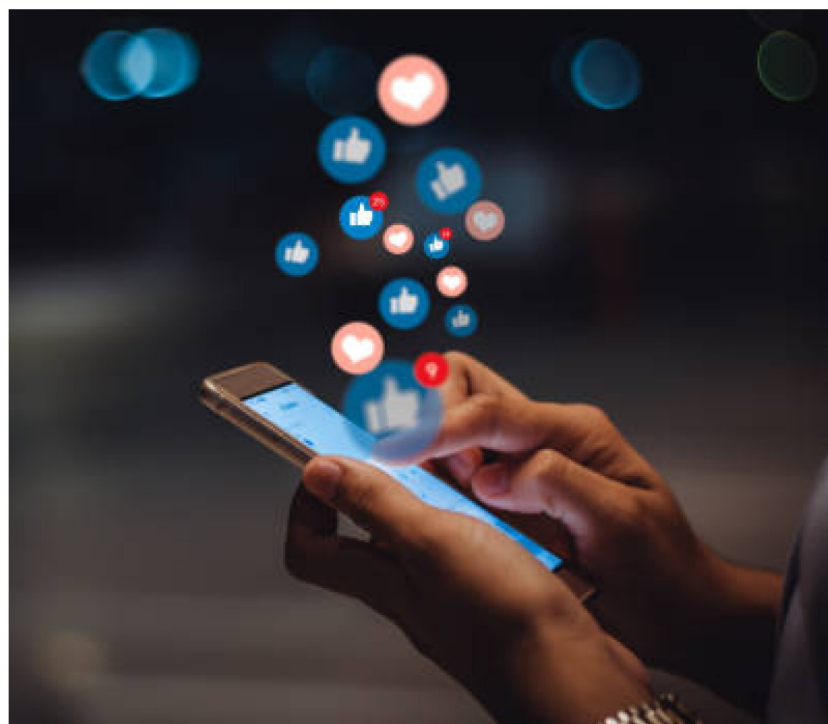
privacy. It raises fundamental questions about the extent to which one should be comfortable sharing their private life in the expansive digital domain.

Take a moment to think about the decisions we make online. It's not about passing judgment but inviting everyone to think about what's right. As students in the online world, we all have a role to play.

Understanding that our choices shape the digital places we use is important.

Whether it's targeted ads tailoring content to our likes, unrealistic beauty standards through carefully chosen images, or unintentional echo chambers reinforcing our

beliefs, we need to think carefully about our online choices. As active members of the digital world, each decision we make shapes the environment we're in. Let's all recognize our role in shaping the narrative, creating a digital space where ethics, privacy, and responsible interactions guide our online presence, making a more thoughtful and respectful online community.



भारतवासी

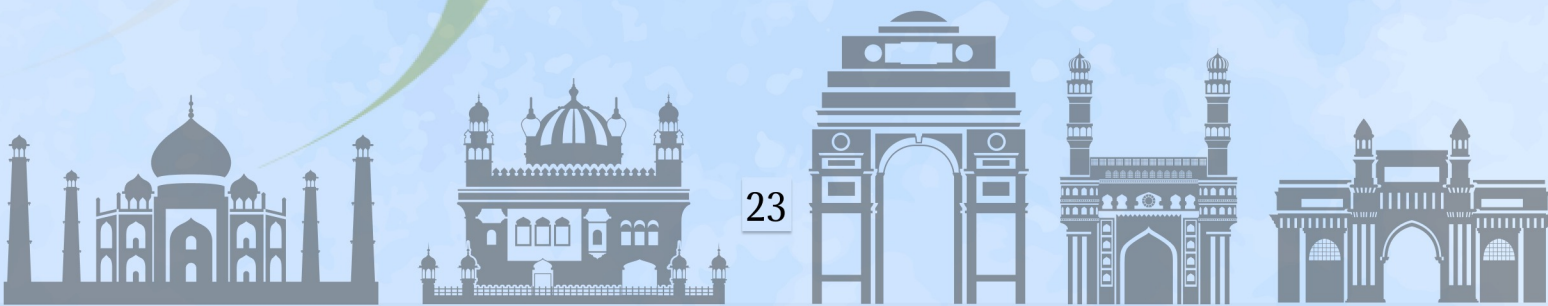
- Shivraj Vishwakarma

हम वो इसांन हैं, हम वो इसांन हैं, मेरे भारत तेरी आन हैं, बान हैं।
उपग्रह इतने भेजे हैं आकाश में, हर सितारे से अब अपनी पहचान है।।

