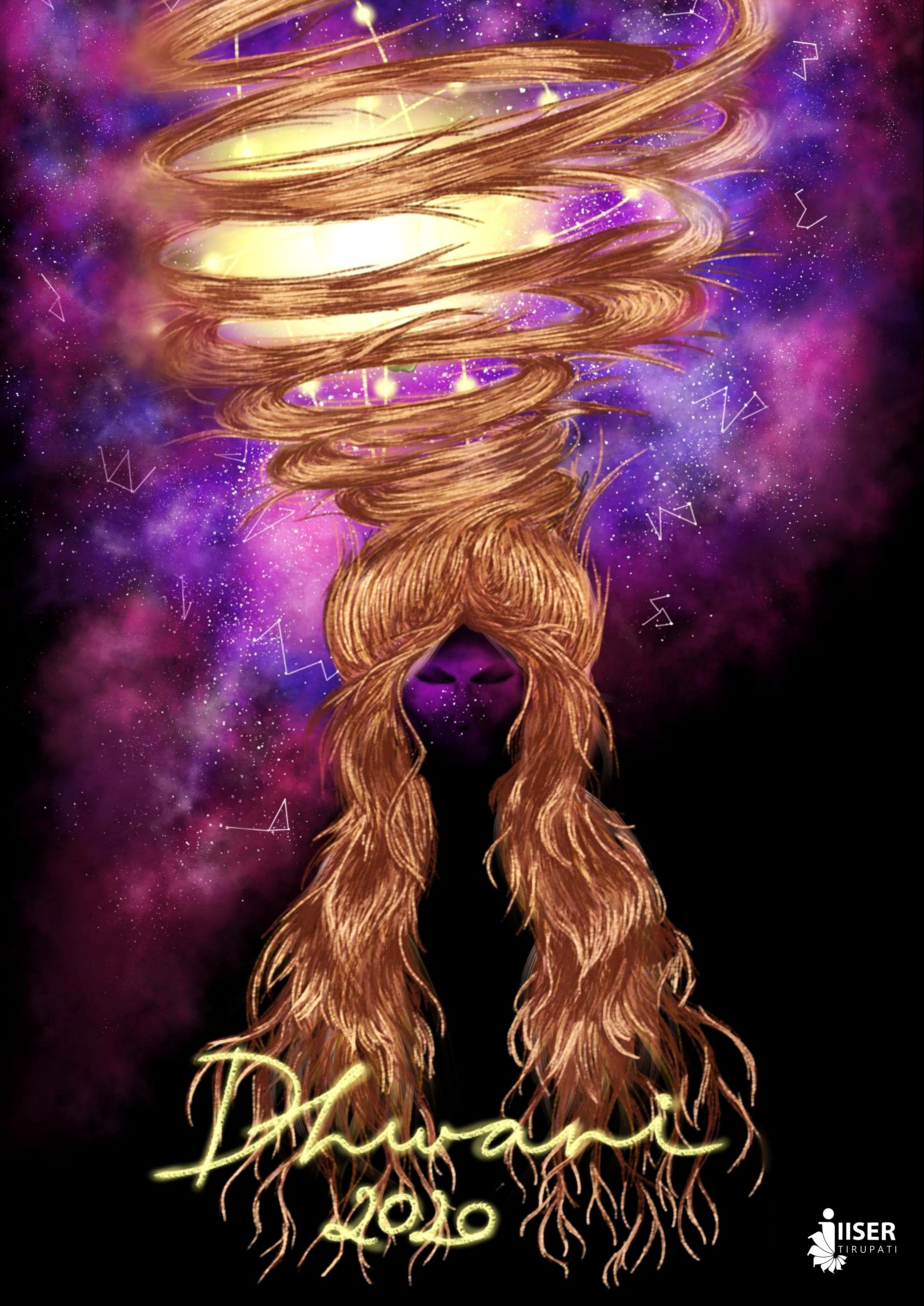


भारतीय विज्ञान शिक्षा एवं अनुसंधान संस्थान तिरुपति

Indian Institute of Science Education and Research (IISER) Tirupati

creating infinite possibilities...



Dhruvanu
2020

Dhwani Team



Hello everyone!

The journey with Dhwani has been one of countless transformations. From a fortnight of preparation to a more organized framework, from two-week chaos to months of lockdown, we have come a long way. As we bid adieu to the 2015 BS-MS batch – who first brought the magazine you see into reality – we hope they inspire the world as they have motivated us, in myriad hues and diverse paths, head in outer space and roots deep in the earth.

We have travelled through these five editions, moulting and growing as a team, united in our efforts. We thank the Director, the Deans, COSA, faculty, administrative staff, and all those who have helped in bringing this fifth edition of Dhwani to you.

Thus, we present to you: the echo, the whisper, the sound, the voice, the shout, the scream, the roar.

– Dhwani 2020.

Note from Director



I am delighted to know about the launch of the 5th edition of “Dhwani” – the magazine of the students of IISER Tirupati. This magazine showcases the writing talents of our students, entirely created and managed by them. Dhwani represents the cultural and creative diversity of students, expressed through writings and art form and embodies expression of their talents beyond the boundaries of classroom. Words and pictures when imaginatively put together, are the best form for expression of thought, and convey rich sense beyond the literal and visual meaning. I eagerly look forward to seeing this edition of Dhwani, exploring the timeless imagination of our students.

Prof. K.N Ganesh

Professor, Chemistry

Director, IISER Tirupati

Note from Chairperson of Committee of Student Activities

Dear Students

Congratulations on releasing the 5th edition of Dhwani.

This being the first message from COSA, I am quite thrilled to pen this down.

Our mind expresses better when it crosses all barriers, the simplest being the language barrier. Dhwani stands as an example of crossing all barriers, evident from the different language articles that it publishes. Like its name, Dhwani resonates with your thoughts; its horizons expanding and even reaching faculty members through their contributions. This expansion is commendable.

Having seen the campus since 2015, there are a few remarkable changes. From 47 students to about 700 students today, we have expanded to have elements of varied sorts. We have freedom to represent IISER Tirupati in any way we want. The campus is liberal and lets its residents express well. Hence there has

been a conscious effort to represent the Institute in a progressive light. My most important message to the students would be to face the challenges that academia and personal life poses to you, to address them methodically and to not succumb to the stress. Remember that there is no single metric for success – it is different for different individuals – do not compare yourself with others. Lastly, and most importantly, feel that you belong to IISER Tirupati and IISER Tirupati belongs to you. This sentiment will never make you go against the system. Even when you want to convey your opposing view, you would always do it constructively. This is the way forward for an educational institute.

Historically, wherever there was a river, there was a civilization. But from my experience at IISER Tirupati, wherever there are students, there is civilization. Let us embrace our differences and be united through the sentiment of science.



Dr. Vasudharani Devanathan

Assistant Professor, Biology,

COSA Chairperson

Note from Associate Dean (Postgraduate studies)

It is a privilege to write this note and grab print space among the expressions of creative minds. It is impossible to ignore the attempts all around us to stifle the freedom of expression. History reassures us that these attempts will always be futile. With this thought in mind, I send my wish that Dhvani serves as the echo of unchained voices and reverberates forever.

Dr. Ramkumar Sambasivan
Associate Professor, Biology,
Associate Dean,
Postgraduate studies



Note from Associate Dean (Undergraduate studies)

It is with great enthusiasm that I pen this note for Dhvani 2020. The vibrancy of Dhvani, the collective cultural harmony of IISER Tirupati's students, has resounded prodigiously this year. This has culminated in this magazine bringing an ensemble of presentations, evidently revealing a holistic experience created by the students. In a short time of four years, Dhvani strides its inspired journey and proves that the students will continue to evolve this immensely as the years go by to represent all its communal experience on IISER Tirupati's campus.

Dhwani, as its apt name sounds, rings and timbres, displays the exciting blend of various cultures, linguistic diversity, mastery of art, literature, intellect and some soul-stirring experiences captured in these pages by the students. As the name resonates, they bring a deeper essence of life itself through these articles. The most impressive aspect to me is the spirit displayed by these young minds, evidently displaying utmost optimism in the face of a minimally efficient transit campus.

Students of IISER Tirupati have blossomed into a vibrant set of minds through every aspect offered through Dhvani. Their collective talents outside of the classroom continues to stimulate their performance in academics as well. This year, particularly noteworthy for its forthcoming graduation of the first class of BS-MS students, leaves no doubt in my mind that a small part of Dhvani will live forever in their life as they move forward in their careers.

Long live the harmony of Dhvani!



Dr. Rajesh Viswanathan
Associate Professor, Chemistry,
Associate Dean,
Undergraduate studies

Contents

Student Clubs	1
Vivante 2020	4
प्रयत्न	5
देशभक्ति	5
Denny and the Blue Aliens	6
Inter IISER Cultural Meet 2019	10
A Victim to Another	11
नारी	12
Warrior of Wonder	13
Mount Everest	13
गरीबी	14
Rare	15
Hitcher's Diary on the Indian Commuting Experience	17
अस्तित्व	18
Importance of Water	19
Workshop on Modular Forms and Galois Representations	20
IISER-SPICMACAY Virasat 2019	22
Selfie	25
The Cage	26
NSS : Campus Cleaning Activity	29
First Letter	31
Saraswati Puja Celebration	32
The Cost of a Privilege	33
उन दिनों की बात	38
Will you?	39
Vijyoshi 2019	40
Induction Programme	43
iGEM	44
Hands on Telescope and Astrophotography Workshop	47
Asian Science Camp 2019	48
The Rhythm	50
First Batch Memories	51
Workshop on Data Analysis and Machine Learning (DAML)	53
Halloween	55
Science Day 2020	56
A Village	59
Science Loyal Knight	60
Life(time) in Quarantine	61
Artworks	63

Student Clubs

Anubhuti

The Classical Arts Club is one where the members meet and share any new pieces they have learnt or come across- be it vocal, instrumental, dances pieces or choreographed tunes. We have organised independent concerts and have also had several stage performances by renowned artists, that came about as an outcome of our collaboration with SPICMACAY.

Shemushi

Shemushi, the quiz club of IISER Tirupati, tries to make the students forget about their worries and have a wonderful time learning something new. Every Friday evening, students enthusiastically participate in the quizzes on far-ranging topics like World Wars, technological innovations, excellent literary works, Anime, etc. We host special quizzes on Independence Day and Science Day, and end the academic year with a quiz about IISER Tirupati.

Breathe

Breathe, which started in 2018, is the Mental Health Awareness and Support Club of IISER Tirupati. We hold regular sessions where we discuss various issues concerning mental health, ranging from simple everyday issues to chronic disorders, in association with professionals. We strive to make the IISER Tirupati experience inclusive while transforming it into a safe space for all.

Sports

Sports club comprises of all team captains who work together to plan and organise all sports-related events in IISER Tirupati. The club also works on improving the game of the players to keep the standards high.

Birding

The Birding club organises regular expeditions in and around Tirupati to explore different species of birds, butterflies, spiders and more. We also participate in several global birding contests held annually. The club has inspired wide appreciation of Tirupati's biodiversity among the IISER cohort.

Arts

The Arts club is who you go to when you want to conduct any event, including but not restricted to cultural programmes on Onam or Diwali, the annual dance competition Thandav, and events like Ethnic Day and Halloween. If there is something to celebrate, we will celebrate it. The club also serves as a platform for students, to showcase their artistic skills and talents.

Physics

We're Schrodinger's kittens! While we're doing physics and not napping, we're not doing physics and napping (other cases are non-differentiable so we didn't consider them). We present about, screen and simulate physical systems every meow and then.

Bio Wissen

Biowissen strives to integrate knowledge and expertise in the field of Biology and provides a platform for Science enthusiasts to discuss research works and propose novel ideas to solve existent problems. Participating in Science day and organizing talks in Biology are our primary mediums to spread knowledge and develop interest among individuals.

Math

Through the Math club, PhD and BSMS students meet thrice a week to learn and present on topics like Grothendieck completion and Witt group, and Axiomatic geometry. We also dazzle people on Science Day with models in knot theory, platonic solids, chess puzzles and probability. Occasionally, you'll see us play regular games with a mathematical twist.

Chemistry

The Chemistry club's motto is to promote chemistry in a fun way so that many people don't feel that chemistry is boring and not at all interesting.

Astronomy

We are the astronomy enthusiasts of IISER Tirupati. We focus on modern astronomy and astrophysics and explore observational and theoretical research carried out in this field.

Chess

The Chess Club of IISER Tirupati was established in 2017 and has been active in the institute ever since. We organise tournaments in various formats from time to time and so far, four such tournaments have been successfully conducted in the campus.

Fovea

Fovea, the photography club of IISER Tirupati. Our club is involved in a range of events like teaching photography to amateur enthusiasts, covering events in institutes like Vivante and Science Day, photo-walks and much more.

Movie

On Friday night, when you're done with all your classes and just want to chill, pop on over to the Movie club screening of the week. We screen movies of all genres and languages (sometimes, we even go a little cuckoo and skip the subtitles).

Lit Club

You should come to our sesquimestral meetings.

Membership is open to anyone who can figure out how often we meet.

Jivivisha

We at Jivivisha strive to explore the art of dramatics both on- and off-stage. With a play every semester in either English or Hindi, we try to promote a “cultural” theatre experience.

The high priests of Jivivisha select you as worthy through a series of secret messages and whispers, almost like the Illuminati.

Unnati

From Unnati we aim to extend help to communities, only to realise the concerted nature of the experience of reaching out: a lot like the interaction of trees that engage in a leavening exchange of resources and ways, to grow and in unison.

Institute Innovation Council (IIC)

Institution's Innovation Council(IIC) is an initiative by MHRD, Govt. of India to encourage as well as nurture young minds by supporting them to work with new ideas.

The council was established at our institute in 2019 and our team has been working since then to foster the culture of innovation among students. Currently, the council's members comprise of both faculties, including HODs and students.

A few of our past activities have been entrepreneurship talks on women's day by some renowned entrepreneurs from biotechnological industries. Currently, we are working on Ideathon, where we have asked students to come up with solutions to tackle COVID 19/20 pandemic. We plan on organizing more of these competitions/interactive sessions in the future.

Vivante 2020

PS Vishnuprasad

BSMS 2017

Vivante 2020, held on 17, 18, and 19 Jan 2020, was the culmination of efforts led by over a100 students. Bigger, brighter, and more festive than its predecessors, Vivante 2020, was hosted with the theme ‘Carnival’.

It was inaugurated on the first day by the Director, Dr KN Ganesh, and three exciting days lay ahead of all of us. Various events across all walks of arts and sciences brought out the fiercest competitors within ourselves. New competitions like Stand-Up Comedy and Improv were welcomed with as much enthusiasm as our most popular ones like Hunger Games (rechristened as Gorging Wars). We also had enthusiastic participation from our next-door friends from IIT Tirupati as well as other colleges around Tirupati thanks to our pre-Vivante events and PR outreach networks.



Three days flew by as we gorged on junk food, ran venue to venue, and rode around on Jawa bikes that we'll probably not own ourselves anytime soon. To top our excitement, the much-awaited stand-up comedy show by Rahul Sridhar had us rolling on the floor, laughing. The wine-soaked cherry atop the cake was the ensemble performance by God's Own Music Festival (GOMF) that had us rooted to the dance-floor for hours by providing

us with a never-before-seen combination of water drums, violin solos, and EDM medleys—sometimes all together – bringing the fest to a thematic close.



Vivante 2020 was an event grander than all previous events here at IISER Tirupati. This was undoubtedly due to the concerted efforts of all those who were involved for almost a year. From securing sponsors to last-minute preparation, the organisers showed herculean patience, perseverance, and diligence. This wouldn't have happened without the constant guidance from the COSA, admin staff, and the student populace. Here was an event to one-up all previous Vivantes and to set the bar high for the next one.





प्रयत्न

Yogeshwari

BSMS 2018

अंधाराची ओढ असावी

जेव्हा प्रकाश नसती जीवनात

अंधाराला प्रकाशात रूपांतरीत करण्याकरिता

धाडस असु ध्या मनात

विश्वास निर्माण करण्यासाठी

प्रयत्न चालु राहू ध्या जीवनात

देशभक्ति

Yogeshwari

BSMS 2018

आदर्श घ्यावा त्याने त्यांचा

ज्यांनी आपले प्राण त्यागले देशाच्या स्वातंत्र्याला ॥

आदर्श घ्यावा त्या सुधारकांचा

ज्यांनी देश आदर्श, ज्ञानी आणि कर्तृत्वान बनवला

सलाम माझा त्या नेत्यांना ज्यांनी,

आयुष्य खर्ची केले सर्वोच्याय भल्याला ॥



DENNY AND THE BLUE ALIENS

Kaushal Pillay

BSMS 2015

Once, I was sitting at the bar alone, with a pint of beer. Craft beer, a brew local and fresh. That's the only way one should drink beer. Anyway, I digress. So this evening, a gentleman walked up to me. He was wearing a nice grey suit, with a white shirt underneath and a light grey tie that complemented the suit. He sat on the stool next to me and ordered a whiskey with soda. Then he turned to me and said, "Funny weather we've been having, eh?"

"I don't know," I replied. "I don't really pay much attention to these things."

"Is that so?", he said, with a shake of his head. The bartender served his whiskey. He downed it all in one gulp and put the glass back on the bar. He then put his hands on my shoulders, looked me in the eyes, and said "My friend! You must pay careful attention to everything." He then brought his face very close to mine, and whispered "Everything." Then, with a wink that left me even more bewildered, he walked away to a table in the corner.

The bartender had been watching the whole interaction. He gave me a look that said 'What a weirdo' and then went back to his work. It had gotten me thinking though. There was something about this gentleman that reminded me of my friend John. I just couldn't place it clearly.

John was my friend from Canada. He had moved to Alaska for the past few years. He was, to put it kindly, a glum guy. On top of that, he was a denier of climate change. Wait. That wasn't his opinion. He believed that climate change was caused by a bunch of blue aliens. Yeah, you read that right. He had once tried to talk me into it at dinner.