बात जब देश की आन पर आ पड़े,
जुल्म के पहाड़ भी सामने हों खड़े,
शत्रु के रूप में पुरा ये जहान हो,
चाहे अपना विरोधी ये आसमान हो,
लहू देकर करेंगे हिफ़ाजत तेरी, जब तलक माँ मेरी जान में जान है।१।

विश्व फिर से तेरी शौर्य गाथा कहे,
मेरी माँ भारती तू सलामत रहे,
पृथ्वी, अग्नि, आकाश, ब्रम्होस, नाग,
दिव्य शस्त्रों से हमने सवांरा तुझे,
विश्व-गुरु फिर बने ये वतन साथियों, अब तो दिल में यही एक अरमान है।१।

हम जो चाहे पहाड़ों को भी फोड़ दें,
हम जो चाहें तो नदियों के रुख मोड़ दें,
मेदिनी दहल उठे, सिन्धु सी मचल उठे,
हम जिधर चरण धरें जीत का वरण करें,
जिस ने डाली नजर जायेगा वो बिखर, बंद इन मुट्टियों में भी तूफ़ान हैं।१।



Digital Twin Technology

~ Kavya

The human mind does wonders. From the internet to everything else that has made our lives far easier than we could ever imagine, here we have another one, on its way to making a difference.

So, what is the digital 'twin' technology? Many of you would've already guessed, but when I heard of it for the first time, I had to google it. Starting from the basics, a twin is something that has a strikingly similar appearance to something else. We see twins in real life, where we can't differentiate one from the other (I always wanted to have an identical twin, so that we could deceive people and do crazy things, but anyway that did not happen). A digital twin on the other hand is a digital version of some real-world entity. In more technical terms, it is a concept that involves creating a digital replica or simulation of a physical object, system or process.

It behaves like its physical counterpart in the real world. The goal is to provide a realtime, virtual counterpart to help monitor, analyse, and optimize the performance of the physical counterpart.

Imagine having a virtual twin of your

own! You can make it do anything, okay maybe we are going off the topic.

Digital twins typically represent physical objects such as machines, equipment, buildings, or even entire systems like smart cities. But how is it created?

It is done using data from sensors, Internet of Things (IoT) devices, and other sources that collect information about the physical object. The digital twin is continuously updated with real-time data from its physical counterpart. This data can include information about temperature, pressure, location, and more. Users can interact with the digital twin to monitor and control the physical object remotely.

Digital twins enable monitoring and analysis of the physical object's performance and behaviour. This can help in identifying issues, predicting maintenance needs, and improving overall efficiency. Advanced analytics, machine learning, and artificial intelligence are often used to analyse the data generated by the digital twin.

Digital twins allow for simulation and predictive modelling, helping to

anticipate how the physical object will behave under different conditions. This capability is particularly valuable for optimizing processes, testing changes, and understanding the potential impact of modifications before implementing them in the real world.

“So how does it matter?” you might ask. Well, yeah, there are many real-life applications where this is used. Digital twin technology finds applications in various industries, including manufacturing, healthcare, transportation, and smart cities. For example, in manufacturing, digital twins can be used to monitor and optimize production processes, while in healthcare, they can represent the human body for personalized medicine and treatment planning. They also facilitate the monitoring of medical equipment, optimizing maintenance schedules and ensuring the highest standards of patient care. Pretty cool, right?

Digital twins play a pivotal role in the development of smart cities. City planners can create digital replicas to simulate urban infrastructure, traffic flow, and energy consumption. This aids in making informed decisions for sustainable urban development.