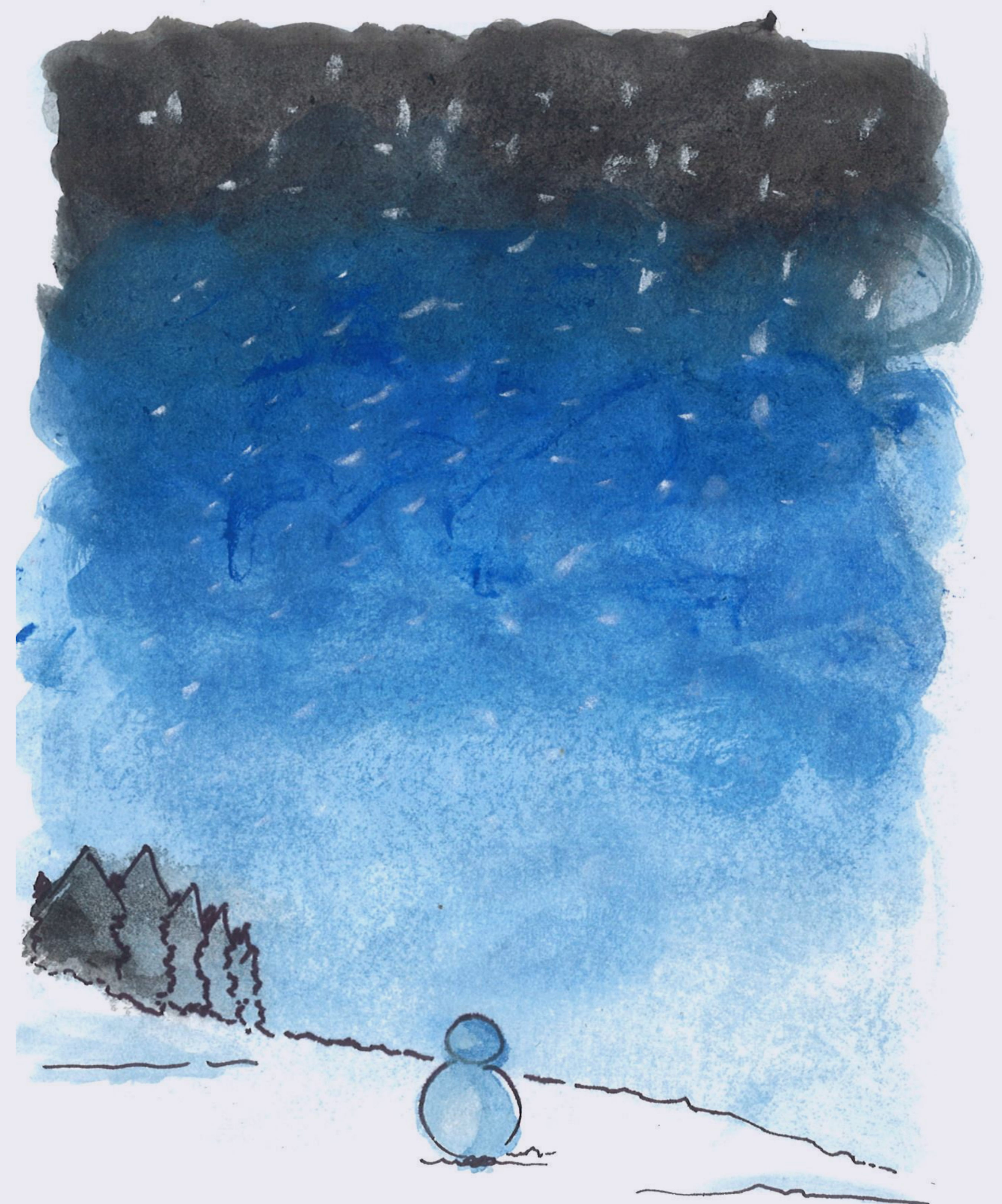
"Ron," he had said. "You have to look at the evidence. I know tonnes of people who have seen these aliens in Alaska. In fact, if you Google it, you will get photos as well!"

"John," I had asked as calmly as I could. "Then why do I, who works with the Environmental Protection Agency not know about this?"

"It's because your bosses don't know it either! Or they simply ignore the evidence!" He had scrolled through his phone and said, "Look! I tried to take a picture last time I saw one."

I had squinted at the screen. The photo appeared to have been taken from far off, but I could see something which looked like a snow-man on top of a snow-horse. In my mind, I silently vowed not to accept any dinner invitation in the future.

"It's all related!" John had continued explaining. "Every time it gets cold around here, we see these creatures. I have never seen them in the summer. Obviously, they bring the cold." Or, children make snowmen whenever it snows, I thought. "People die or go missing too. In fact, just last week, Carter's son – Carter is a farmer around here - went missing. I am sure these blue aliens took him to do some experiments. He hasn't been found yet, even though the policemen have searched every inch around. I



am telling you; these aliens cause the cold.”

I had recalled that conversation trying to figure out what this gentleman in the grey suit had in common with John. Was it the sparkle in the eyes? The one that seemed to suggest that they knew things others didn't? Was it the way they had seemed so invested in the weather? I carefully looked at the man sitting at the corner table, trying to think. His white hair had reminded me of another conversation with John.

“What about global warming?” I had been asking. “Even if these aliens are real - I am not saying they are – global warming is still real. How does the temperature of the Earth increase every year, if all that these creatures do is bring the cold?”

“Oh, that's because of my girlfriend,” John had replied without missing a beat.

“Y-your girlfriend?” I had stared at him, flabbergasted. A lot of questions had been swirling around in my mind, but I had decided to ask the most obvious one. “You have a girlfriend?”

“Oh yes. Her name is Denny. A lovely lady actually, though a bit of a control freak,” he had replied. “She is European. Came here just last year. I met her on this cruise from California to Alaska. She was really interested to know about the blue aliens. Believed me right away.”

“I see,” I had said. “And she causes global warming?”

“Yup,” he had said, confidently.

“Umm. How exactly, if you don't mind me asking?”

“Oh, she's always causing fires. She doesn't mean to,” he added, immediately. “She can't help it. She likes these scented candles, you see, and she has three pet lizards. Well, two pet lizards. One died in Alaska. But these lizards, sometimes they knock a candle over, and poof, we have a fire.”

“You're telling me, her fires cause global warming?”

“Oh yes. She's burnt a lot of houses. Everyone is surprised as to how she hasn't burnt herself, yet. European luck, I suppose. Wait, let me show you a pic,” he had said and showed me a photo from his phone. They were both standing next to a waterfall, each one holding a lizard in their hands. She had white hair and was definitely quite older than John. Old enough to be his aunt, actually.

“She's very pretty,” was all I had said.

“I know, right?” he said, looking at the picture. “I must be the luckiest man alive.”

Was that it? The fact that both Denny and this gentleman had white hair, was that the link? No. My mind told me that there was something deeper that they had in common.

I looked at the gentleman again. White hair, prominent jawline, grey suit. I recalled the way he had interacted with me, trying to contrast it with John's. What was the similarity? The way they carried themselves? Like they had secrets? I thought back to the last conversation I had had with John.

He had been drinking heavily all night. He looked very morose. I had asked him what the matter was.

“My sister, Aria,” he had started saying. “She poked one of the blue aliens with a butter knife, and it just straight-up melted. After that, I haven't seen a single one. I think she saved the world man.”

Or winter ended, and there's no more snow, I had thought to myself. “But that's a good thing, isn't it? What's got you down?”

“It is Denny. She died.”

“What?” I had said, shocked. “How? What happened?”

“She had some anger issues; she was working on them. That day, she had a fight with one of the women who live above our apartment. So she was meditating to calm down. She lit the scented candles and sat down cross-legged. Unfortunately, one of her dragons knocked a candle over, and the fire spread quickly. The entire building burnt down, and Denny with it.”

I had been speechless. I hadn't known how to react. I had quickly composed myself, and said, “I am sorry to hear that man. Is there anything I can do for you?”

“No, but thank you” he had said. He then added, “Actually, there is something. I am meaning to go to Alaska one last time. I have to get my husky back here with me; he is with my friend Tom right now. And I was hoping to just do one last hunt to see if these alien things are still around.”

I had almost refused, but he was clearly very sad, so I had gone with him. And boy, had my life changed after it. One

week in the cold, barren north can do wonders for your patience. Of course, we didn't find any snowmen in the middle of summer-

Grey suit! That was the link! John had a suit which was the same shade of grey that this gentleman was wearing. And if memory served right, John had been buried wearing this suit. Hah, finally figured it out. Grey suit. With a smile on my face, I asked the bartender for another beer.

...

The above was my attempt at what is called a shaggy dog story. A shaggy dog story is an extremely long story or anecdote which ultimately goes nowhere and contains irrelevant incidents. There are various examples in fiction, and the name also serves as a fan theory for an ASOIAF character. You can also read up on the Shaggy God story.



Kshitij Sinha

BSMS 2019

INTER IISER CULTURAL MEET 2019

PS Vishnuprasad

BSMS 2017

The second edition of Inter-IISER Cultural Meet (IICM) was hosted by IISER Thiruvananthapuram from 20th to 22nd December 2019. Following IISER Kolkata's spectacular event last year, organizing the event was no small feat but IISER Thiruvananthapuram delivered. They set the bar high in all aspects of the event, from management to competition, while being innovative and highly competent.

The campus, nestled in the foothills of the Southern Sahyadris at the foothills of Ponmudi Hills, is about an hour away from the state capital of Thiruvananthapuram City. The contingent from IISER Tirupati reached there on the 19th of December, and were welcomed to the beautiful campus not just by the cool winter breeze but also by the hospitality offered by the institute.

The events began on the following day, and the competitions commenced. Our talented students put up a fierce battle at all

fronts and did their best. Between all the events — in the green rooms, backstage before going on, running pillar to post-preparing and arranging — we barely noticed the three days going by. Every waking moment was fun; interacting with friends, exploring the campus, meeting friends old and new from across the country, stuffing ourselves with food, and taking all of IICM in. The best part came on the last day when the much-awaited performance by the Bangalore based fusion-rock band, When Chai Met Toast, knocked the ball out of the park. When the fatigued and sleep-deprived bodies of a few hundred 20-somethings dance for hours at a DJ party after a concert, you know that it must have been immensely impressive.

Coming back from Thiruvananthapuram, we were as tired as we were energised; filled with ideas and hopes for the next year, having made the best out of the three days at IICM.



A VICTIM TO ANOTHER

Shubhra Singhal

BSMS 2019

Hey, hey... shhh... shhh... please don't cry...
I didn't want to hurt you,
I didn't want to rape you,
I don't know. But I did it. Why!
My whole world has been a sham...
They programmed me this way.
I didn't make cheap comments about girls,
my friends misapprehended me to be gay!
I helped my mother in cooking,
my father slapped me for doing a woman's thing!
I tried to share my feelings with my mother at 5.
She told me to not be frail, "Boys don't cry.
If your eyes aren't as dry as a desert,
shame on you for being so pert.
Boys are strong, boys aren't afraid.
Pink is for girls, pick up a darker shade.
You must earn to support the family.
Nobody cares about how you want to live jovially.
Go get a job, get a degree!
This is the world's decree!"
Soon, all of this became ingrained in me despite being
faulty.
I don't know when, but they robbed me of my identity!
I grew a beard to hide all that I feared.
When I heard you laugh on the street freely,
the animal inside me broke off hungrily.
It couldn't shake you off my head.
As it was taught, it just wanted to take you to bed!
Your screaming and wailing was music to its ears.
It was made to protect me, losing my ego is all it fears!
Nurtured by the milk of society,
it also robbed me off my identity!
I don't know how, why or when,
But my pleasure was all it cared about then!
Not your life...not my life...
but only the knowledge that the society has given it so far,

that you are weak, and that man is the king, that I am the
all-star!

I don't expect you to forgive me, for I'm not sorry,
I just wanted to share with you another victim's story!
I'll never understand your pain, I don't expect you to
understand mine,

It's the one decaying me from inside, every second,
hurting my spine.

"I forgive you." she said between her tears,

Her face coming out from the dark of her fears.

"A victim to another, if you join me in this fight,
maybe we'll guide this society into light,

No more identities will be lost, no more women paying
the cost!"



नारी

Surya Narayan Sangitra
PhD, Physics

दो अक्षर का शब्द है लेकिन
सब अक्षर से भारी
न में आ की, र में ई की
मात्रा से होती है नारी ॥१॥

माँ, बहन, साथी, भार्या
होती है ये नारी
सब सम्बन्ध सब नातों की
जननी होती नारी ॥२॥

माँ की ममता, लाड और प्यार
उनकी बात, उनकी मार।
सबसे है न्यारी
माँ भी है एक नारी ॥३॥

बहन का प्यार और बलिदान
दुनिया में है सबसे महान
माँ के बदले गाती लोरी
बहन भी है एक ऐसी नारी ॥४॥



घर कि पत्नी बनती वो
सुख दुख में साथी हो
अच्छी सलाह देती सारी
ऐसी है भारत की नारी ॥५॥

दुनिया का आदि है वो
अन्त भी है नारी
धैर्य का मन्दिर है वो
मस्जिद भी है नारी ॥६॥

वेद वेदान्तों कि है ये उक्ति
नारी से ही दुनिया होती
भूमि, अग्नि, वायु, गगन और बारी
जीवन की उत्पत्ति है नारी ॥७॥

सीता बन कर सब सह जाए
दुर्जन का जब कहर आए
दुर्गा होकर दुष्ट को मारी
ऐसी थी भारत की नारी ॥८॥

नारी को जो मान देता
सम्मान और प्यार देता
उसकी नैया होती पार
ऐसी होती है नारी ॥९॥

WARRIOR OF WONDER

Anonymous

BSMS 2018



A novice warrior with a daunting task,
Set out with a shiny old cask.
“That should do it”, he mused,
Although he was still confused.
Ceaselessly travelled did he,
Along the way in symphony
Two commoners asked if he was lost
To them he said, “At any cost
O! souls, I must hurry for I am preoccupied”
With the gates just closing he arrived
Oriental world standing before him
Raised the cask to the lord’s whim
Looking at the rusty coins the old man smiled
“Do I get the Candy now?” said the warrior child.

MOUNT EVEREST

Yogeshwari

BSMS 2018

अभी तो छोटी हूँ, लेकिन सपना बड़ा है।
Mount Everest चढ़ने का मेरा ख्याल है।।
लोग क्या कहते हैं, इससे नहीं पढ़ता मुझे कोई फर्क।
अपने सपने को पाना है, इतनी है बस दिल में धड़क।।
देखना मैं अपना सपना जरूर पूरा करके रहूँगी।
और लड़कियां भी लड़कों से कम नहीं होती,
ये बता के रहूँगी।।



गरीबी

Sachin Kori

BSMS 2019

एक ऐसा शब्द उठा मन मे
जो कारण दुख का दर्शाता है।

हैं भाग्यशाली वो जन
जो इससे दूर रह जाता है।

पर उनका क्या होता है
जो इसकी जकड़ में आता है।

रोटी, कपड़ा और रहने का
मुश्किल से ही कर पाता है।

हर मोड़ पे उनका जीवन
कष्टों को सहते जाता है।

दुविधा जब उनकी यह देख
दिल दुख से भर जाता है।




RARE

Shubhra Singhal

BSMS 2019

I was a prisoner,
the cause for high-pitched screams? The actions of my jailor.
I never understood why I did it,
Should I give myself or the people around me the credit?
Does the prison really stink this bad or is it my soul?
Decaying from my core since I made that girl my goal...
They say they tie me down every night and beat me to return the favour,
But I know it too well, food is bland in front of the screams we savour!
So I never make the same mistakes that girl made on my bed,
I never scream or cry, when my eyes are covered with spots of red.
They are all failures, as I still don't know her pain.
I don't know her control, to live one's life controlled by a chain!
I've always known freedom, and that's why I'm going to run away again.
Not for the pleased wind, but this time for the piercing rain...
Last time I came close, so close.
I touched the same clothes.
But this time, it's mine,
The pleasure we both deserve, the one which is divine!
She was sleeping peacefully, I never wanted to scare her.
I merely wanted to touch her again, her – light as a feather.
The police sirens behind me awakened her,
bringing back the nulled fear, making her falter.
“Please leave me. I can't go through that pain again...” she pleaded and cried.
“Pain is neither given nor taken, it's as constant as life...” I replied.
“Why are you here? Weren't those three weeks of me satisfying?” she asked
bitterly.
“I just wanted to tell you that it wasn't your fault, it's the lies we are sold so
crassly!
They taught me that women are for my service, and they were not born to be
gritty.
You were taught to be weak and pretty, I was taught to be strong yet witty.
Before we were human, I was a man and you a woman!
I was the symbol of strength, you were the embodiment of love,
I was like the lion; you were to resemble the dove...
When the man realised he was no lion,
out of frustration, he went after the dove,
her wings he tore and thought it to be a place to lie in...



So, if there wasn't a lion, there wouldn't be a dove.

No more people like me, doing sickening acts in the name of love..."

The sirens were close, I knew it was time for another round of penitence.

I jumped out the window, leaving her at peace after my unexpected appearance.

I opened my eyes and was greeted by darkness, the same pain.

I fail to see how my mind finds the courage to dream again,

to dream that one day I'll be free to say all that to her,

to be capable enough to walk together.

But they never let me go, beating, and tying me down.

Telling that my dream of reaching out to her is another trick, they frown!

After all, a dream like this from an inhuman prisoner like me is rare.

It puts the world out of gear, to the average human's categories, it doesn't seem fair!

But to us, the sinners, it's something common to the conscious.

I hope it's not rare to you. I hope you see her before the lust! Be cautious!



HITCHER'S DIARY

ON THE INDIAN COMMUTING EXPERIENCE

Prateek Yadav

iPhD 2019, Biology

My daily, arduous commute from college in Delhi to home in Gurgaon presented in a foaming rant.

...

“Wee! My saviour is here!” I squinted my eyes at what seemed like a Haryana Roadways bus in the distance; I swear Clint Eastwood would have materialised and pried open my eyes with his crinkly hands, “Now remember, things look bad and it looks like you’re not gonna make it, then you gotta get mean. I mean plumb, mad-dog mean.”

The bus grew bigger as it trudged toward us men—its grumble duetting with its metallic clank—eager to lap a ride or many. I say men, because out there in the public, there are hardly any women. Which is why when one massive aunty sediments in a car, I ooze out a sigh of relief as if it were an endorsement of the driver’s scrupulousness. (Sexist me. Sexist me.) [Since I ain’t no Watson or Crick, it has only recently arrived under my notice that this saviour lady I have postulated might serve as an instrument that shall plonk itself on my skinny self as other participants in the crime rob me of wads of notes from my wallet].

Haryana Roadways buses ply on this route. Moreover,

Rajiv chowk is—one of their designated stops. Designated on paper, that is. Disregarded in practice. For some weird logistical reasons that go beyond my comprehension they don’t ferry passengers to Rajiv chowk even though they do stop there to pick up passengers.

Smug conductors: these guys will romance loose change but not smile at a human. The drivers aren’t much charming either. So, the idea of pleading them to drop me off at Rajiv Chowk would be scoffed at by the Association of Plumbers for Fixing Leaky Heart Valve. Once upon a time though, the noxious smoke of Delhi extravasated into every Haryanvi morsel of their being and lodged itself so well that they transmogrified into angelic custodians of Haryana Roadways and invited me to hop on. However, not without the expense of having to placidly nod to the driver’s incoherent, angry desi ramblings ladled out in a tone as bristly as his beard throughout the journey home lest I witness my head being dunked in the engine box for having betrayed their generosity. Thence, I sat, unremittingly serving him with intonated “Hmms” that would make cows across Haryana deliriously smash their way into oestrus and swipe right on me. Thank you college for giving me a degree with stories.