In the aerospace industry, digital twins are employed to monitor the health and performance of aircraft, predict maintenance needs, and optimize fuel efficiency. This contributes to increased safety and operational efficiency. It also helps in lifestyle management, digital twins can

cover the entire lifecycle of a physical object, from design and manufacturing to operation and maintenance. This helps in improving efficiency and reducing costs over the entire lifespan of the object.

Digital twin technology often integrates with other emerging technologies such as IoT, cloud computing, and edge computing to gather and process data efficiently. Well everything so far was bed of roses, there are challenges to overcome, including data security concerns, interoperability issues, and the need for standardized protocols. As technology continues to advance, addressing these challenges will be crucial in unlocking the full potential of digital twins.

The concept of digital twins continues to evolve, and its applications are expanding as technology advances. It offers a powerful tool for organizations to gain insights, improve decision-making, and optimize the performance of physical assets and processes.



SAVE YOUR DEVICES

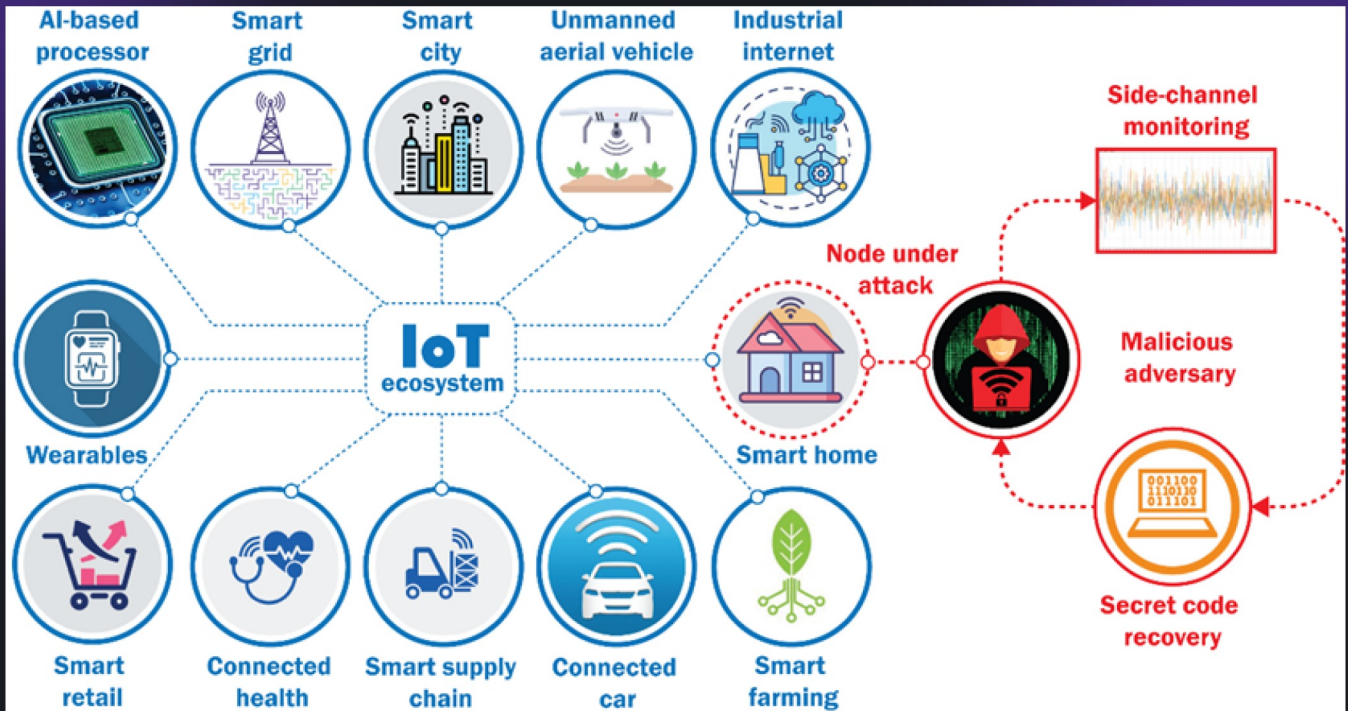
~ **Thockchom Birjit**



Well, besides रोटी (food), कपड़ा (cloth) and मकान (house), “communication” can be considered as the fourth aspect necessary for human survival. A baby signals his mother by crying to indicate his hunger, a man expresses love to his partner with gifts, sportspersons communicate with designated signs, ministers and business personnel hold meetings to discuss plans, teachers deliver lectures to the students to impart knowledge. All these acts fall under the umbrella of 'communication'. Similarly, devices, machines, and systems, we are surrounded with, communicate too. Graham Bell must have hardly realized what he was contributing to technology and mankind, one and a half centuries back. Also, with everyone sitting on the lap of Internet, communication over miles of distances can be fathomed in split seconds. It's not a trifle matter that the communication process has been so well-laid today that one can reach out to his/her near and dear ones with a button-press.

We can appreciate the blessings of technology if we take a 'break' from our technology-engrossed monotonous daily life, and ponder how life would have been if we still sent messages across over pigeons and telegrams (not the app, of course). Happy pondering!

Just as every coin has two sides, the other side of the coin of technology is the jeopardy of information thieving by adversaries. Particularly, Internet of Thing (IoT) has shrunk the world under one roof, and is a soft target due to the physically accessible wireless sensor nodes. Gone are those days when hackers broke open the devices physically to steal information. Sensors of today, costing a few bucks suffice tracking internal operations of the device.



A very interesting art of such data theft currently in the limelight is the 'side-channel attack' which involves monitoring of an IoT device under communication. Such a device employs cryptographic ciphers like Advanced Encryption Standard (AES) to encrypt the data before transmission. This act designated to secure information is very intelligently exploited by hackers to their advantage. They study some physical information leaked and emancipated during the encryption process which are studied to extract information about the device internals. Similar to every person holding a distinct signature, AES too, has a unique power signature pattern which can be captured in an oscilloscope, and some statistical analyses performed on it to crack open the secret cipher key used in the encryption process. Once the key lands in the hands of the hacker, it's 'game over' for the device user, as all

the communicated data can be retrieved using reverse engineering. A recent real-life example of such attacks is counterfeiting e-cigarette batteries by stealing the fixed secret key embedded in the authentic device to gain market share. Bitcoin wallets, Apple crypto core, and the Philips Hue lightbulbs, too have been cracked open. Another interesting one is the Platypus attack on Intel server, desktop and laptop CPUs to gain unprivileged access to infer data and extract cryptographic keys. The remedy to this grave issue is to modify the circuitry involved in the AES chip design, referred to as 'countermeasure design against side-channel attacks', serving as a hot cake being sold in the research market. If interested to contribute your tad bit to the field of technology, go grab this 'cake' and seize the opportunities!

कर्मपथ

~ Dhiraj

वो आजकल चिंतित रहता है, जो चेहरा कभी खिला रहता था,
वो बंद कमरे में रहना पसंद करता है, जो कभी सबसे मिला करता था,
माँ जिसे नादान कहती थी, वो अब बहुत कुछ सोचता है,
वो सिर्फ 18 साल का है और कमाई के साधन खोजता है,
बोलता बहुत कम है, बड़ी बातों को कम शब्दों में पिरो देता है,
वो बंद कमरे में आईने के सामने अक्सर रो देता है।

उसे आने वाले कल की फ़िक्र है, वो वर्तमान को जी नहीं पाता,
खुशियां क्या होती है उसे नही पता, वो होली और दीवाली नहीं मनाता,
वो लोगो से मिलना नहीं चाहता, वो सूरज ढलने का इंतज़ार करता है,
उसे उजाले पर भरोसा नही, वो बस अँधेरे का ऐतबार करता है,
उसकी कोशिशों को, उसके उत्साह को, विफलताओं का क्रम दबाता रहा,
एक हल्की सी मुस्कुराहट के पीछे वो हज़ारो गम छुपाता रहा।

वो मेहनत पूरी करता है, पर परिणाम हमेशा विपरीत रहता है,
इन्ही सब बातों से, मन उसका कुंठित रहता है,
जब आशाएँ सभी बीच डगर मे साथ छोड़ देती है, राहें मंजिल की फिर
तीखे मोड़ लेती है,
लोग उसे ताने देते है, इन तानों का सोचो क्या असर होता है,
वो बंद कमरे में आईने के सामने अक्सर रो देता है।