अस्तित्व

Ajay Kumar Yadav

BSMS 2019

में कौन हूँ
क्या सरल साधारण सोच हूँ ?
या अनंत अणुओं से बना,
परिभाषित एक तरह का जीव ।
में यह देह हूँ।
या देह का यह भाव कि “में” हूँ ।
क्या है उद्देश्य ?
अस्तित्व ही क्यों मेरा ??
क्या किसी ने कहीं बांधा है ?
उस मवेशी की तरह,
जो रूट और नाद को ही।
भव मानता।
इतना तो मालूम है,
कोई भ्रामक खेल में खेल रहा,
सुबह के सपने की तरह।
यही हार की मेरी सीमा लगती है,
पर खुद को संतोष दिलाता हूँ ।
एक सोच से जो शायद झूठी हो सकती है,
कि किसी बालक के झूठ को,
सच मान उसके साथ खेलना ही,
मेरे अस्तित्व की परिभाषा है और कारण भी।



IMPORTANCE OF WATER

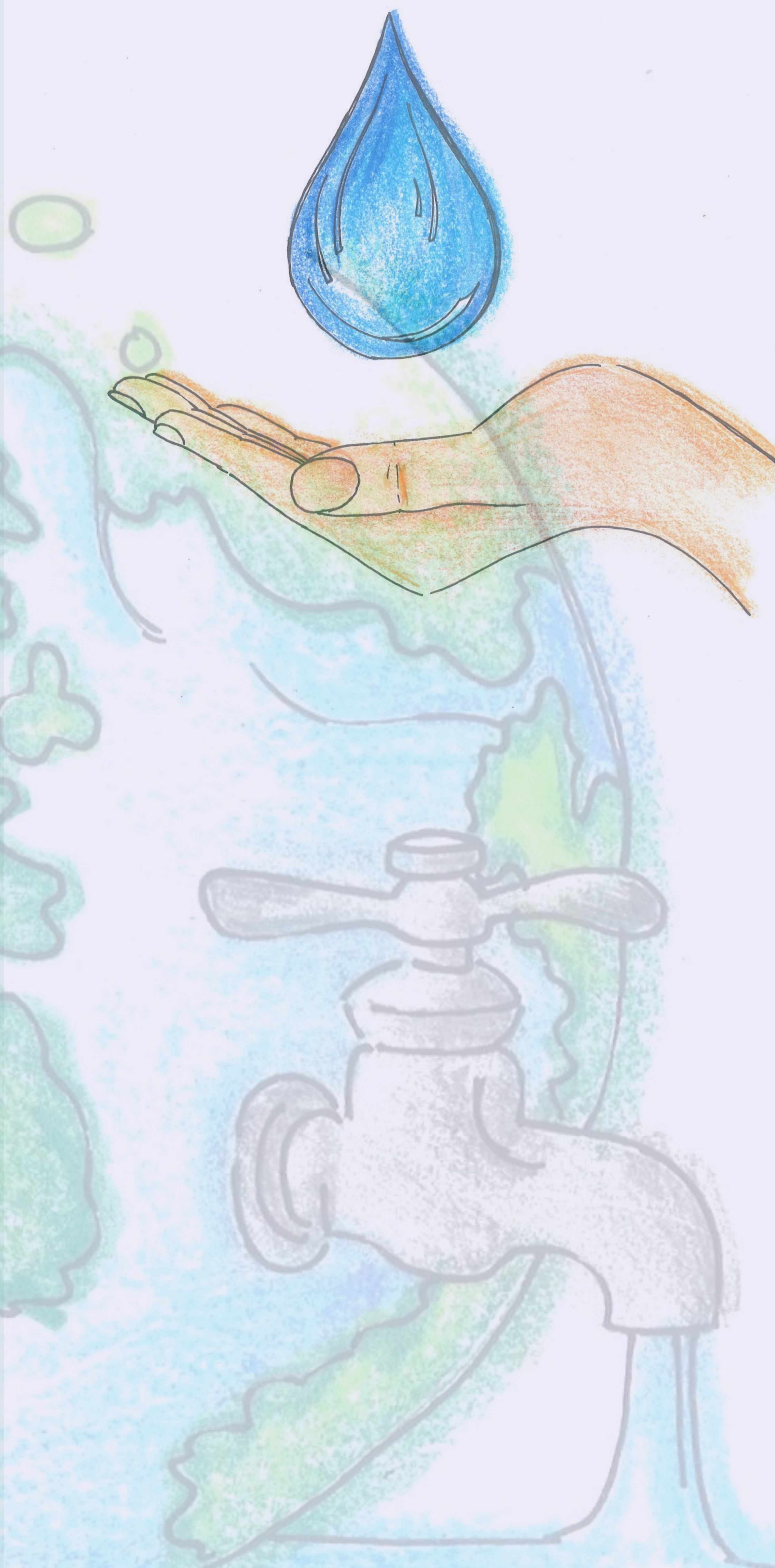
Anubhav Kumar

PhD, Chemistry

Prof. Richard N. Zare, an eminent scientist from Stanford University, USA, delivered a colloquium talk titled “Water So Common, So Mysterious” at IISER Tirupati on November 19, 2019. During the talk, he reiterated “Water, water, everywhere, nor any drop to drink.” Indeed, water covers about four-fifths the surface of the Earth, and human life depends on potable water. Water is so abundant, its behaviour so familiar, its appearance so commonplace, that we are tricked into thinking that there is nothing new to be learned about this substance. We, however, are in for a surprise... Unquestionably, water is a weird liquid, which, in its solid form (ice) floats on liquid water at room temperature. If water was not densest at 4°C, ice in ponds and rivers would freeze from the bottom up and kill all aquatic inhabitants; if water did not absorb heat so well, water on the Earth would have boiled away long ago; and so forth. Parents often tell their children to wash their hands and regard water as a harmless but excellent solvent. Imagine then our surprise to find that tiny water droplets can be highly reactive, that its behaviour is remarkably different from that of bulk water – as seen in Water Microdroplet Chemistry – and that it is important in chemical process and in practical application.



Prof. Richard N. Zare



WORKSHOP ON MODULAR FORMS AND GALOIS REPRESENTATIONS

Anonymous

IISER Tirupati hosted a weeklong workshop, "Modular Forms and Galois Representations", between December 11-17, 2019 as part of the Advanced Training in Mathematics (ATM) schools that are organised by the National Centre for Mathematics (NCM). The workshop was held jointly by Professors Shalini Bhattacharya (IISER Tirupati) and Eknath Ghate (TIFR Mumbai). The program featured stimulating lectures and research talks by distinguished mathematicians which included the likes of Professors Neil Dummigan (University of Sheffield), Chol Park (UNIST), Eknath Ghate and Sandeep Varma (TIFR Mumbai). Among the varied topics that were discussed, there were intensive lectures on rigid analytic geometry, mod- p representations of finite groups, L-values and congruences of modular forms, to name a few. There were

also gruelling problem-solving sessions to encourage the application of theory and enhance its appreciation.

The program witnessed over 30 participants, which included graduate students, post-doctoral fellows and professors having similar research interests, from as many as 20 institutes all over the world. As is the purpose of an ATM school, such a diverse collaboration between professional mathematicians and students provided young researchers with exposure to cutting-edge research in the fields of Galois representations and its interactions with several other areas of modern mathematics. The tutorial sessions were beneficial for everybody involved with quality discussions taking place. The program was a massive success, and IISER Tirupati is committed to hosting many more such programs in the future.



Mayur Bajaj Manoj

iPhD, Biology



Amartya Bera

BSMS 2017

IISER-SPICMACAY VIRASAT 2019

AN ELABORATION

Yukta Ajay

BSMS 2018

There is never a dearth of minds who appreciate and can relate to Classical and Traditional Art forms. SPICMACAY - Virasat Series was a wonderful opportunity for people with such shared interests to come together and host a set of events that would hopefully appeal to the unacquainted audiences.

Working with constraints such as a classroom-turned-auditorium and outsourced music systems, we manoeuvred our efforts into coordinating and satisfying all requirements from both ends of the spectrum- the artists and audiences.

There were two workshops included as a part of the Series – one on Gond Painting, a form of Dravidian expression most popular in regions of Madhya Pradesh; and Pattachitra Painting, inspired by the Jagannath and Vaishnava sects of Odisha. The length of each workshop was about six hours, where we were guided by professional artists - Mr. Mayank Shyam for Gond painting and Mr. PC Mohanara for Pattachitra, in their respective fields of expertise. At the end of these workshops, we learnt about the intricacies of each art, and were able to design basic paintings, attempting to add our touch of modifications to it, but staying stuck to the specific artform.



The series showcased five major performances by various artists that spanned almost an entire week, which unlike the concerts we may usually attend, were Lec-Dems and directed at audiences learning finer details that are seldom noticed. Attending these concerts and performances probably give us the biggest advantage of knowing the artform through the eyes of the artists on stage, as well as a chance to personally interact with them.



First in the Series was a Bharatnatyam recital by Padma Shri Smt. Malavika Sarukkai, where she taught us to appreciate the subtleties of each hand movement ('Mudra'/'Hasta') and every expression that goes into creating an emotion. She also explained to us the various components of a typical performance, backed by interpretations of why and how they came to be so.



The second performance was a Carnatic Veena recital by Dr. Jayanthi Kumaresh, which mostly proceeded as a Lec-Dem on the whole, with renditions, their interpretations and brief interactions in between. Apart from playing several compositions that helped us understand the vastness and beauty that the instruments on stage could explore, she also patiently explained to us the meaning of 'Raga' – a specific set of notes combining to create an imagery of a certain emotion, and 'Tala' – a rhythmic cycle of a definite set of counts. She also gave an insight into the history and evolution of the Saraswati Veena, the Mrudangam and the Ghatam- which are essential percussion accompaniments in any Carnatic Music concert. The highlight of the concert was probably the Ragam-Thanam-Pallavi, also known as RTP in Raga Kaapi – the equivalent of Raag Pilu in the Hindustani system, more of Mishra Pilu to be specific. After the concert, we were fortunate to be able to interact with her for quite a long time and through these conversations, we shared our views with her on various subjects and also got to know her opinions about them.



The third event was a Hindustani Vocals concert by Pt. Jayateerth Mevundi which began with Raag Megh followed by Raag Behag, quite similar to the sunshine that follows rains. The audience got a glimpse of the Kirana Gharana gayaki, which reflects one of the four main styles of rendition in the Hindustani system.



Next up in the series was a Carnatic Vocals concert by Smt. Bombay Jayashri. This was a very different experience for all of us since she made sure that every enthusiast in the audience would have a 'favourite aspect' that they could carry back with them- she included several pieces like kritis, bhajans, RTP (in Dwijavanthi Raga, equivalent to Jaijaiwanti in the Hindustani system) and Thillana (in Desh Raga). Typical of a Lec-Dem session, it was a soul-stirring concert with beautifully chosen and rendered Ragas by Smt. Bombay Jayashri and the accompanying artists on stage.



The concluding event of the series was a Kathak performance by Pt. Rajendra Gangani. This performance included a Shiv - Stuti, a dance piece that depicted the Vivekananda Statue in Kanyakumari, some improvised elements and finally 'Abhinaya' and Jugalbandi. As the performance progressed, we could witness a change in the way of depiction with each piece that was portrayed.



All in all, SPICMACAY - Virasat Series at the institute was something that none of us had experienced earlier, so we ought to think of it as something special and treasure this experience forever. Most importantly, we learnt to appreciate and identify the finer details that each artform brings along with it, which I'm sure sets us at a higher level of how we perceive it now than before. Looking forward to being part of such events in the future as well!!



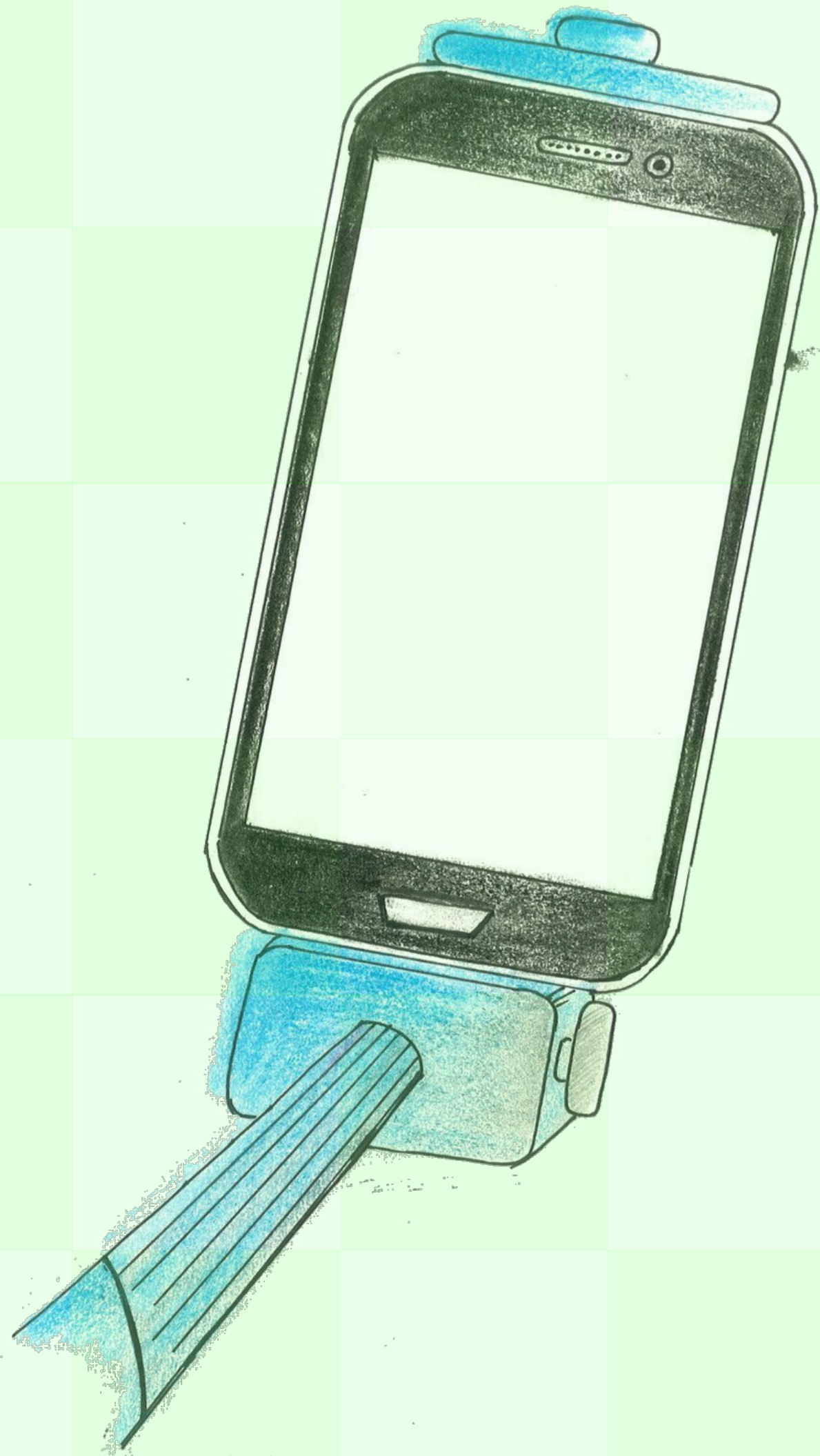
SELFIE

Surya Narayan Sangitra
PhD (Physics)

ବୁଝିଲି ଯା ନାହିଁଏ ମନଟା ଜମା,
ସେଥିପାଇଁ ଗଲି ଡାକ୍ତରଖାନା ।
ପରାମର୍ଶସେସଲ ଡାକ୍ତରବାରୁ,
ନେନିକୁଚାରଣି “ସେଲଫି” ନରୁ ।
ନସହସଲ ସରାଗଟା ସ ାର ବଢ଼ିବ,
AIDS, CANCER ସ ସହାଇବ ॥1॥

ପଢ଼ାପଢ଼ି କରି exam ସେଲି,
Written ସେସବ ମୁଁ clear କଲି ।
Hobby ସର “ସେଲଫି” ନିଏନି ସବାଲି,
Interview ସର ମୁଁ କଟଲି ।
ସେଥିପାଇଁ ମୁଁ ହିଁବାସ ରା ସହଲି,
ଛକ ଉପସର ଖଟି କରିଲି ॥2॥

ପଟିଗଲା ସେସବ ସଗାଟିଏ ଝିଅ,
ବାହାର କଲା ସମା ଆଖିର ଲୁହ ।
Darling, darling କହିଲା ସବାଲି,
ଘଣ୍ଟାକୁଘଣ୍ଟା ମୁଁ “ସେଲଫି” ସନଲି ।
ବାହାସହାଇ ାକୁକଲି wife,
ବେଳିଗଲା ସମା daily life ॥3॥



Marketସର ସହଲା ନୁଆ virus,
ଫଟ ସନବା ପାଇଁପାଖକୁଥୋ ।
ଜନମିସଲ ଛୁଆ କହୁନି “କୁଆଁ”,
କହୁଛି “ସେଲଫି” ସନବିସଲା ମୁଁ ।
ବାହାସହବା ପାଇଁ ଥୋସଲ ବର,
“ସେଲଫି” ସନବାକୁରୁଆ ୁର ॥4॥

ବାପ ପୁଅକୁକହୁଛିବାରୁ,
ମଲାସବସଲ ସଗାସଟ “ସେଲଫି” ସନରୁ ।
Daily profile କୁchange କରବୁ,
Statusସର ୁଏହା ସଲଖିବୁ,
Return ticket ମସ ମିଲିନି,
I am in a long journey ॥5॥

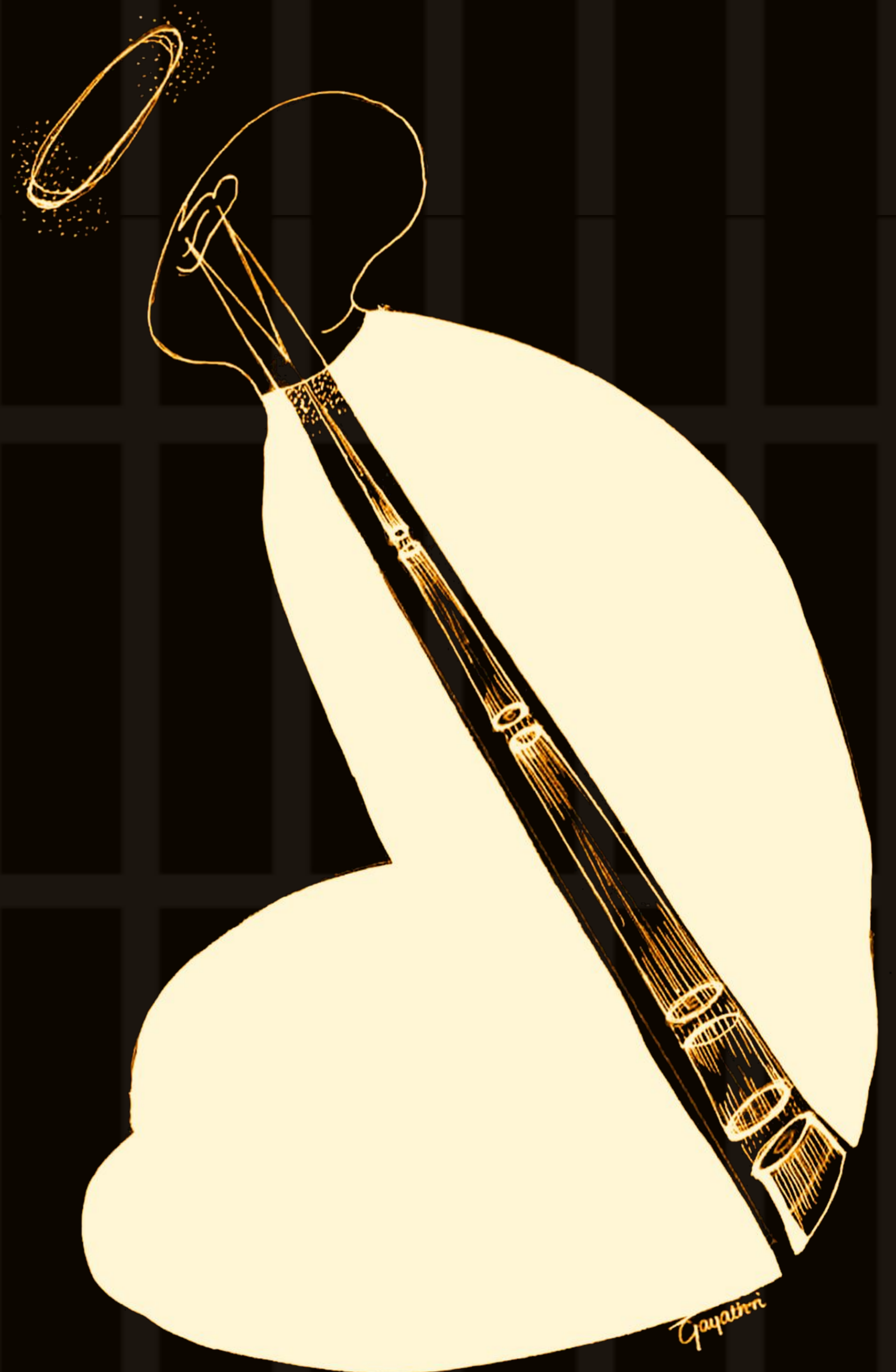
ସମା ୋସେ “ସେଲଫି” ନବନି ସବାଲି,
ଏହି କବି ାଟା share କଲି ।
ସେଲଫିସ୍ ଏସ ନସହାଇ ଭାଇ,
like କରିବ “ସେଲଫି” ପାଇଁ ॥6॥

THE CAGE

Shubhra Singhal

BSMS 2019

I sit in a confinement,
hopeless walls of cement,
I don't understand, how I end up here always,
lungs filled with thick air; mind tired of the greys.
Tearful eyes cry my sorrow,
a failure that knows no tomorrow.
A ray of sunshine falls on my hair,
like hope making me ask "Can I get out of here?"
No... I mustn't fall prey to the hope,
The reason why I'm here is that hollow rope!
I've banged my head on all the walls.
But the sound never stops, I still hear the waterfalls!
Out there somewhere lies the merry and the beauty,
urging me to join the mutiny
of my thoughts against my thoughts,
for being in the world that belongs to the fought!
So for the millionth time, I rise from my embers,
Pat my thumping heart with hands that tremble,
To tell myself it's all right if I fail again,
But not all right if I go down without another game!
The cage I had built, I tore,
But there's no one left to care anymore!
This is the time to create, to make mistakes,
To go the distance, to give what it takes!
To breathe and go out of breath,
To live for life, not just to cheat death!