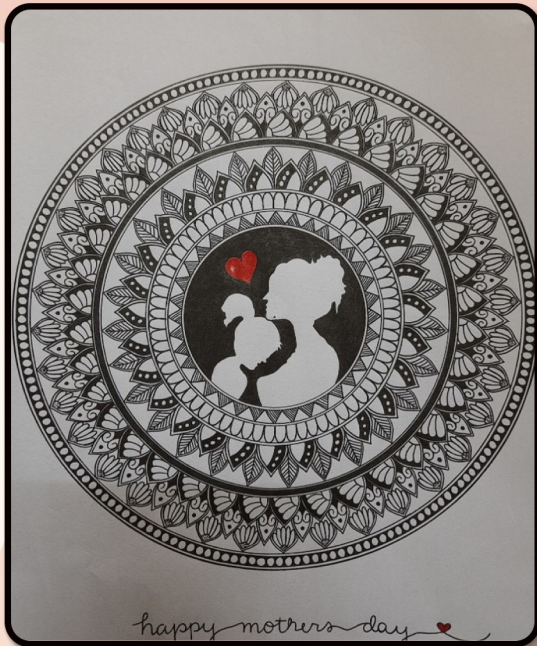
परेशान होकर जिंदगी से, वो जिंदगी खत्म करने की सोचता है,
पल दो पल को परिवार का ख्याल भी उसे रोकता है,
मौत के बाद का मंजर भी उसे साफ दिखता है,
माँ तो बेहोश है और बूढ़ा बाप बिलखता है,
बहन का रो-रोकर बुरा हाल है, छोटा भाई भी कुछ समझ नहीं पाता
बस इसी वजह से, वो ये कदम नहीं उठा पाता।

फिर उसको भी इस दुनिया मे एक ऐसा साथी मिलता है,
मार्गदर्शक बन उसका जो हर कदम पर उसके साथ चलता है,
निराशाओं की रात खत्म होती है, उम्मीदों का सूरज उगता है,
वह कर्मपथ पर गिरता, उठता और संभलता है,
वो अब उम्मीदें खोकर नहीं, एक नई उम्मीद लेकर सोता है,
ना ही अब घबराता है और ना ही बंद कमरे मे रोता है।

डगर अगर मुश्किल है तो सोचो मंजिल कितनी ऊँची होगी,
कुछ ऐसी शान तुम्हारी होगी, जो ना कभी किसी ने सोची होगी,
हौसलों की उड़ान को बांध सके, ऐसी कोई जंजीर तो नहीं,
और तुम्हारे संकल्प को काट सके ऐसी कोई शमशीर तो नहीं,
जो तय ना हो सके, इतना अधिक तो आसमाँ का भी विस्तार नहीं,
परिंदा बेशक घायल है पर मरने को तैयार नहीं।

कुछ ऐसा करना है तुमको, कि दुनिया को विस्मित करना है,
जीवन एक बार मिला है जीना है, कि खुद को साबित करना है,
असफलता तो एक नया मौका है, सोचो अनुभव कितना मिलता है
सोना जितना ज्यादा तपता है, उतना ही प्रखर निखरता है,
तुम बस कोशिशें करते रहो, विफलताएँ चाहे जीवन पर्यन्त मिले,
खुदा के हाथों प्रारब्ध मिला है, खुदा के हाथों अन्त मिले।

Arts & Creatives



~ Shreya Raj



~ Shreya Raj



~ Varshika Manoj Mudda



~ Shreya Raj

माँ

~ Shivraj Vishwakarma

माँ की सेवा से बढ़कर न कोई धरम,
चाहे जो कर लो व्रत दान पुण्य कर्म।
मंदिर में जिसे पूजते हैं रात दिन,
बन के माता पिता वो लिए है जन्म ॥१॥

वो एक आवाज सुनकर ही, सु बह और शाम होती थी,
मेरी धड़कन, मेरी सांसे, वही है डोर जीवन की,
वो जब कुछ न समझते थे, न दिखती माँ तो रोते थे,
हाँ जन्नत से भी बढ़कर है, वो ममता से भरी गोदी ॥२॥

है मातृ धन्य, वह मातृ धन्य, इस दुनिया मे जो लाती है,
नौ मास पेट मे रखती है, फिर उर मे हमे बसाती है।
सारी पीड़ा सारी उलझन, बिन बतलाये समझ जाती है,
वह प्रथम गुरु है जीवन की, जीवन जीना सिखलाती है ॥१॥

सब व्यथा कष्ट मिट जाते है, मन शुशांत हो जाता है,
सब कार्य सफल होते उसके, माँ का आशीष जो पाता है,
हम सबकी भूख मिटाने को, खुद ही भूखी सो जाती है,
वह प्रथम गुरु है जीवन की, जीवन जीना सिखलाती है ॥२॥

मन ही मन मे रोती है माँ, फिर भी बाहर से हँसती है,
दुःख दर्द के ऊँचे पर्वत से, खुशमय झरना सा झरती है।
सब दर्द छुपा करके रखती, बच्चो के संग मुस्काती है,
वह प्रथम गुरु है जीवन की, जीवन जीना सीखलाती है ॥३॥

माँ तो माँ ही रहती है पर, जब बेटे बड़े हो जाते है,
उस माँ को अकेला छोड़ के वे, अपना परिवार बसाते है,
मुश्किल मे कोई जब साथ न हो, माँ फिर भी साथ निभाती है ॥३॥
वह प्रथम गुरु है जीवन की, जीवन जीना सिखलाती है ॥४॥

TECHNICHE CHRONICLES

Navigating the Grandeur of the 25th Edition

~ Ankit



In the vibrant realm of North-East India, lies the colossal celebration of technology and innovation - Techniche. This year marked the 25th edition of this grandeur, making it a momentous occasion to partake in the festivities. As I delved into the organising team, little did I know the extraordinary experiences that awaited during this spectacular journey. The commencement in April kicked off with the Guwahati Half Marathon (GHM), a prelude to the main events in September. From coordinating pit stops to witnessing the unwavering determination of participants in the 21 km and 6 km categories, the GHM was a testament to commitment and resilience. Like Arjuna's gaze fixed on the goal, their dedication left an indelible mark, imparting a profound life lesson on commitment and unwavering dedication.

With GHM triumphantly concluding, the spotlight shifted to the main event in September—a culmination of planning that commenced in January. The month unfolded with a myriad of events, each boasting its unique charm and technical brilliance.

From captivating robotic events like Escalade, AquaWar, RoboWar, SkySprint, Track Titan, and Micromouse, to engaging tournaments like chess, BGMI, Valorant, and the captivating TechExpo, the atmosphere buzzed with excitement and anticipation. The heart-pounding excitement peaked during the RoboWar spectacle—a chapter that had captivated my imagination through countless online videos. Stepping into the arena, the air crackled with vibrant energy and anticipation. The battleground, resembling a gladiatorial arena, housed two formidable robots poised for an epic duel. These mechanical gladiators crafted with meticulous precision, stood as testaments to the genius of their creators. The crowd held its collective breath as the match commenced. The arena echoed with the clash of metal, sparks flying, and gears whirring as the robots engaged in a riveting dance of strategy and brute force. What set RoboWar apart was its

unpredictability—the dynamic nature of the battle. Each robot, a marvel of engineering, showcased unique weaponry and defensive mechanisms. The strategic dance unfolded not only in the physical realm but also in the minds of the creators, who controlled their mechanical warriors with a blend of precision and tactical acumen. As the dust settled and the victor emerged, the sense of awe lingered. RoboWar transcended being a mere technical showdown; it became a narrative of innovation, strategy, and the triumph of engineering prowess. It left an indelible mark, inspiring not just the creators but everyone fortunate enough to witness this thrilling clash of machines. Following the mechanical symphony of RoboWar, the narrative flowed into the uncharted waters of AquaWar—an event that had never been organised in any IITs previously. The anticipation was palpable as water robots navigated the high velocity and turbulence of the water, engaging in combat while



avoiding obstacles. This seemingly insurmountable challenge not only showcased technical prowess but also sparked intrigue and excitement. As the water robots manoeuvred through the aquatic arena, the audience witnessed a breathtaking blend of innovation and adaptability. The challenges posed by high-velocity water currents and the necessity to engage in combat while avoiding obstacles in water elevated AquaWar to a league of its own. The event not only pushed the boundaries of robotics but also left an indelible mark on the audience, highlighting the potential of technology to conquer uncharted territories.