Arnab Lahiry

BSMS 2018

NATIONAL SERVICE SCHEME , IISER TIRUPATI

CAMPUS CLEANING ACTIVITY

Shubhra Singhal

BSMS 2019

A campus cleaning activity was held at the Indian Institute of Scientific Education and Research (IISER), Tirupati and the Indian Culinary Institute (ICI), Tirupati as part of the Gandhi Jayanti celebration and Swachha Bharat Abhiyaan. The event was held on 12 October 2019 (Saturday) and saw the enthusiastic and heartiest participation of the army of NSS volunteers and from our institute.

The first year (BS-MS 2019) NSS volunteers held the campus cleaning activity at the Indian Culinary Institute, Tirupati, which is their temporary home for this semester. A total of 47 volunteers from the first year participated in the activity under the watch of our warden, Mrs. Sarita Batra and our counselor, Mrs. Bhooma Krishnan.



The agenda was to work towards “Plastic Free Country” wherein all the plastic waste collected from around the campus was collected and sent for recycling. The activity commenced at 7 am with the distribution of gloves, face masks, brooms, garbage bags and dustpans to all the volunteers and giving them the general instructions about the activity. The volunteers were divided into



groups of 8 people and were assigned different areas of the campus to clean. Each of the six teams was headed by a student coordinator, who had previously inspected the site and identified potential problems.

All of the participants showed the utmost vigor and enthusiasm to clean their campus, be it cleaning drains or collecting and finding small plastics from the grass; they were up for it. During the cleaning, puddles at many places were identified which could have been potential breeding grounds for mosquitoes. All such



sites were reported to the caretaker at ICI and swift action was taken to eliminate them. As ICI has just completed the hostel construction, there was a lot of construction debris behind the hostels. Most of it was cleared and disposed. Dustbins were also placed around the campus wherever deemed necessary. Batra mam also maintained a water and glucose stand for the

comfort of the volunteers. The activity concluded at 8.30 am with dirty hands, sweaty clothes and huge smiles on the faces of all the people who were a part of this noble Saturday. The group photo taken in the end left this event etched in the memory of every NSS volunteer as the first NSS event of IISER Tirupati which was made a success by their hard work and dedication.



FIRST LETTER

Triptesh Kumar Roy

BSMS 2018

আত্মসম্মান

ভাটার টান।

জোয়ার আসুক ফিরে

নিয়ে যান সবে,

ভবু গাবো গান,

বাঁচুক আত্মসম্মান।

স্বপ্নে ভোরবেলা পথ হাঁটে

রাতের অন্ধকারে কারা

যেন তার কাটে

দূর থেকে শুনি আহ্বান

বাঁচাও আত্মসম্মান।

নতুন ফুলের কুঁড়ি

জলের অভাব,

মালি হতে জল চাই

যেমন স্বভাব।

জলহীন মালি তারে

করে অপমান,

শিকড়ের জল বলে

বাচাও সম্মান।



Saraswati Puja Celebration



THE COST OF A PRIVILEGE

Dr Sreenivas Chavali

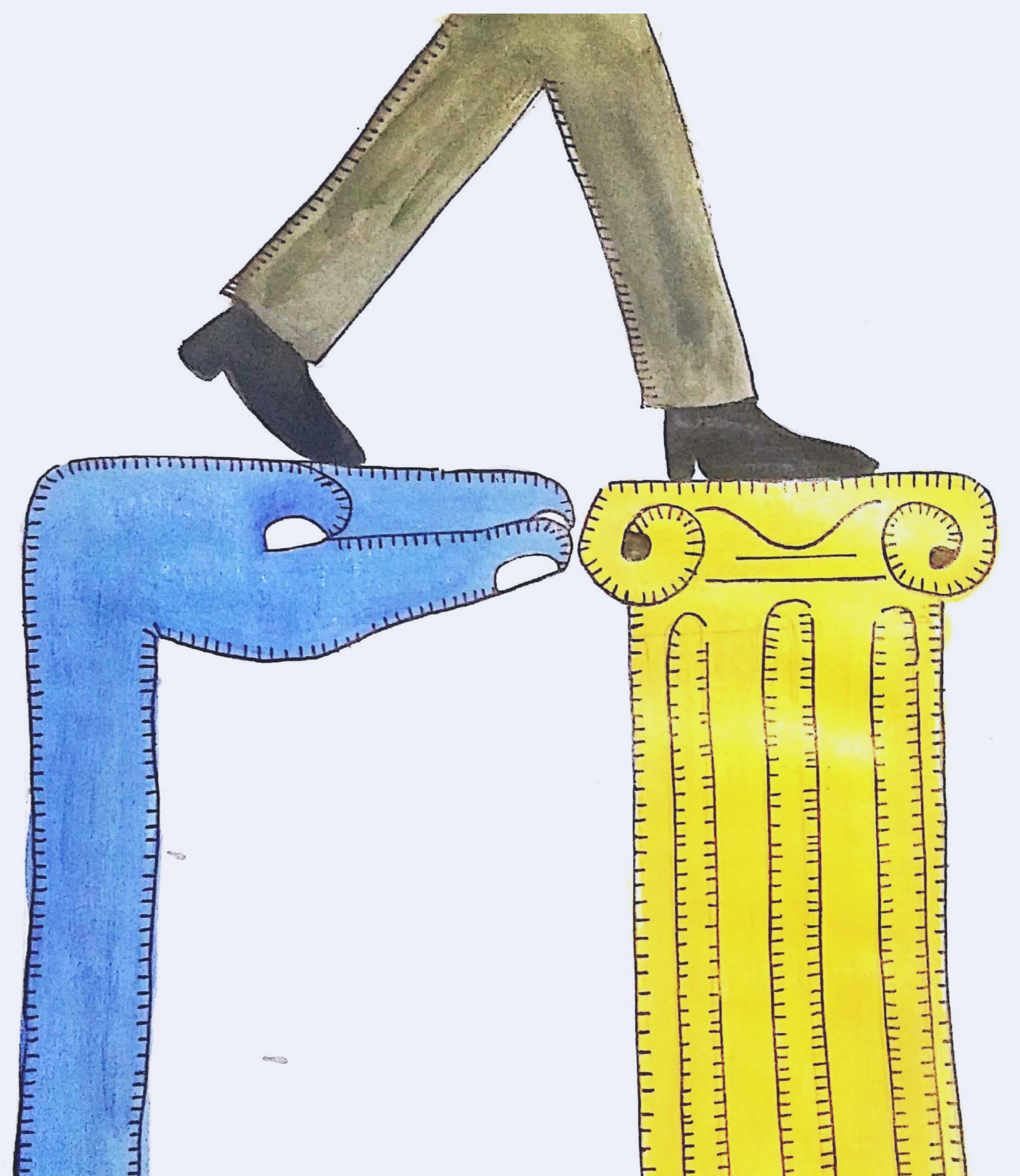
Assistant Professor, Biology

The rays had just begun to lazily pierce the thick blanket of fog on a very cold morning in Delhi. I was starting to catch a train bound to my hometown, after completing my research degree. One of my friends rode his motorbike to fetch me an auto rickshaw while a couple of others helped me bring the luggage down from the third floor where we had stayed together for the past three years. I knew that they would help me. This was the belief that made me stay at an unknown place for years feeling safe and comfortable and pursue a career in biomedical research. The three-wheeler arrived and they put the luggage in and surprisingly enough, I found some place for myself, as well. It was time to start and leave the premises, which was the place of many wonderful memories. I strongly discouraged my friends, who wished to accompany me to the train station, sacrificing a cosy and warm sleep, especially after a long farewell party, the previous night. Nevertheless, my friend on the motorbike did not relent and accompanied me to the train station.

The auto rickshaw driver was an elderly, pleasant person. “We have to reach the train station as quickly as possible,” I insisted. He gave me a confident smile and before I could realize the auto rickshaw roared through the lanes of Delhi and our conversations turned high-pitched. I had a strange sense of safety albeit travelling high speed on a foggy, cold morning. I was not sure if it was because of the confident driver or because I felt assured that anyone on the street will make way for us as they cannot ignore the combined noise generated by the auto-rickshaw and the travellers in it. Or maybe it was the sense of achievement, of having got a research degree, that made everything cheerful. I had to repeatedly check if my friend was following us without any hassles. Within a short time, we reached the station. The auto driver wished me a safe journey and helped me unload the luggage. We reached on to the platform where my train had arrived and the passengers were boarding. I got a

pleasant surprise when I discovered that one of my dear friends has braved the cold weather to see me off. She bid me a teary farewell. I felt really privileged for having such great friends, but immediately reasoned that such dearness evolved as a result of long stretches of hours we put in together at work and the time we spent together thereafter. The small gathering at the station made me feel important and accentuated my sense of accomplishment.

Unable to resist, I was laughing to myself with pride, as I boarded the train. I settled in my seat, after arranging my luggage. A middle-aged man and an elderly woman took their seats adjacent to me. I waved to my friends one last time as the train started to leave the platform. I was going through a mixture of emotions— a sense of achievement as I had fulfilled my dream of pursuing a research degree, a tad heavy as I am parting my friends and a bit anxious about what the future holds. Going through these waves of emotions, I was indifferent to my immediate surroundings. Surpassing all these feelings, exhaustion took over and I



involuntarily crept up to the upper berth and slept off instantly. Booking an upper berth, was my preferred route to escape oft-encountered intrusive elderly co-travellers, who would end up giving tons of unsolicited advice in the name of sharing their experiences. I was woken up by a strong poke from a dutiful railway staff who hurriedly enquired “Breakfast order, Saar?” I felt irritated to have been woken up rudely, but placed an order, got up, refreshed and bought a newspaper. I felt fresh and the sense of accomplishment, made it more pleasant. More than two hours had passed since the start of the journey. Finally, I took a good look at my fellow passengers. They were having some home-made food, and I joined them as my breakfast arrived. The gentleman with a light stubble had the sleeves of his shirt rolled-up, beneath a sleeveless sweater, with a leather-strap watch on his right wrist, while the elderly lady was covered from head to toe. The gentleman passed a warm smile, which I reciprocated judiciously and started eating the toasted bread. I smiled to myself thinking that probably the packing cost the money I paid, than the content. I was surprised as to how even a terrible tasteless breakfast made me feel delightful. Probably, that is what the pride in achieving what you longed for, could do.

The elderly woman lied on the lower berth opposite to us, immediately after the breakfast. I thought she was a bit tired, having to take an early morning train in the cold weather. I wanted to kick-start a conversation, more so to boast about my latest feat, of getting a research degree. “Is everything fine with her?”, I enquired. “She is my mother. We came to Delhi to get her checked at the leading state-run medical and research institute”. I realized that I started off on a wrong foot, setting a sober tone for our discussion. Just to show off that I know some doctors with whom I had research collaborations and to let him know that I am a scientist, I interjected, “Oh! What’s the problem? I know a lot of doctors there; we have worked together. I could get you access to experts”. He seemed unfazed and gently, but quickly cut me short, “She is terminally ill. If given medical care she might survive a bit longer. They advised us to consider private medical care”. Now I could see that she was very frail and probably in some pain, than being just tired. I felt a bit choked, “So, what do you plan to do?”, I queried, clearing my throat. “I do not want to be in any hospital, I would be happy staying

with my family”, murmured the elderly woman. With a wry smile, the gentleman responded, “That’s her way of protecting me, the truth is I cannot afford private care”. There was no reaction from the elderly woman. Having never been in such situations before, I did not know how to react and what to speak. Suddenly, the atmosphere had turned pensive. I felt a bit hurt when it flashed that all my research papers, that I am proud of, could not help alleviate someone’s pain and suffering. I remained silent and buried myself in the newspaper, after which I slowly retreated to my berth avoiding further conversations. This definitely was not how I wanted the discussion to evolve. I wanted to boast about my achievements and when the reality dawned, I ended up feeling inadequate. I did not want an unreasonable guilt to engulf my pride. So, I rested for a while and resolved to make a second attempt to advertise my heroics. When I looked down, I found something really strange— the gentleman was busy scribbling some equations, while simultaneously turning pages in one of the books placed in his front, using his right hand. His mother was fast asleep. “A silent middle-aged Indian man, travelling in a train, engrossed in his own work, working on some advanced maths. What a rare sight! This is outrageous defiance of the norm” I quipped. I got down, sat in front of him and pretended to be busy reading a book, that I carried. After a while, I figured out that I had to don the hat of the intrusive passenger. Ignoring that he was immersed in his work, I bent a bit forward, letting my shadow fall on his paper and asked him “What are you doing?”, expecting him to say a bit about his occupation and then reciprocate the question. “Trying to solve a theorem” he said without taking his eyes off the paper. I found my situation hopeless. “He is a mutant Indian”, I thought. I had to act fast and so continued the conversation, “Oh! So, you teach mathematics”. He realized that I am not going to let him work further, closed his pen, kept his file on the side, looked at me and said “No, I am an accountant in the mining division of a state-owned thermal power corporation.” For next fifteen minutes, I probed him more on his occupation, for which he patiently responded. “So, why does an accountant solve maths theorems?”, I asked. “I wanted to be a Mathematician but had to take up a job half-way through my University to support my family. So, whenever I get some free time, I attempt solving problems”, he said. I was beginning to feel disappointed, as the discussion was not proceeding in the direction I

wanted, as he did not show any intentions of asking me about my profession. Finally, heavens blessed me as he asked, “So, do you work in Delhi?” “Sort of! I am a biomedical researcher and just finished my PhD”. He listened to me calmly, without any expression. “My work resulted in twenty research publications”, I boasted, to sweep him of his feet. His unwavering calmness did not help my cause. To impress him, I started reading out my resume from my memory, listing the number of conference talks I had given, the awards I had won and that I was heading abroad to a famous University to pursue further research. “You know, I was awarded a five-year fellowship from the Government, selected through National-level competitive exam. Only 600 fellowships are awarded each year”. I was making every effort to awe him about my achievements, sometimes overstating facts. I thought he would be more than pleased as I was pursuing a career in research, which he had dreamt of. “Do you know who funds your research work and fellowships?” he asked, leaving aside all the other items I listed. In an attempt to show-case that I am a know-all I said, “Yeah, its tax- payers money”. He had his trademark smile and looked out of the window. “Ah! Typical accountant, thinking always about money”, I thought. The pregnant silence that followed pushed me to think, that being a tax-payer, whether he was implying that he had contributed towards funding my research and is taking undue credit. Not a single word was spoken thereafter. For the second time, since the start of the journey that morning, my ego got hurt, without my fellow traveller uttering anything remotely disrespectful. I bought food, had my lunch, along with them and got up to relocate to my berth, when I heard a deep, hesitant voice, “What is the price of your faded jeans?” I turned to see his curious eyes and told him how much I paid. I thought he was trying to break the ice by asking some irrelevant questions. I wanted to avenge by cutting him short, when he would extend the discussion, instead he just shook his head and started working on this maths problems. Without waiting further, I made a move. Once on my berth, I tried to reason out as to why he questioned about the price of my jeans. I did not want to investigate further and feel more hurt. I slipped into a slumber, unknowingly. “Dinner order, Saar?”, I woke up startled to realize that it was getting dark outside. I placed an order for dinner and got down. “You slept really long, hope you are doing good”, remarked the elderly lady, looking concerned. I explained her about my lack of sleep over several preceding days involving

preparations to defend my thesis, to relocate to my home town, and the celebrations that ran deep the previous night. She was more interested than her son in learning about me and the discussion gradually progressed along the line that I had desired from the morning.

I provided a detailed account of the academic process of obtaining a research degree, my research work and future plans. Strangely enough, I was not cataloguing my achievements, but reflecting on the past few years of my life- the sparks of ecstasy when solving problems/making discoveries and the intermittent, frequent bouts of resentment flanking the eureka moments; the delight in learning something new every day; the joy in traveling far and wide, attending conferences and workshops, talking to people from different walks of life, learning about different cultures and making new friends; the excitement and the anxiety in communicating the research work and receiving feedbacks. I felt more contented reliving my immediate past than I would have if I had boasted about my achievements. The elderly lady, though very engaged in my rather long monolog, was getting tired and wanted to lie down. Wishing good night to them, I started moving to my berth. “By the way, why did you inquire about the price of my jeans”, I asked, unable to suppress my curiosity. “My teenage son wanted faded jeans for his birthday. I could not afford then. I would like to get him a pair, at least this Christmas”, he said with a faint smile. I nodded my head, bid him good night and went back to my berth. I read for some time and slept off after a while.

The day’s happenings were playing in my mind during the sleep and suddenly it flashed to me that here was guy, probably more ambitious and talented than me, who wanted to pursue a research career in Mathematics, but could not afford; here was a son, who wanted to provide private medical care to this mother, so that she could live a bit longer, but could not afford; here was a father, who wanted to buy a pair of faded jeans and make his son happy, but could not afford. Nevertheless, he had over years wilfully contributed to the privileges of several people like me, by being a sincere, and consenting tax-payer. With this thought, my achievements appeared miniscule and I felt belittled. I got up and looked down, just to learn that the mother and son had alighted at their station. He had left, before I could thank him. He was gone but left a strong impression on me how so many invisible people, unable to

fulfil their day-today needs, are working hard and paying for the privileges I and several others enjoy. I felt really humble, learning that some unknown faces have been contributing relentlessly to the benefits and concessions I have enjoyed. I felt more privileged, but this time, it was accompanied by a feeling of increased hope and responsibility, rather than pride– the hope that one day my research efforts will alleviate some one from pain and the responsibility that I should actively contribute to privileges of others and create more opportunities, like the calm and pleasant gentleman. The train reached my station. It was a clear and sunny sky at my home town. I got down and walked towards my family, eagerly waiting to receive me.