The grand crescendo of Techniche unfolded in the Pro-Nites, an event that encapsulated the essence of fun and enjoyment. As the silver jubilee edition unfolded, the renowned singer Asees Kaur graced the stage, leaving an indelible imprint with soul-stirring renditions of songs like "Raatan Lambiyan" and "Makhna." The live performance transcended the ordinary, creating an



atmosphere of enchantment that resonated deeply with the audience. The Pro-Nites were not just a musical spectacle; they were a culmination of the collective joy and celebration that Techniche embodied. After the concerts, a stroke of luck allowed our team to meet Asees Kaur in person—a surreal experience that added a personal touch to the grand celebration.

In conclusion, my odyssey through the Silver Jubilee Edition of Techniche was a journey through realms of excitement, dedication, and pure joy. As the curtains descended and the lights dimmed, the echoes of Techniche's grandeur lingered, etching an unforgettable chapter in the annals of my experiences.

Snapshots

~ Yash Murmadkar



काश हम

~ Akshay Gharde

तो वह होता है ना, जब बस 2-4 दिन किसीके साथ बिताकर ऐसा लगता है कि She is the one, और फिर हम जल्दी-जल्दी बिना कुछ सोचे-समझे रिलेशनशिप में आ जाते हैं। But When Reality hits, तो उतनी ही जल्दी उस पर से मन भी उड़ जाता है। पर वह उसके साथ मुलाकातों का, बातों का एहसास जहेन में कहीं लिपटा हुआ होता है।

क्योंकि हम लड़कों के लिए इतना आसान नहीं होता इतने जल्दी किसीको भूल पाना, एक बार अगर कोई पसंद आ जाए तो। तो उस पे कुछ लिखा है मैंने...

काश हम दोनों कुछ और वक्त अनजान
होते,
ना तुम मुझे इतना जानती,
ना मैं तुम्हें इतना जानता,
तो शायद साथ होते हम।

एक दूसरे को जानने के लिए,
और कुछ सवाल होते,
कुछ और पल होते,
तो शायद साथ होते हम।

अब कुछ भी पहले जैसा नहीं लगता,
 तुम भी तुम नहीं लगती,
 जिसको पहली नजर में देख,
 मुझे प्यार हुआ था,
 जिसको देखे बिना मेरा
 जीना दुसवार हुआ था ।
 जिसके साथ रहकर लम्हों का,
 पता ना चलता था,
 जिसके साथ मैं दिल खोलकर,
 रोता मुस्कुराता था ।

अब साथ तो होते हैं,
 पर बात नहीं होती,
 एक शहर में होकर भी,
 मुलाकात नहीं होती ।
 तुम्हें देखकर अब वो पहले जैसी,
 मुस्कुराहट भी नहीं आती ।

और मिल भी जाओ सिरहाने,
 में कभी अगर तुम,
 तो हमारे दिल में अब प्यार,
 से भरी वो बरसात नहीं होती ।

हाँ माना सब कुछ बदल गया है हमारे
 दरमियाँ
 लेकिन आज भी तुझे ख्यालों में शामिल
 किए बगैर
 हमारी रात नहीं होती ।

Dear Team Cepstrum

This is a heartfelt message from your General Secretary who feels extremely fortunate to get the best team he has ever worked with.



As my term draws to a close, I find myself reflecting on the remarkable journey we have shared this past year. From coordinating remarkable events to celebrating our successes, from seeking guidance from our seniors to imparting knowledge to our juniors, from representing our department to enhancing the

reputation of 'Cepstrum,' each of you has been an integral part of this incredible team effort. I am grateful for the dedication, passion and ingenuity each one of you has brought to the table. Whether it's achieving milestones in our events or collaborating in our team meetings, it is our combined effort



that consistently leads us to victory and will always be incomplete without all of you. Being a part of Cepstrum and serving as the General Secretary to this wonderful team, will always be one of my best memories of college life. The friends I made here, the bonds I shared here will always remain special to me. I have always appreciated how you interacted with me more like younger siblings, transcending the usual junior-senior boundaries

As I prepare to pass the baton of responsibilities to the next year's team, I do take with me a treasure trove of memories we have created together. Serving as your General Secretary has been a profound honour as well as a privilege, a memory that I'll forever cherish



*Warm Regards,
Vatan Narang
General Secretary (2023-24)*

Mentors



Vatan Narang
General Secretary



Soham Parundekar
Branch Representative/DUPC



Sarthak Agashe
Branch Representative, EEE



Grace Mary Matson
Branch Representative, DUPC



Sanskar Kejriwal
Content Mentor



Mitali Potdar
Design Mentor



Riddhi Aggarwal
Events Mentor

ECE

Branch Repre



Lakshit Setia
Pre-Final Year, ECE



Prachi Sinha
Pre-Final Year, ECE



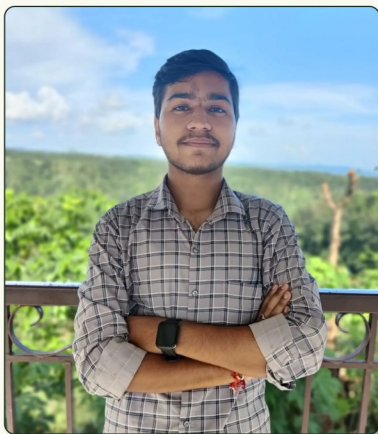
Devarsh Bhandari
Sophomore, ECE



Akshaya Sridhar
Sophomore, ECE

Representatives

EEE



Naman Kumar Jangid
Associate General Secretary
Pre-Final Year, EEE



Himanshu Agarwal
Pre-Final Year, EEE



Jasmine
Sophomore, EEE



Chirag Agarwal
Sophomore, EEE

ECE

Academic Re



Ipsita Jain
Pre-Final Year, ECE



Diya Arun
Pre-Final Year, ECE



Amit Kumar Padhi
Sophomore, ECE



Harnoor Kaur
Sophomore, ECE

representatives

EEE



Maharsh Raval
Pre-Final Year, EEE



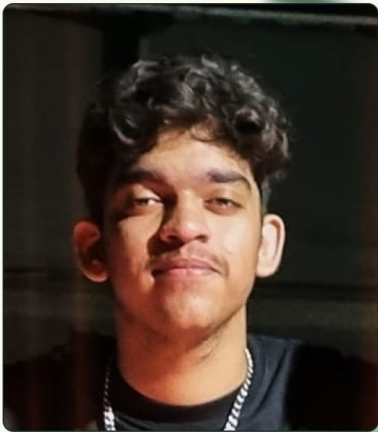
Adweit Singh Chaudhary
Sophomore, EEE



Sapaharam Vishnu Singh
Sophomore, EEE

Events

Inphase 24



Amaan Zaidi
Events Executive



Anany Sihare
Events Executive



Srishti Murarka
Events Head



Akshat Rangari
Events Executive

Inphase 24

WebOps



Geet Manik
WebOps Head



Tanu Siwach
WebOps Executive



Shagun Sharma
WebOps Executive



Ashmit Verma
WebOps Executive

Inphase Design

Inphase 24



Rajeshwari
Design Executive



Sameer Mehta
Design Executive



Dheeraj Chandra
Design Executive



Akshat Rangari
Design Executive



Paridhi Baruah
Design Head

Inphase 24

Inphase Content



Tejas Kadre
Content Head



Anika Bhardwaj
Content Executive



Kavya Lamture
Content Executive



Ashutosh Kumar
Content Head



Prashams Ganugula
Content Executive



Ankit Singh
Content Executive