Mayur Bajaj Manoj

iPhD, Biology



Arnab Lahiry

BSMS 2018

उन दिनों की बात

Shubham Kumar

BSMS 2018

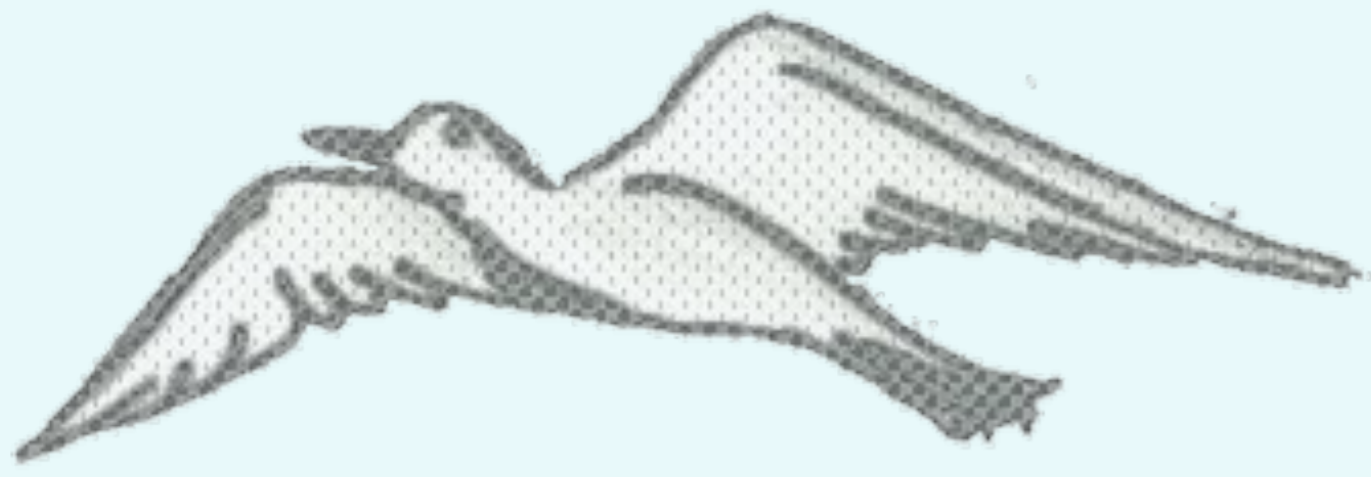
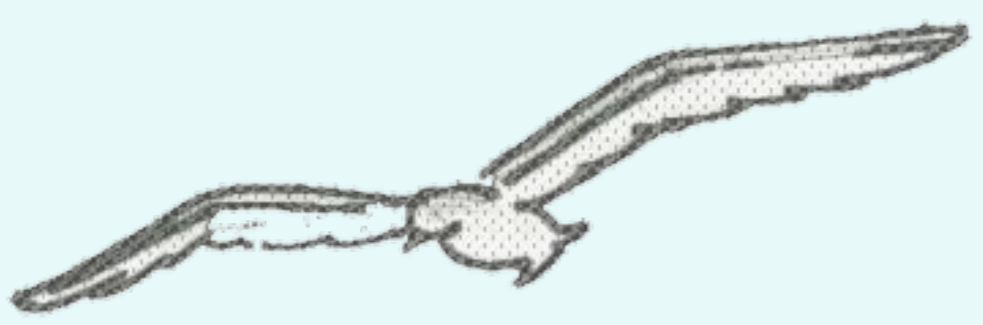
यह उन दिनों की बात है जब हम यह सोचा करते थे।
की हम भी बोल दे नहीं की हम उनके दिल पर मरते हैं।।
और वह हमारे दिल में रहती हैं।
यह उन दिनों की बात है, जब हम यह सोचा करते थे।।

उनकी खूबसूरती ऐसी थी की हम भूल जाना चाहते थे चाँद तारो को।
की हम यह सोचा करते थे।।
की हमारी सुबह की शुरुआत कैसे हो और हमारी रात उनपर खत्म हो।
की यह उन दिनों की बात है की हम यह सोचा करते थे।।

जबभी हम नज़रे मिलाते उनसे, तो यह सोचा करते थे।
की बोल दे उन्हें अपने दिल की बात।।
की तुमसा कोई नहीं इस जहान में जिनपर हम मरना चाहते हैं।
यह उन दिनों की बात है जब हम यह सोचा करते थे।।

फिर मिला था मौका एक दिन उसे यह कहने का
की हम उनपर कितना मरते हैं।।
पर कमबख्त यह डर था की कही वह हमसे दूर ना हो जाए, यह हमे खाया करता था।
की यह उन दिनों की बात है जब हम यह सोचा करते थे।।





WILL YOU?

Shubhra Singhal

BSMS 2019

Our paths cross.
Our destinations meet.
Yet we never cry for the same loss,
and yet we never greet!
We make a mess of which we don't have time to clean up.
We cut down trees we don't have time to regrow.
We cover ourselves in the lies we made up.
There is a human in the mirror too, you know?
We think we are free to dream.
We are just not free to fail.
Others' stories we livestream,
but we are unable to write our own tale!
When it comes to us, a mist is what we see,
We don't give it time to clear,
To realise that below it, is a sea,
which is perhaps deeper than the depths we fear!
We never dive into ourselves.
We never explore.
We simply want to find someone who confides in us, who delves.
We do not enjoy the waves, we just wait to get to the shore!
But what if the shore doesn't exist?
What if the ocean is all you get?
Will you then wait till your warmth clears the mist?
Will you then look in the mirror and see the soul you just met?



VIJYOSHI 2019

Harikrishnan R

BSMS 2018

The National Science Camp, organised by the Indian Institute of Science, takes place every year in the month of December. Its main intention is to provide a platform for young science students to interact with eminent scientists and motivate them to take up a career in Science. This year it was held from 6th to 8th December at IISc Bangalore. Parallely, another camp was also organised from 8th to 10th December at IISER Kolkata. I arrived at Yeshwantpur on 5th morning around 8 am. A bus was waiting for the participants already. It took us to the KVPY office first thing in the morning for the registration. After registration, they gave us a few goodies and a delicious breakfast. Next on my bucket list was roaming around the beautiful IISc campus. The green and serene campus was simply magnificent and very easy to get lost in. For me, the accommodation was in the guesthouse of Indian Academy of Sciences which was around twenty-five minutes from the IISc campus. My curiosity got the best of me and I wanted to go around Bangalore. But even though we had clear instructions not to leave, I made one of my batchmates act as my cousin and stage an entire coup just to get out and have a look around Bangalore.



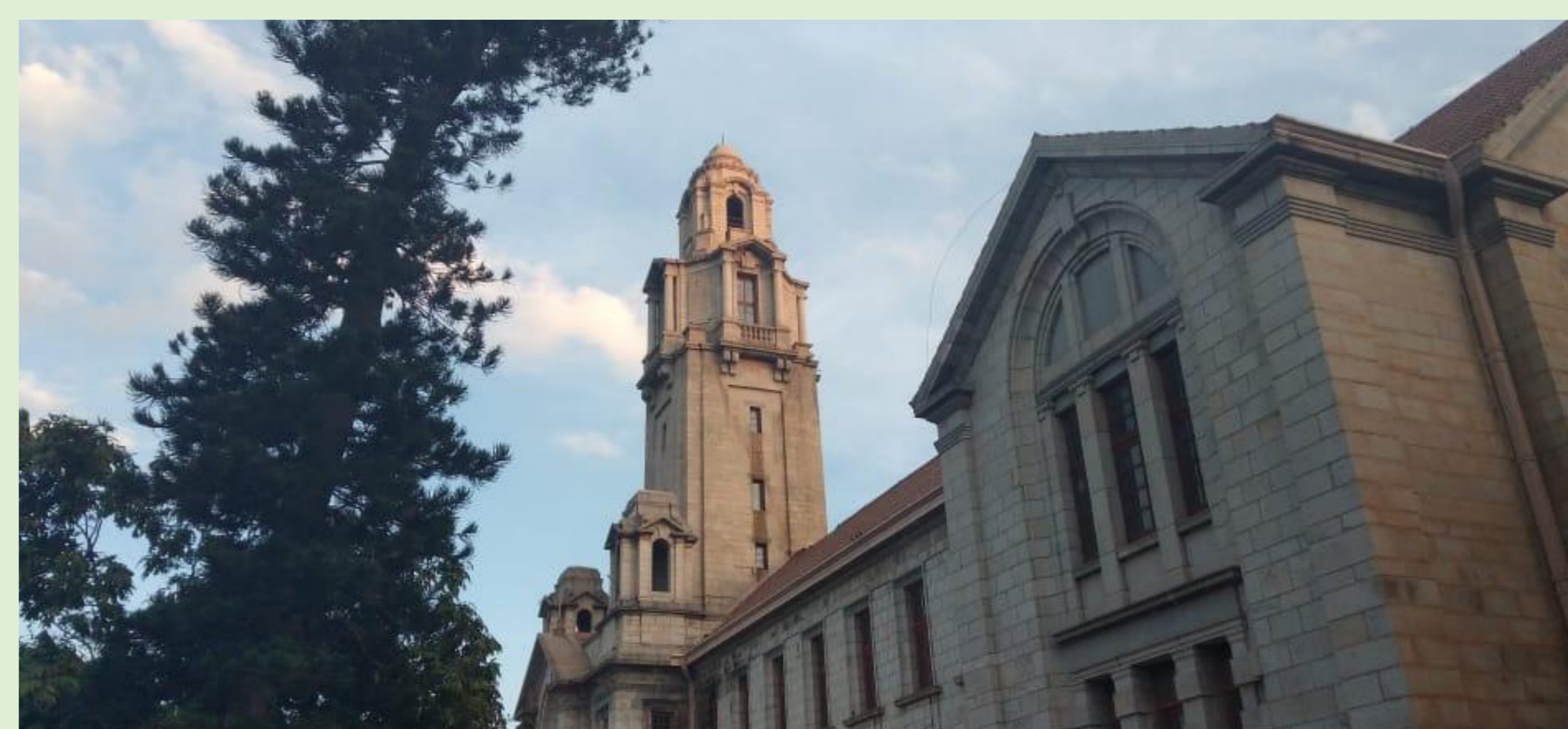
Day 1: After an eventful day, came the first day of the camp. It started off with breakfast in IISc campus. The events were officially started with the address of Prof. AK Nandakumaran, the Convenor of KVPY. The first lecture of the camp was given by Prof. Kankan

Bhattacharyya about microscopes titled 'Seeing Tiny Things - A Tale of Two Nobels in Last Five years'. He made the lecture even more interesting by discussing his own research. His quick-witted nature also made the lecture very enjoyable. The second lecture was by Prof. Vijayalakshmi Ravindranath. She is the head of the department of neuroscience in IISc and a stalwart in the field. Her talk was titled 'Human brain: simplicity behind complexity'. In particular, she discussed the adolescent brain and its development. She meticulously explained how the seemingly simple components of the human brain work together to give rise to the most complex thing in the entire universe. After that was the scrumptious lunch. We were sure to fall asleep after that but were woken up by the next talk given by Prof. Peter Saulson. Prof Saulson is a professor of Physics at Syracuse University in New York. In his talk, he explained how LIGO detected the gravitational waves and explained about its sister project VIRGO which is located in Europe. And he described the role of India in this monumental discovery and that the next Neutrino observatory was coming up in India which was very exciting news indeed. The last talk of the day was by Prof. Dipendra Prasad in which he explained about the various fields of mathematics which was more oriented towards the younger kids. Unlike other years, this year the organisers had introduced a new feature which was the interaction session with the speakers. During this time we got to hear a lot of interesting questions from all the students and the following discussions were really enlightening. The day concluded with an evening tea. And we all went back to our place of accommodation.



Day 2: The second day also started really early. The first talk of the day was by Prof. Sundaram Thangavelu. He started explaining how the most beautiful mathematical proofs were considered as though it was taken from a book which was out of reach to us mortals. He went on to discuss some of the most elegant proofs in mathematics. After high tea, it was time for the interactive session with the speakers. And the cultural program that followed the lunch was really a great spectacle and it really eased our minds after a series of lectures. After the evening tea was a break, for at least us undergrads, because it was an interactive session with Prof. Nagasuma Chandra. The best talk of the day was by Prof Uday Maitra. He had already come to IISER Tirupati in 2018. His talk was in two parts: one about the periodic table and the other one about learning chemistry through experiments. He said that the aim of his talk was to make students like chemistry. Well, I'm sure that it didn't work with me, but the experiments were really amazing. To no one's surprise, he overshot time by at least one hour and there were no complaints! Following the dinner in IISc, we went back and called it a day.

Day 3: For the last day of the camp, we arrived with our bags packed. The first lecture of the day was by Prof. Marlene Zuk, a Professor of Ecology, Evolution and Behavior at the University of Minnesota. She talked about sexual selection and explained a lot about the scenarios when sexual selection and natural selection



conflict. After the tea, there was a lecture by Prof. Rahul Pandit. He explained about the electrophysiology of cardiac arrhythmias and discussed the various mathematical models used to explain them. He showed us some really interesting and cool simulations of the electrical signal transmission in the heart. Then came the interaction session with the speaker and finally the lunch. After lunch was the final talk of the 2019 Vijyoshi Camp which was given by Prof. Sanat Kumar, who was a professor of chemical engineering at Columbia University in New York. He talked about designing membranes using Grafted Nanoparticles. His talk was simply amazing. We discussed climate change and how we should be designing solutions to tackle it and also about Donald Trump's actions regarding the problem. He transformed the lecture into a very lively discussion and made us think and come up with ideas for these problems. The day, and also the camp, concluded after a set of remarks by the convenor of KVPY, after which we collected the group photo and the certificates. I stayed back in Bangalore for one more day so I went back to the guest house with some really good memories.





Chaitanya Chawak

BSMS 2018

INDUCTION PROGRAMME

Ainesh Sanyal

BS-MS 2019

It is a paradigm shift from school life to college life. Some students might optimistically view this transition as the beginning of something new and something exciting, but the fact of the matter is that most of us are very anxious and tensed about ourselves embarking on this journey of a lifetime. In addition to this, there is also the matter of us leaving our parents and homes and adjusting to a radically different surrounding. Therefore, for most students, this transition is, indeed, a very turbulent time. The Induction Programme organized for the BS-MS 2019 Batch was a very unique and ambitious attempt to curb this so-called 'pre-college anxiety', and I must say, it proved quite useful.

There were many events organized during the ten-day Induction Programme. It was an eclectic mix of both academic as well as non-academic activities. The educational activities did not pertain to the to-be-studied course or anything of the sort but were aimed at inciting scientific curiosity. In totality, there were 3 colloquiums during the Induction Programme. Personally, I felt that the 'Goodbye, Mr Kilogram' talk by Prof. Amol Dighe from TIFR was absolutely stunning! The way the entire talk was presented just left me spellbound.

One of my fondest memories of the Induction Programme was our visit to the Regional Science Centre. Before coming to college, I had certain preconceived notions about the people I'd meet. But this visit made me realize that I'd be spending the next 5 years with the most diverse, smart and fun bunch of people I had ever come across. The Regional Science Centre was pretty impressive, as well. Our first batch photo was clicked on this day too! We also visited our permanent campus to plant trees near the UG Hostel. I felt strangely excited that we'd be moving into that campus in just a year from then.

Arts and crafts have never been my forté. Yet, I enjoyed the Paper Folding Workshop organized during the

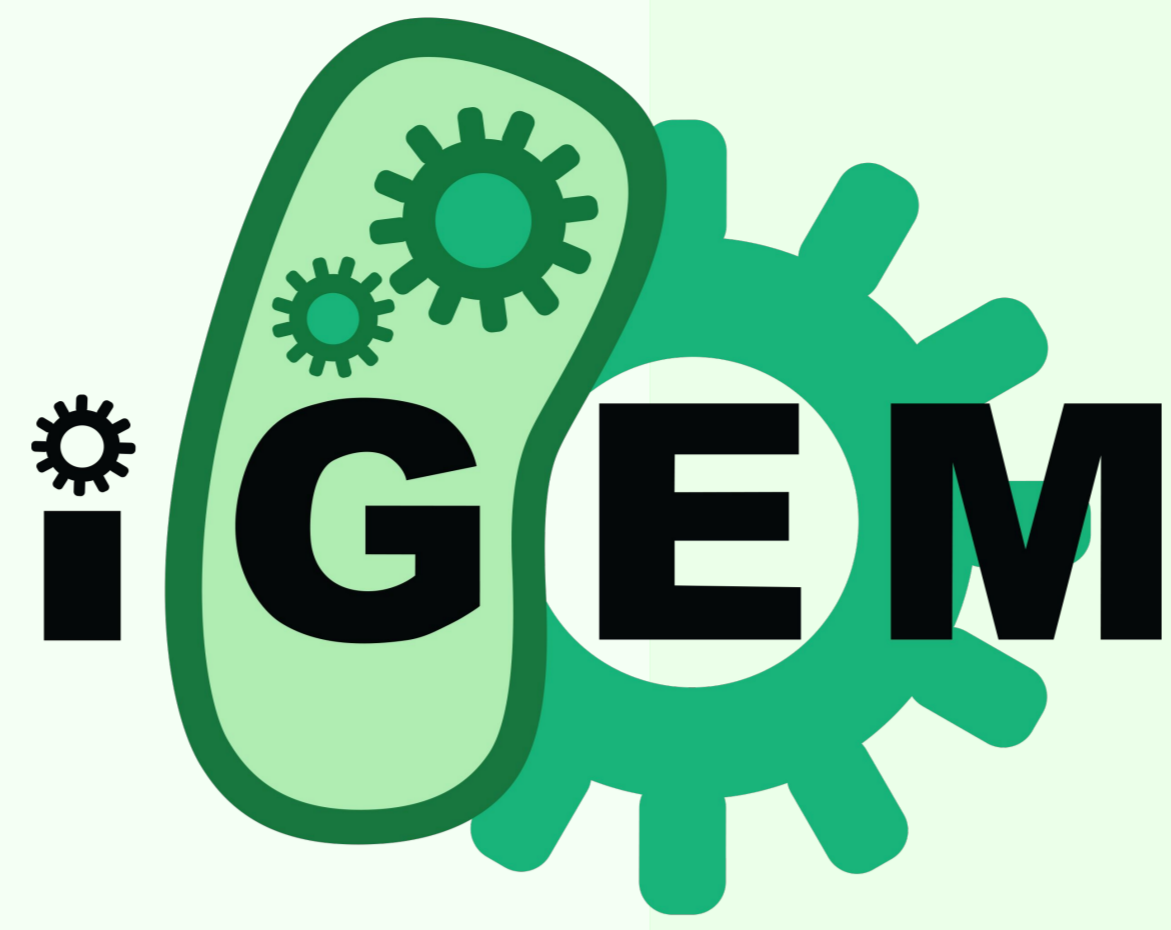
Induction Programme. At the end of it, I knew how to fold a paper in such a way that it strangely resembled a butterfly. I was, and still am really proud of myself for that. There was also a slot for cultural events where we could go up on stage and showcase our talents. This was a good platform for people accustomed to stage performances as well as a welcoming and friendly platform for people who had never been on stage before.

The 'organized' and 'official' activities could only do half of the work required for me to get to know my batch. I think that the Induction Programme encouraged us to step out, talk and play games which were neither planned nor organized. This 'unofficial' interaction led me to discover the people who would turn out to be my closest friends.

The Induction Programme concluded with the Freshers' Day organized by our immediate seniors, i.e. the BS-MS 2018 batch. Preceding the Freshers' Day, an entire week of competitions/activities were organized by the BS-MS 2018 Batch. Personally, I felt that the Treasure Hunt was fantastic!

I wouldn't say that the Induction Programme fully bridged the emotional gap between home and college. But that being said, I know for a fact that I wouldn't have made the friends that I hold so dear to my heart today, without the Induction Programme. This is why I am grateful to the Institute for organizing such a marvellous programme.





Uttara Khatri

BS-MS 2016

So this is how I would like to narrate it, for this is how it happened and this is how this experience will remain (amazing) for a lifetime. It began in 2018 when reading an email from Dr. Mukherjee, our Biology professor at IISER, about a competition that made me excited and when I approached him, I was delighted to know that I was not alone. The email was about iGEM and the other avid fellow was my friend and batchmate, Mrugank.

iGEM, which stands for International Genetically Engineered Machine, is a competition where young minds are expected to solve real-world problems using Synthetic Biology (also a lot of math and computation) and then meet at this conference called the Giant Jamboree to discuss ideas and compete. Mrugank and I gathered our enthusiastic batchmates and started meeting regularly to discuss ideas. We, being total noobs, figured out soon that our ideas were either unfeasible or had already been pursued before. When the time for registration was over, we were disheartened but gave it a break with the hope of getting back and be better at it the next time. For the next year's (2019) competition, we started early, and expanded our team. We had already started brainstorming ideas and actively evolved them through literature-search. The specialised set of courses we took in the next semester helped us quite a bit with the quality of our ideas. It turned out that we were successful this time and so we shortlisted a few ideas. With all the literature-mining, endless discussions and guidance from our mentors – Prof. Rao and Dr. Mukherjee – we finalised on innovating a probiotic therapy for colon cancer. Our next step was getting funding for the project. Well, we all knew this was going to be the tough part but upon learning that the Department of Biology (DBT) funds 5 Indian teams, we got our hopes up and so we began planning and working on experiments that show the feasibility of our proposal.

This, I must say, was a new experience for us for two reasons – first, we had to plan and do all of this as a team, and second, we had to do this all by ourselves. We were nervous but also hepped up about the planning. We were working on experiments almost all the time except during class hours (sometimes even during mid-semester exams), troubleshooting and filling out the proposal form. It finally came to an end with a sigh of relief, but we soon realised this was just the beginning and have 7 more months to go!

First things first, we wore the 'marketing hat' to come up with a catchy title and a logo for our project. Happy with the title and in the hopes to get sponsorship from Coca-Cola, we were motivated enough to plan the intricate details and the timeline we were to follow. We divided ourselves into teams and distributed work for the summer. In no time came the end-semesters and as soon as they got over we were pumped up for the summer. We didn't know that we were going to need all the optimism there is in the world, because the first experiment that we predicted would be over in a couple of days, took a couple of weeks and then a month just to fail. And we left it the way any FRS (frustrated research scholar, credits for the abbreviation go to my friend Amogh Desai, BSMS 2018) would! We tried our hand in something apparently more doable. Turned out, we had successfully failed in making ultra-competent cells to be used for transforming the little amount of DNA obtained from the iGEM kit (which had finally arrived after a long wait). After a series of unsuccessful attempts and changing our strategies midway with advice from our mentors, we finally transformed the DNA. Meanwhile, we planned cloning strategies and ordered sequences, started applying for sponsorships, made videos for crowdfunding, grew cancer cell lines, and ran HPLC

experiments to measure lactate levels. We sent postcards to a German iGEM team as part of collaboration and outreach, and members on our team went to schools in their hometowns for educating kids about synthetic biology. Amidst all the workload, there was a sigh of relief upon learning that we had got the DBT sponsorship! Our happiness was boundless and our motivation skyrocketed. The work went on and it was time for the All-India iGEM Meet at IISER Bhopal at the end of July. Three of our members went there to present our idea and got valuable feedback (which was particularly important for us first-timers) to improve upon for the final competition to be held in November. The start of the semester saw the reunion of our team and major changes in work distribution and strategy as we were required to work during the semester. We also buckled up on our weak areas (focused on mathematical modelling) and strengthened our strong ones (wetlab). One of our team members, Dibya Saha, started working on the now awesome team website. Results were coming in with a lot of effort. And that is what kept us going. By this time the fund crunch had settled in which made us go through the tough and tedious process of choosing the representative team for the Giant Jamboree after long hours of discussions amongst the members and also the mentors. We had our differences, but the one thing that brought us closer was synthetic biology. We continued to work and felt déjà vu when it was around mid-semester time. This was followed by the Puja holidays where we worked extra hard, for the wiki-freeze deadline was approaching. This is when we saw the pieces of the puzzle coming together to give out the big picture. We utilised these crucial hours by giving our best and later enjoyed the long-forgotten sweet sleepful nights. But all of this would mean nothing without the 'final showdown'. And so, we started preparing for the poster and the presentation to be given at the Giant Jamboree (GJ). We had a lot of discussions and clashes regarding the format of the presentation. It finally took a presentable form two days before our journey for the competition and we gave a mock-presentation in front of faculty and students for their indispensable feedback.

Our team mentors, members and our friends gave us a send-off and we took off for our journey to Boston, USA (the venue for GJ). I remember us balancing between being edgy, alert and excited because we had the formalities at the airport to go through and for most of



us, it was our first international flight. To our delight, we met a few iGEM teams on board and had already made friends. We finally landed in Boston and the sights were splendid, especially with the fall colours. Our next task was to get home because it was getting dark. After a fair bit of effort, we saw our home (we had booked a villa) and it was the best feeling to know that homemade daal-chawal was waiting for us. We couldn't have gotten a warmer welcome. The next day the villa-owners took us shopping to buy groceries, for we were to cook some meals by ourselves. This day was also for registration and Halloween, where again our house owners made a sweet gesture by taking us to a famous street where we could witness an authentic Halloween celebration – kids went to houses and were treated with candies, marshmallows, popcorn, cotton candy and not to forget some very scary looking houses. Just as the joy was filling up, so was the pressure. The opening ceremony began with a bang the following day which was followed by presentations and posters by various teams. Some of the presentations were already giving us goosebumps and adding to our nervousness. But this is when we implemented some small changes, embraced our strengths and boosted our confidence. In the afternoon, we visited Alnylam Pharmaceuticals as arranged by our Director, Prof. KN Ganesh. This was a remarkable experience on its own. We got an insight into how cutting-edge research is done and met the great minds behind it. We were awed upon learning that it (located amidst all the biotech companies) being the hot hub for amazing science, had such modest people. After having a memorable lunch with them we headed back to our

haven for the final practice. The pressure was intense and the last minute changes endless. The script was ready and rehearsed. It was morning in no time and we rushed to the competition. Although our presentation was in the evening, there was a poster session scheduled during the morning hours. We explained it to several people and got feedback, boosting up our confidence. It was time. We did our grand rehearsal and gave ourselves the ultimate pep-talk for the presentation. We entered the hall with raised heartbeats but were comforted a bit by the friendliness of the judges. With the blink of an eye, it was our turn. The wait was over. It was time to make all the efforts of our team count. We stepped on the stage and words just flew out of our mouths. We were no longer worried but only immersed in the presentation, for it was our idea. We were glad that it went well. The judges asked us questions and we could answer most of them. This was followed by more questions at the poster session. Contrary to our expectations, the judges showed constructive criticism and were (in general) very encouraging. It turned out to be a very productive discussion and gave us further insight into the future of our project. This marked the end of our series of attempts to impress the judges. And now the tension was gone. We went out for dinner with other iGEM teams and had a good night's sleep. In the remaining time, we went sightseeing and shopping and experimented with cooking in the kitchen. For getting detailed descriptions of recipes,

It began with a welcome speech followed by finalists' presentations. As satisfactory as they were, it was now time for the speech by the iGEM president, Dr. Randy.

The message that his generation has done harm to the one can contact Mr. Amartya Pal and me personally. Visiting Boston also fulfilled our dreams of visiting Harvard and MIT. No words can do justice to the feeling of visiting their campuses. And we didn't know we were going to fall short for words the following day in the closing ceremony as well. world and now the least he can do is set up a platform for the next generation to solve the existing problems, still rings loud in my ears and never fails to inspire me. With the inspiration set right, the award ceremony began. The high school teams from across the world do require a noteworthy appreciation for achieving such heights at a very young age. They soon began announcing bronze medals for undergraduate teams. I don't know if I was happy or sad that I couldn't find IISER Tirupati's name on the list, and the same applies to the silver medal. By this time, all iGEM members and friends watching the event live had lost count of the heartbeats. Finally, the teams winning the Gold flashed and left us dumbstruck. Some had tears in their eyes and some were shouting at the top of their voices. We had done it as a team and that's all that mattered. Soon celebrations followed, but this was not the ultimate destination. We still have a long way to go and many experiments to be tested. This marked the beginning of another journey by another iGEM team from IISER Tirupati with aims of being better. We are thankful to everyone who helped us in every possible way.

They say, it is the journey that matters and not the final destination. I understood this in its truest sense during iGEM.



HANDS ON TELESCOPE AND ASTROPHOTOGRAPHY WORKSHOP

Arunangshu Bora

BS-MS 2018

It was an interesting experience for everyone involved. The day was 9th November 2019, we went to the central lecture hall at IIT-Tirupati. The workshop was carried out by SPACE-Chennai. The organizer gave us the introduction speech and told us details about the workshop and the events. Then started a series of lectures about light, vision and role of light in observing the universe. Though the level of content was quite basic, the lectures were quite educating for those unaware of such stuff. After the lectures, we were taken to the garden adjacent to the hall to begin the hands-on session. Students were asked to make groups of three and each group was given a beginner telescope kit. Then we had to assemble

the kit which hardly took 5 mins and then we were taught to focus on distant objects guided by the organization members. Since the weather was cloudy, we could not observe the stars. So, we had to observe the moon which was magnified quite well. There were professional astronomical telescopes being set up there and everyone got a chance to look through those. We had dinner after the session and then went back to the lecture hall. The Astrophotography session began with a talk titled 'DSLR -what it is and how to use it'. The lectures were about taking clear photos of space objects, including our Milky Way. The session ended with the usage of an astrophotography software and a group photo session.



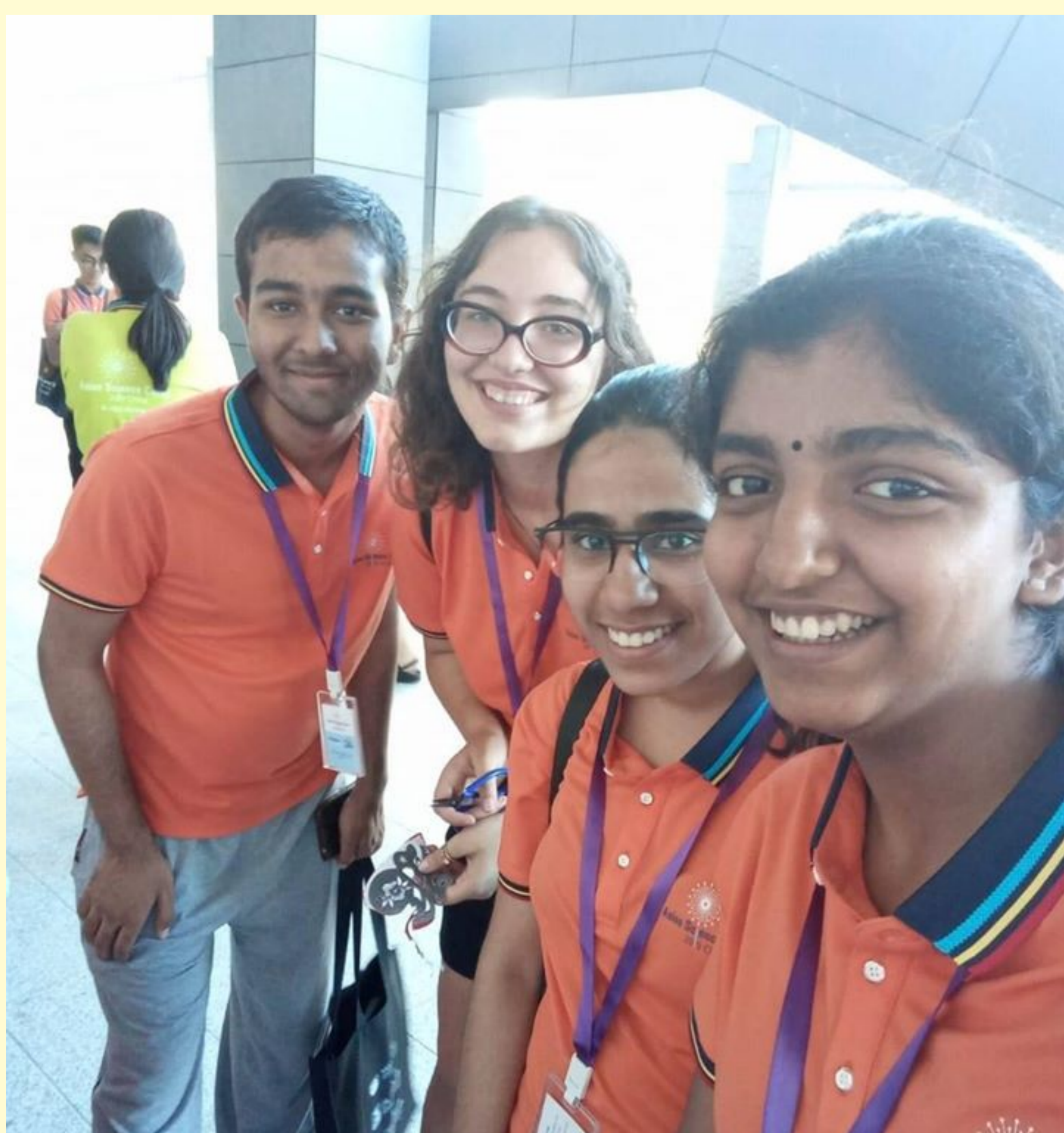
ASIAN SCIENCE CAMP 2019

Gopika Sundar

BS-MS 2018

The Asian Science Camp (ASC) has been conducted in various countries across Asia since 2007. It was modelled after the Lindau meeting in 2005 by two Nobel laureates. ASC is a forum that promotes discussion and cooperation among Asian Students for the betterment of science on the continent.

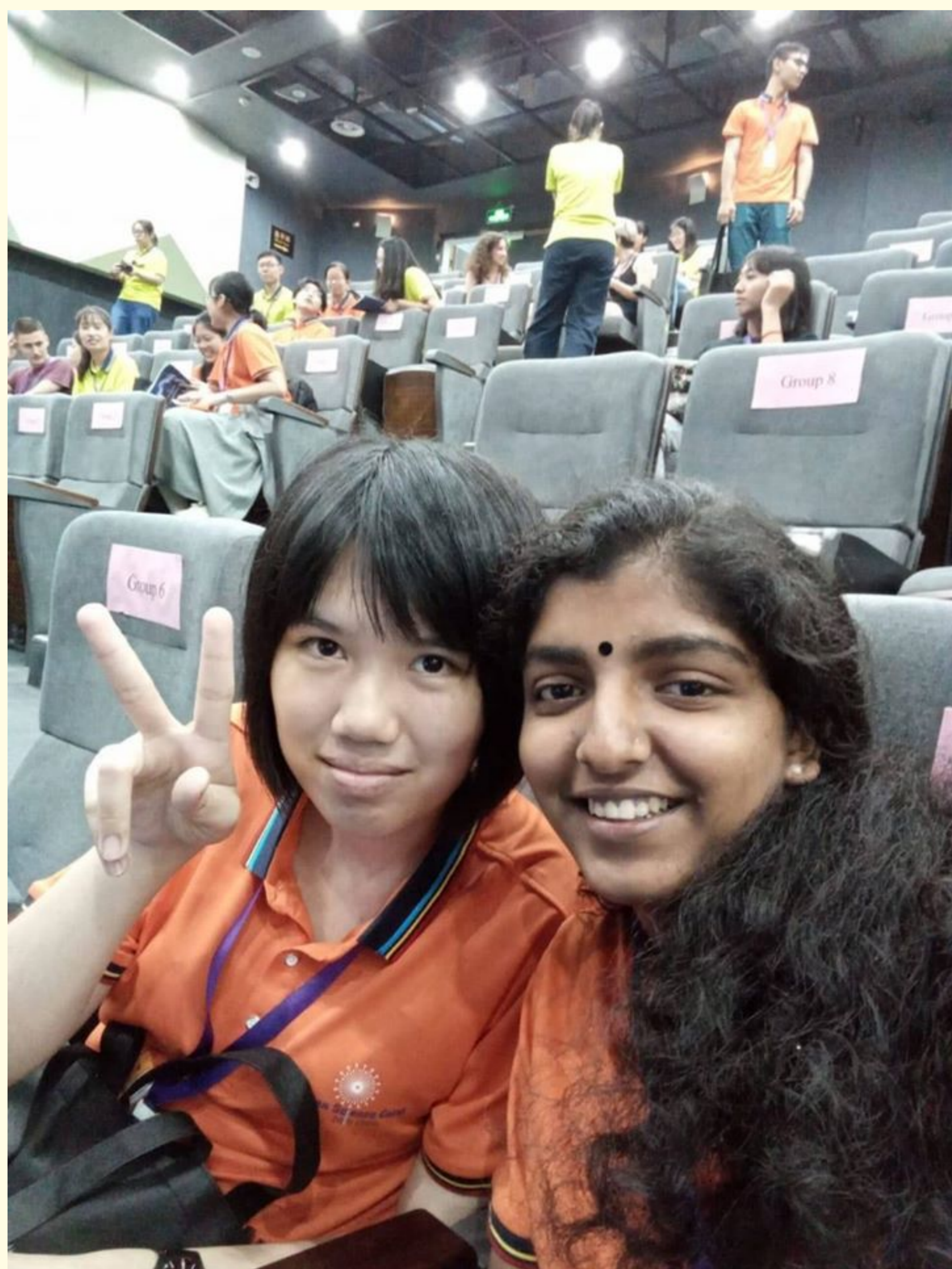
This year, the camp was held at Shantou, China between 28th July and 3rd August. We were about 20 of us from India, including 18 students and 2 faculty members from IISc, Bangalore. We all gathered at the KVPY office, Bangalore on 26th July and commenced our journey on 27th July- from Bangalore to Kolkata and then to Shantou. We reached the Jieyang Chaoshan International Airport, Shantou by 10.30am. The volunteers took us to the Shantou University, where there was a formal registration of all participants and then we were provided with essentials and other items that we might require during our stay there. The most attractive one was the Chinese hand fan with the printing 'Asian Science Camp'.



DAY 1: The events of ASC started on 29th July with the inauguration followed by a traditional Chinese band performance. The first lecture was by Prof. Aaron Ciechanover, who was awarded the Nobel Prize in Chemistry in 2004. He elaborated on why the field of personalized medicine is important and its progress in the last 10 years. The lunch was entirely different; we were provided with some vegetables, fruits and different kinds of meat. I however preferred fruits over the others and stuck to this option. The second lecture was by renowned scientist Professor Wang Quan, who works on nanoparticle-based energy harvesting materials and Smart-Materials. The session was followed by a brief tea-break and scientific office hours.

DAY 2: The schedule was quite similar to the first; the day started with breakfast followed by a plenary session by Prof. Zhang Shuguang from MIT. He spoke about his

serendipitous discovery of a repetitious and ionic self-complementary peptide segment in yeast protein Zuotin in 1990. This marked the discovery of self-assembling peptides which eventually led to the development of the new field of peptide nanobiotechnology. The tea break was followed by Prof. Guan Yi's lecture on Virology and Control of Infectious Diseases, who was the first one to discover the source of SARS virus. In the afternoon, Prof. Jean Francois Le Gall, winner of the Wolf Mathematics Prize in 2019 gave a talk on the History of Discovery of Brownian Motion, to reveal the physical notion behind this phenomenon. He illustrated his views on the subject with various examples from Economics, Mathematical Finance, Medicine, Industry and other fields. Despite not having a particular inclination to Mathematics, I found the session to be interesting and relatable. We spent the evening learning about the traditional arts of Shantou.



DAY 3: The day began with a visit to the historical and local tourist spots in Shantou. We first went to Chen Ci Hong's Residence, known as the best overseas Chinese residence in Lignan and a protected cultural relic in Guangdong Province portraying the traditional Chaos Han architectural style of '4-horse-drawn chariot'. We then visited the Bai Shi Yuan - Craft Master's Garden, the

National Historical and Cultural City, and the capital of Chinese arts and crafts founded in Chaozhou.

DAY 4: The first session was by Prof. Liao Fulong, from the team of Prof. Tu Youyou, who gave us an unusual lecture about Chinese Medicine. He went on to mention Prof. TU Youyou's personal experience, about how she was inspired by ancient wisdom and finally isolated artemisinin, which has benefited millions of people. The next plenary session was by Prof. Eliezer Rabinovici, one of the founding fathers of SESAME (a cooperative venture by scientists and governments of the Middle East set up on a similar model as that of CERN.) He and his student shed light on how collaboration between different countries helps to develop research facilities and bring about discoveries, taking SESAME as an example. By night, all of us got busy with getting our posters ready and worked to better our ideas and organise our thoughts for the presentation.

DAY 5: Having explored the university campus and visiting the Buddha Viharas nearby, we went to the Life Sciences museum at the university. We then rushed back for the poster presentation session, and went on to witness the Cultural Evening which commenced at around 6:30 pm. It looked like a grand party, with members of each country seated at their respective allocated tables. Students from all the 25 participating countries showcased art forms unique to their nation. We were 9th in the list to perform and presented a piece that depicted the classical and folk art forms of India. The camp came to an end with a speech by the Director of Shantou University. We returned to India the next day and reached IISc by twelve in the night.

Overall, a great learning experience, friends and memories made- and a milestone that I will always remember!

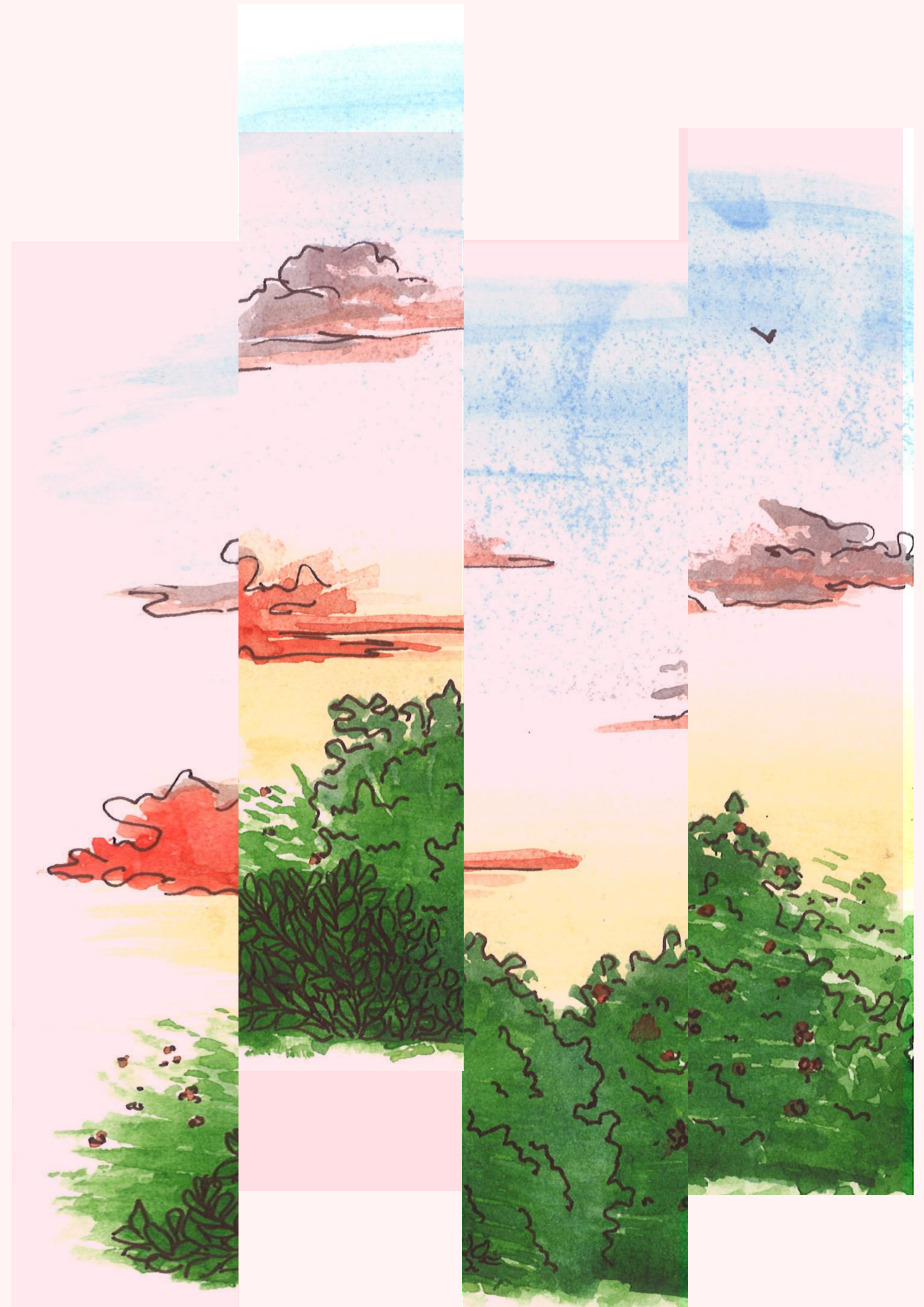


THE RHYTHM

Shubhra Singhal

BSMS 2019

The rivers are flowing, bringing tranquility around.
I'm walking with myself, whom I have just found!
Neither of us are close to perfection,
but at least she is not of my own conception!
Now the flowers are blooming, and the air feels alive,
dancing to a rhythm which is ostensibly naive!
But not to me and myself, for this is the rhythm of finding
the humming of the mess, not of tidying.
The drumming of beginning, not ire.
The peace of giving, not desire!
Hand in hand, we break our latch.
Hand in hand, we dance, our frequencies match!
At this instant, the feeling is of infinite power.
A sensation like rain, bringing life and death in every shower!
We cross a beautiful garden into an unfamiliar lawn.
We wonder, what will remain, if all is gone?
Everything will be left behind as time issues its call.
Forced to move forward, everything changes, but not all!
The humming and drumming will stay,
they will call out to you, to be you in the same way!
Listen well, for they will make you stay in the present.
They will make you, and give you, your own assent!



FIRST BATCH

“The first victory of IISER Tirupati cricket team against NISER in IISM”

“1st January 2019, It was not just another new year for me. It was the day god gifted me the most beautiful thing I ever wanted, Love.”

“Our trip to IISER Pune”

“The organisation of maiden Spicmacay Virasat series of IISER Tirupati.”

“First-year Diwali, for the first time it felt like a family!”

“Summer project of 2016 - when the hostels were all empty except for a few students, and all us boys used to watch movies in the TV room at night.”

“My best remembrances from IISER where I got a great response from our faculties and my friends for my life's first art exhibition. IISER made me realize that how can I be a good citizen who can do something for our society.”

“It's so hot at Tirupati. How are we going to survive until our 5th year? It's the year 2020, Tirupati is still hot and we are still here, ready to graduate and leave on our terms.”

“The batch trip to Karavan 2015 (IISER Pune)”

“Things we did in the first two years at IISER were the best; Like fun pranks, comedies at lab hours, tutorial solving, Menger sponge making night, first Science day, first Dhvani making struggles and the list goes on...”

“The first trip north, first IISM, first loss, first time experiencing near-zero temperatures, the first time we made a team, playing with your first friend (Anubhav), first heartbreak, the first time I felt like I belonged.”

MEMORIES

“The first year at IISER Tirupati will possibly always remain special to me and it will be a gross injustice if I pick one particular event over another.”

“The best thing I had in IISER is to get an awesome roommate who will always be sleeping”

“Our first unofficial batch trip 'The PUNE trip'”

“Playing Hide and Seek in the chemistry Lab and placing Rafna in that cupboard.”

“The queue outside the kitchen of the mess, for the aloo parathas right off the Tawa.”

“The day when we all charmed with exquisite colours for the very first Holi celebration.”

“ Haven't learned anything, but no F on the transcript. All the shortcuts and cramming we have done on exam nights.”

“Late-night studies in the tutorial room and the first Science day celebs.”

“The one we went to collect water for Winogradsky (checked the seeking in google) column.”

“When we came back from being 0-1 down to win 2-1 against IISER Kolkata in IISM 2019. It was surreal, the stuff of dreams.”

“The memory I cherish is the Holi celebration during our first year.”

“IISER welcomed me to the real world. It sucks! I love it.”

“The day when I proposed someone for the first time in my life.”

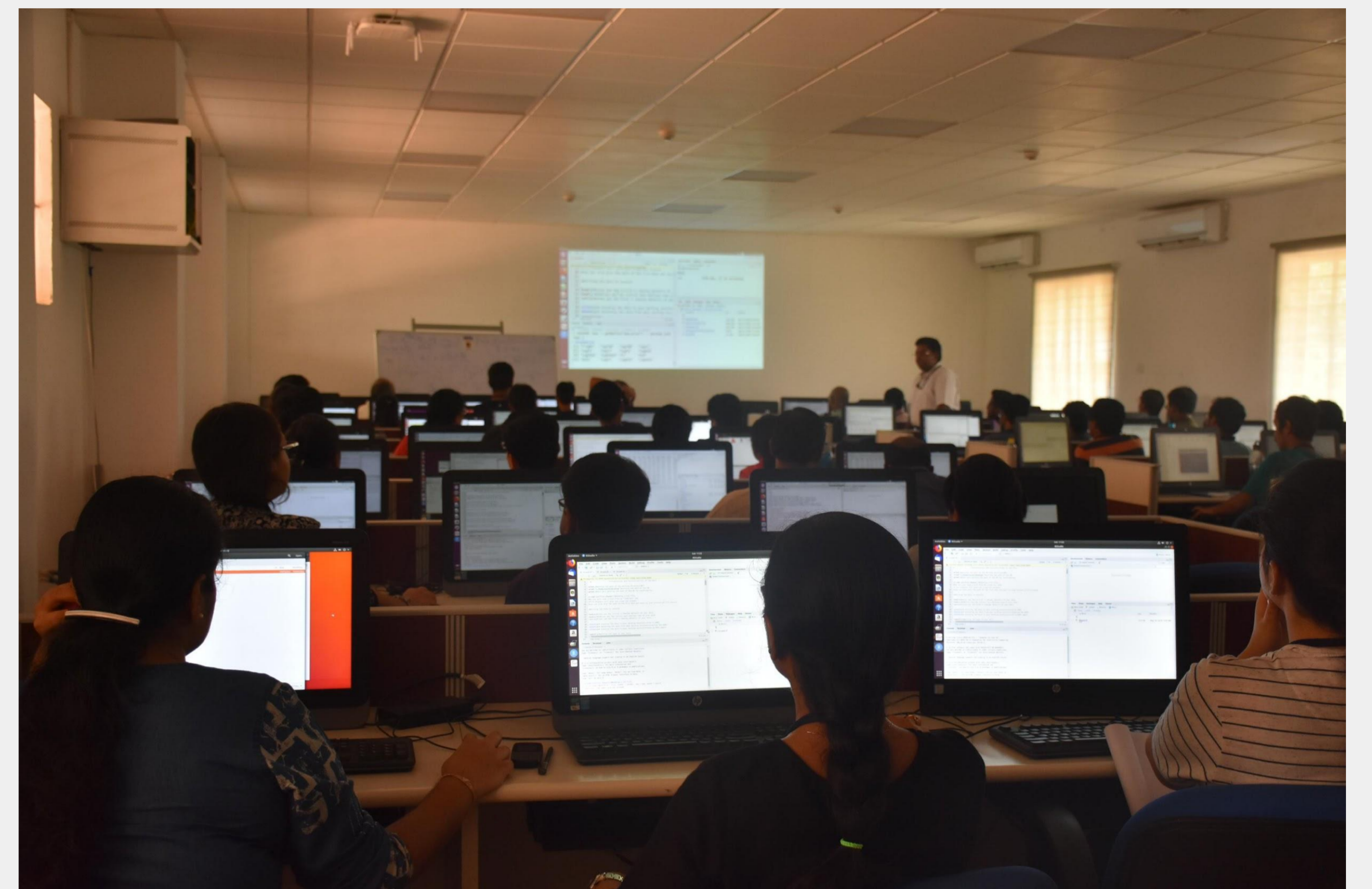
WORKSHOP ON DATA ANALYSIS AND MACHINE LEARNING (DAML)

Sneha Kachhara

PhD, Physics

Buzzwords such as ‘Big Data’ and ‘Artificial Neural Networks’ are becoming more and more familiar to the business and science communities alike. In spite of a myriad of possible applications with scientific data, however, there is little to no exposure to these concepts in the traditional science curriculum. With the aim of bridging this gap and to train students in the techniques and recent developments, a workshop on Data Analysis and Machine Learning (DAML) was held at IISER Tirupati (organized jointly with IUCAA, Pune) from May 24th to May 28th, 2019. It saw enthusiastic participation not just from the IISER Tirupati students, but also from other IISERs, various IITs, IUCAA and IISc, as well as many universities and private colleges. Themes ranged from data analytics, Neural Networks and statistical inference to nonlinear time series analysis and applications specific to climate data, biological data and astrophysical data.

With an increasing upsurge of data and computational power, we are observing a fundamental shift in science. Numerical simulations and multidimensional models generated from data reduce theoretical and analytical effort tremendously and aid in generating simplified, intuitive models. The past few decades have seen



exponential progress in Machine Learning and Artificial Intelligence, enabling us to discover patterns and correlations in data that would be lost to the ‘human eye’ otherwise. It doesn’t stop there, however. With advanced applications such as facial and voice recognition, big data analytics, and neural network-based predictions – we are able to build automatic systems such as Alexa that were only a fantasy a few decades ago. The world is smaller than ever, more connected than ever and yet it’s never felt bigger. Big companies such as Amazon and Google are investing billions in data analytics and deep learning. It is unfortunate that we see little work employing these techniques to analyze scientific data. There is a lot of widespread scepticism and unfamiliarity among scientists about the developments in Machine Learning and Data Analysis and thus a dire need to train scientific persona in them. The DAML workshop was conducted for this very purpose and got an enthusiastic response from students and experts alike. Participants were introduced to the background and recent developments in data analysis and machine learning, complemented by hands-on lab sessions to demonstrate applications with real data.



The Workshop started with introductory remarks from the Director, IISER Tirupati followed by Prof. G. Ambika, who explained the motivation, curriculum and organizational details of the event. Applications of Machine Learning in Astronomy (Dr. Kaushal Sharma, IUCAA) were discussed followed by an introduction to Nonlinear Time Series Analysis (Prof. G. Ambika, IISER Tirupati). The first day concluded with an elaborate discussion and demonstration of Bayesian Statistics in Cosmology by Dr. Tarun Deep Saini (IISc).

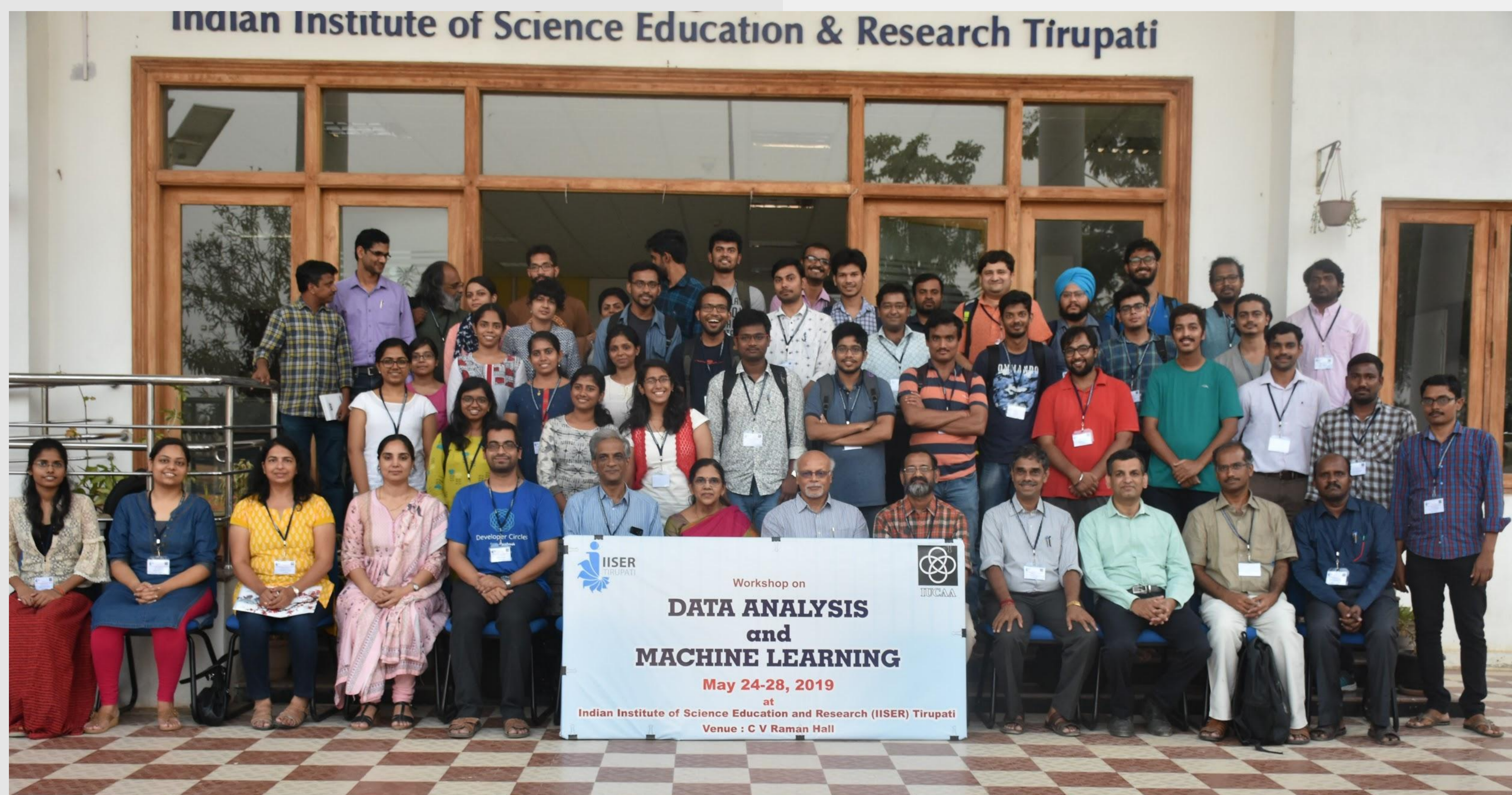
The second day began with a detailed introduction to Statistics and Inference by Prof. Asis Kumar Chattopadhyay, Univ. of Calcutta who demonstrated the power of statistics with random sampling to inference in astronomical data. The evening witnessed a light-hearted, engaging talk by Prof. R. I. Sujith, IIT Madras who explained applications of nonlinear time series analysis in thermoacoustic systems.

The third day was rather technical, starting with Spectral and Wavelet analysis (Prof. P. Panigrahi, IISER Kolkata) and Multivariate time series, correlations and random matrix theory (Dr. MS Santhanam, IISER Pune). The practical were explained in the accompanying hands-on session.

Prof. KP Harikrishnan, Dr. Rinku Jacob and Prof. Ranjeev Misra introduced Recurrence Networks in a very well-received lab session.

On the fourth day, the focus shifted to Big Data with applications to biological data (Prof. Sajeeth N. Phillip, St. Thomas College, Kerala) and analysis of astrophysical datasets (Prof. Ranjeev Misra, IUCAA), both of which dealt with real, scientific data. The participants were guided at each step, enabling them to analyze the data by themselves.

The last day participants were introduced to some business and industrial applications. Prof. Dinesh Kumar, IIM Bangalore talked about Competitive Intelligence using Analytics while Convolutional Neural Networks in analysing biological data were discussed by Dr. Kalidas Yeturu, IIT Tirupati. In the demo sessions, more applications to real data were demonstrated: Analysis of Climate data by Dr. Saikranthi, IISER Tirupati and Big data analytics with SPARK framework by Dr Asadi Srinivasulu, Vidyanikethan Engineering College, Tirupati. The workshop concluded with a poster session exhibiting research work of some of the participants.



H A L L O W E E N



SCIENCE DAY 2020

Chaitanya Chawak

BS-MS 2018

“Holy crap! This is crazy!!”- I screamed in the Physics lab as we saw the green laser making a crazy Lissajous Figure on the ceiling. It was about 1 am on the 29th of February at that time.

Students from different schools in Tirupati and some nearby areas were going to reach our Institute within 7 hours for Science Day presentations and demonstrations. Even after very little sleep at night, there was an unusual energy early in the morning. Students and faculty alike were enthusiastically running around, trying to make last minute adjustments to their works. There was a plethora of fascinating talks and demos in all the subjects.



I had volunteered to make a model for the Physics corner along with Aaradhya, one of my batch-mates and Vikas, a senior. We put a bluetooth speaker inside a small container and fixed a rubber membrane over its mouth. We then fixed a tiny piece of mirror at the centre of the membrane and a laser was shone such that the reflection could be seen on the ceiling. Now, when we played any song or any frequency, the entire membrane would vibrate, thus creating a pattern on the ceiling. We called it ‘The Laserjous Figures’. There were many other interesting models in the Physics section, like trapping laser beams in a waterfall, a demonstration of Electromagnetic Induction and the Gyroscopic Effect to name a few.



There were some enigmatic mathematical puzzles, some of them nearly unsolvable, courtesy of Graph Theory.

Due to lack of time and being held up with my own demonstration, I wasn't able to attend all the projects in the Chemistry section and pay close attention to each one of them, but they had a couple of really good exhibits.

The students from BioWissen had come up with an ingenious idea of having a murder-mystery house, where we needed to find the murderer by actually analysing the crime-scene. Our team of four had no hopes of getting even close to figuring anything out, yet we donned our deerstalker hat and went ahead. The inspection of the murder weapon, the blood group detection, and



fingerprint analysis all led to us eventually figuring out the killer and we ended up winning. Now, if anyone asks, *ahem* "Elementary stuff, my dear Watson!" is what we say.



To top this enormous feast that the entire day was, Shemushi club members had a brilliantly organised Quiz finals with a stegasaurical range of rounds. One of my favourite rounds was the one which had photos of faculties on the screen and the teams had to choose one faculty based on whose research topic the question would be asked to them. I took part in the qualifiers for this event and also made through, but was K.O.-ed in the tiebreaker. Yet, it was fun to just watch the teams answer the questions.

Overall, the entire Science Day was a massive success, and for people who missed it . . . well, I pity thee.





Tejas Borkar

BSMS 2018



Arnab Lahiry

BSMS 2018

A VILLAGE

Khushi Dani

BS-MS 2018

Nestled within the warmth of the foothills of Yerpedu, distanced from the city, is a village of children- vibrant and wonderful.

Being one of the 572 Societas Socialis Villages that are distributed across 135 countries, SOS Children's Village Tirupati is one with 12 houses, each of which is turned into a home by the large, loving family of eight to ten siblings, and their mother.

Growing up in the company of each other and the guiding light of their mothers and mentors, all part of the village, are 118 children — children who would have otherwise been unable to claim their rights such as access to healthcare, education, family life, play and recreation to name a few.

It was at the beginning of October of this academic year that some of us had a chance to meet and to get to know these wonderful people. We first learned of the spirit and story of SOS during our interaction with some of the co-ordinators of the organisation. Following it, our small initiative to reach out to those who would be as keen to meet us as we were to meet them, has given back more to us than we expected ourselves to give to it.

Even though we were unsure of how to go about it, we aimed to share our appreciation and joy for the stories across various fields, such as science, math, literature, music, art, and more, that we have known and thought they would be delighted to know. To achieve this diversity, we involved members from Anubhuti, Literary Club and Math club, and are hoping to involve more clubs at the institute. Through our interactions, we try to explore the wonder and curiosity that lies beyond textbooks. In order to realise a love for the literary word in them, we proceeded to establish a library, now consisting of over 200 books, that we collected through a book donation drive organised at the institute.

We celebrated this year's Diwali at the SOS Village, and it was unanimously one of the best we'd celebrated- song, dance, and play, in the field under the early evening sky.

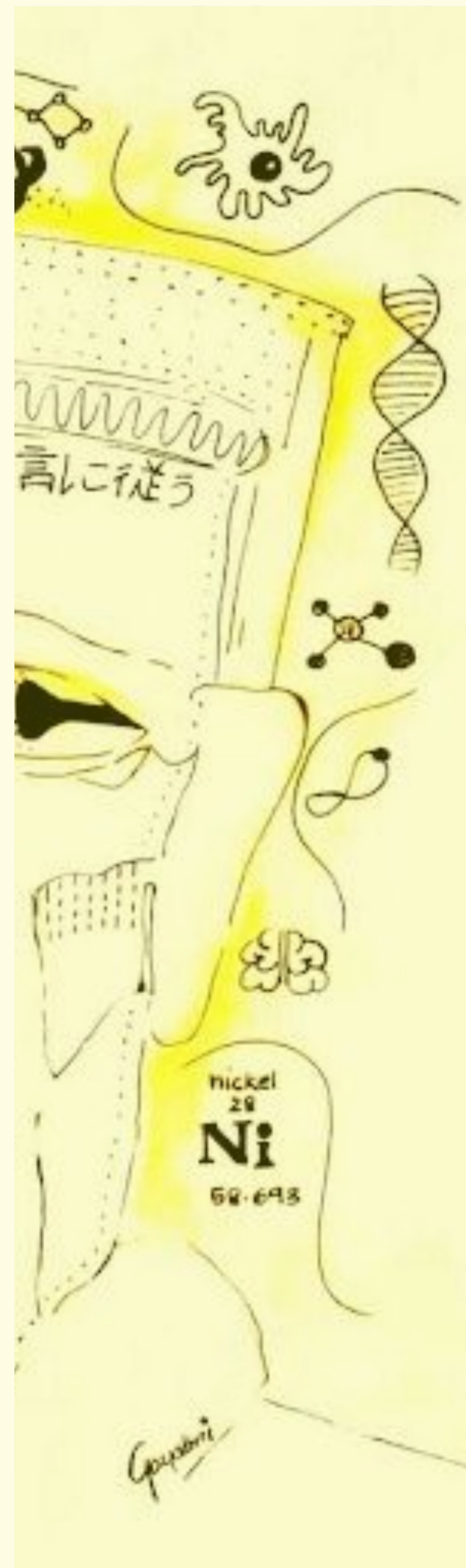
As our little affair of exchanging stories and cultures and of love and laughter continues to grow and strengthen, we are constantly figuring, and refiguring, how we could make our interactions more effective, sharing new ideas with them each time and learning together. Hoping this tryst goes a long way in the future!



SCIENCE LOYAL KNIGHT

Ajay Kumar Yadav

BS-MS 2019



I don't have golden wings,
Neither am I the owner of magical rings.
But still want to fly, High into the sky.
Want to know why the world is so,
Thinking to lonely let my boat row.
When the sun stopped and the earth started her
revolution,
It was the first step of humans evolution.
Thus want to feel Galileo's feelings,
When finally the religion stooped killings.
From unknown ages, our hands were tied,
In the name of God we have lied.
But that was the first light,
Which made the world utmost bright.
But still, there are many fancy magical myths,
Who deserve some scientific logical fists.
And thus I want to give them that,
Believing in the idea of tit for tat.
So want to discover,
And end the battle for forever.
I don't have ironed armour,
Neither am I the owner of the silvered skewer.
But still want to fight,
As a science loyal knight.

After widespread dissent, in order to avoid being fired as the writer for the 'A day in the life of quarantine' series, the author was forced to come up with another article for day 8 which he so unoriginally titled 'Day 8 of lockdown, REMASTERED'. Here it is:

Day 8 of lockdown, REMASTERED:

In episode 20 of Death Note, at 19:23-

Misa: I can't even dream about living in a world without light.

L: Yes, that would be dark.

Day 9 of lockdown:

My toothbrush has 1410 bristles on it and the length of each bristle is between 9.5mm to 11mm, which is acceptable according to the adult toothbrush bristles standard. Phew! Relief.

Ref:

<https://www.researchgate.net/publication/47509081-Number-length-and-end-rounding-quality-of-bristles-in-manual-child-and-adult-toothbrushes>

Day 10 of lockdown:

Pro-tip: If someone accuses you of plagiarism from Wikipedia, just delete it from Wikipedia.

After 10 days of this jargon, the author's mom got fed up with him and locked him up in an undisclosed location. The whereabouts are still unknown.

[Please note: This is a joke post. The author will not be responsible for any damage caused due to the application of any of the above in your life. Amen.]

Artworks



Swimming beauties on Mandelbrot sea - (Oil on Canvas)

- G Ambika

Copyright © 2018 G. Ambika. All Rights Reserved



Arnab Lahiry
BS-MS 2018



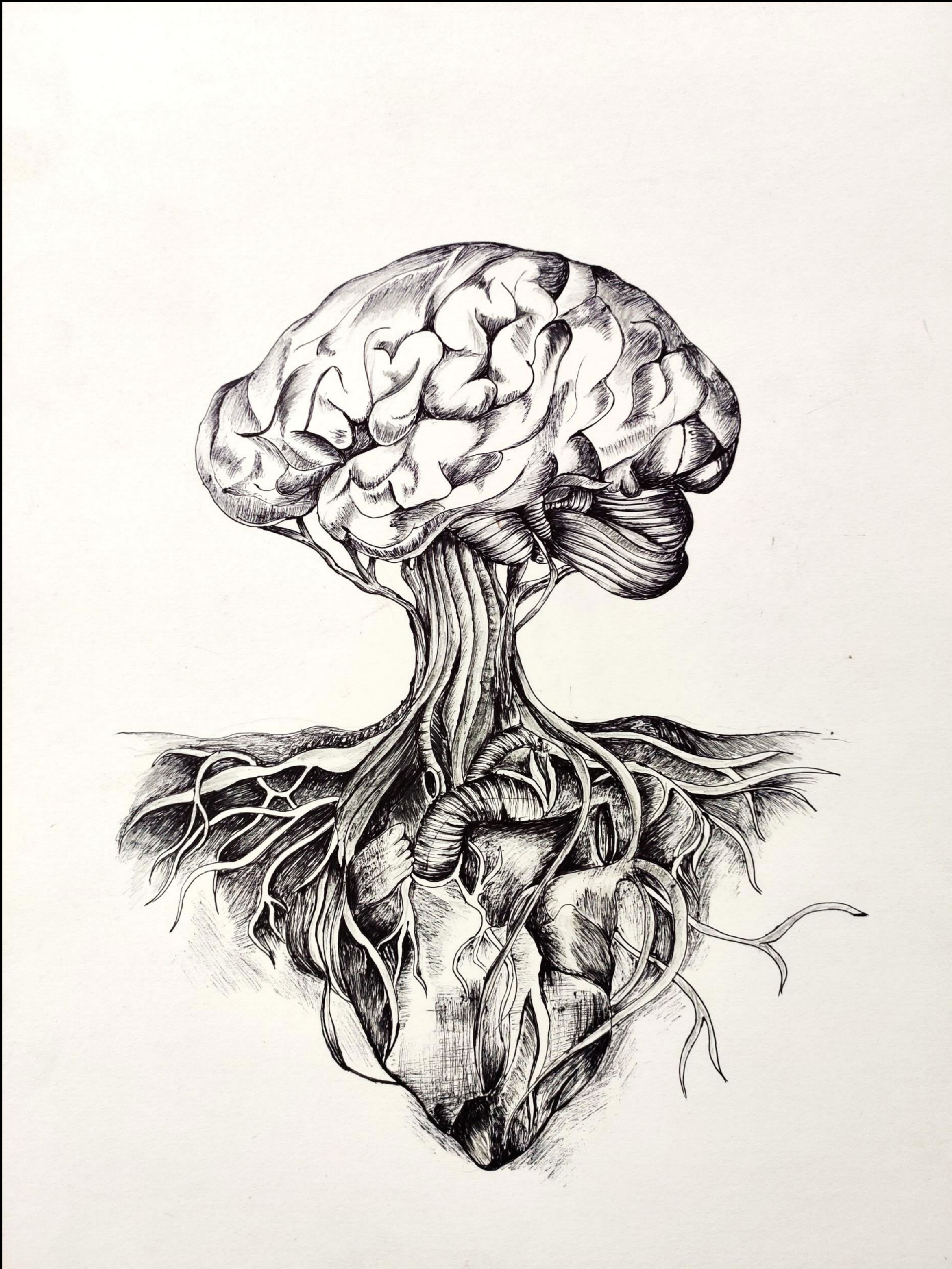
Sushmita Halder
BS-MS 2018



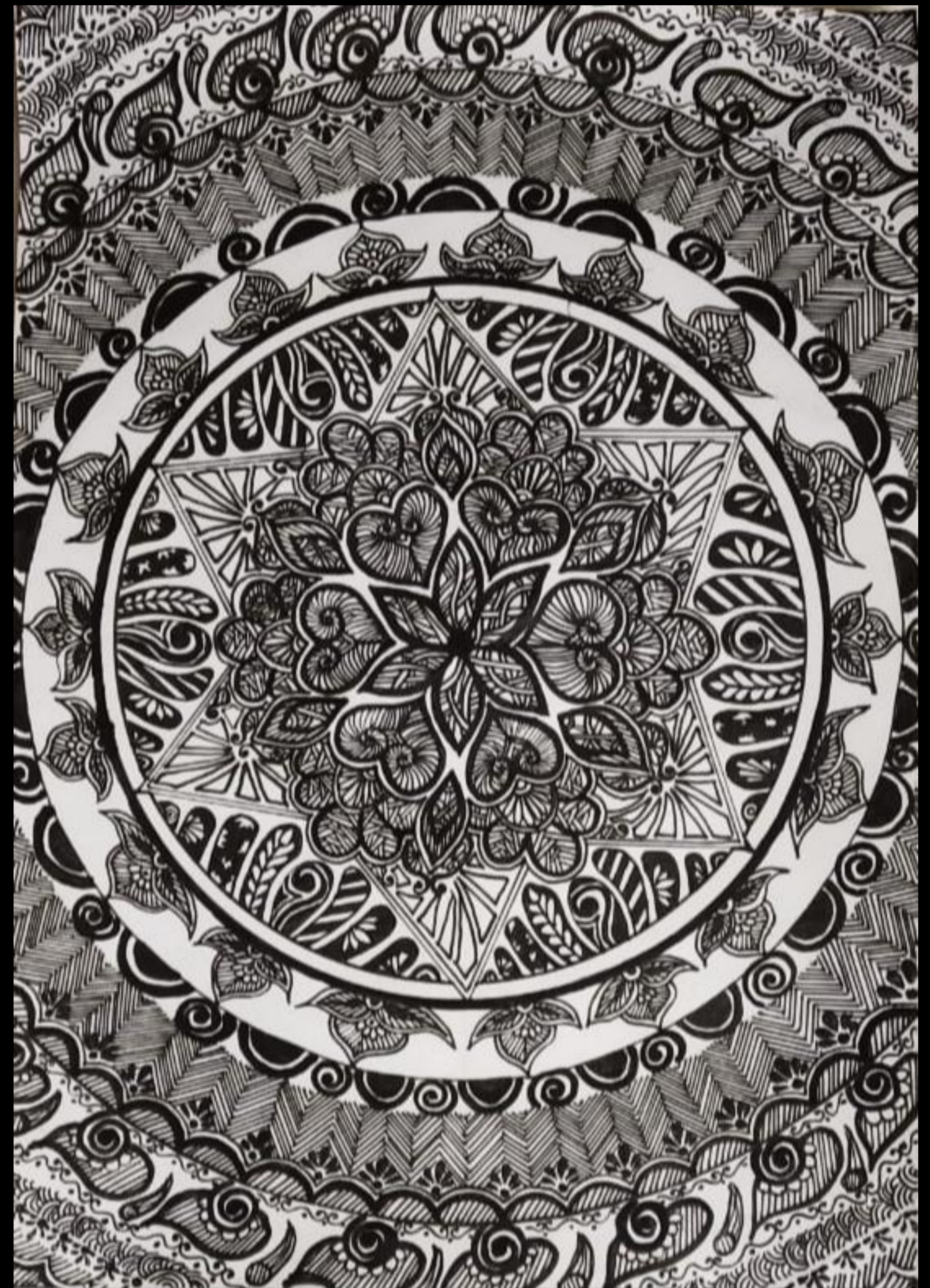
Nikita Shinde Nilkanth
BS-MS 2015



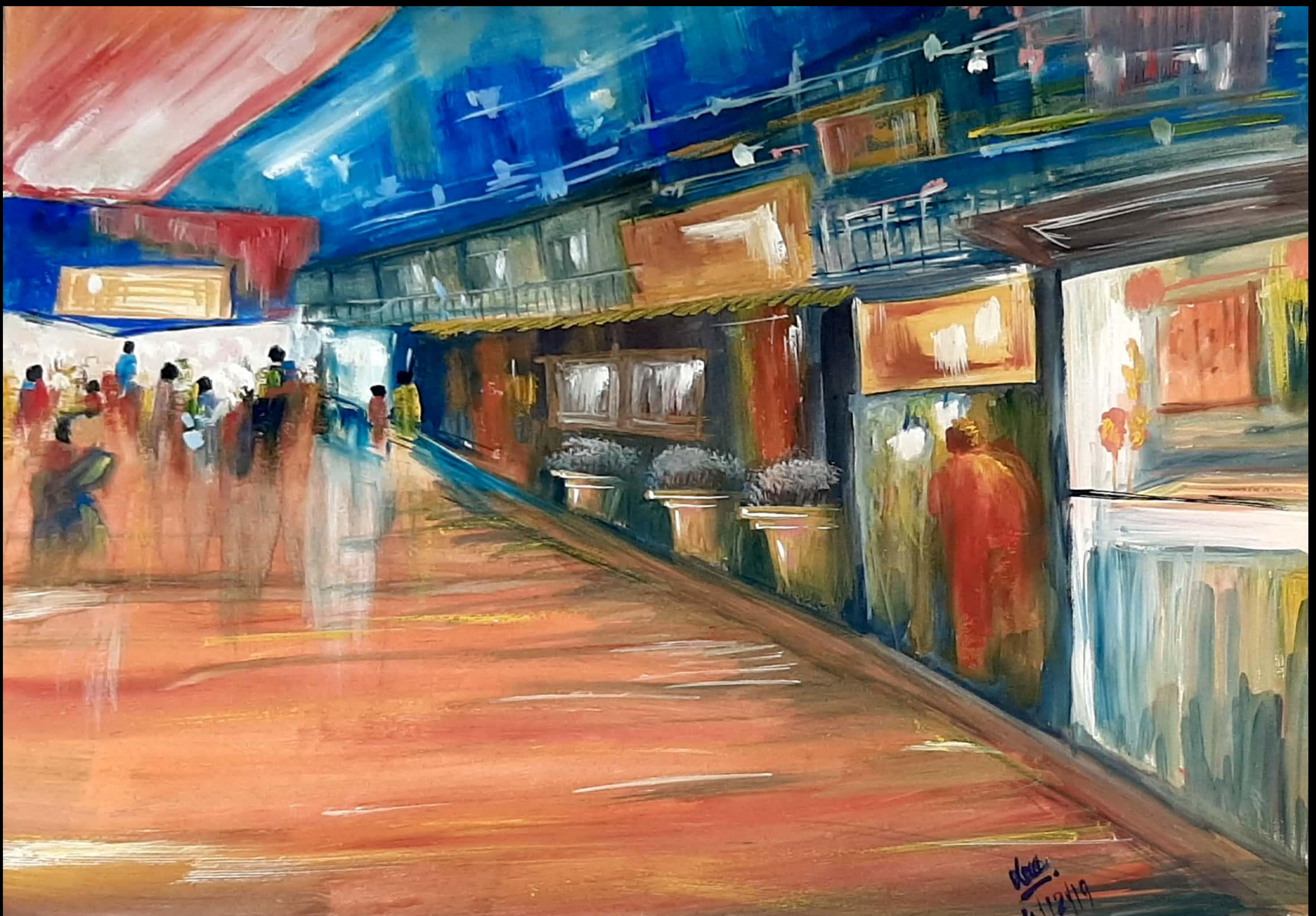
Himika Das
BS-MS 2019



Himika Das
BS-MS 2019



Sushmita Halder
BS-MS 2018



Rukmini Harale
BS-MS 2019



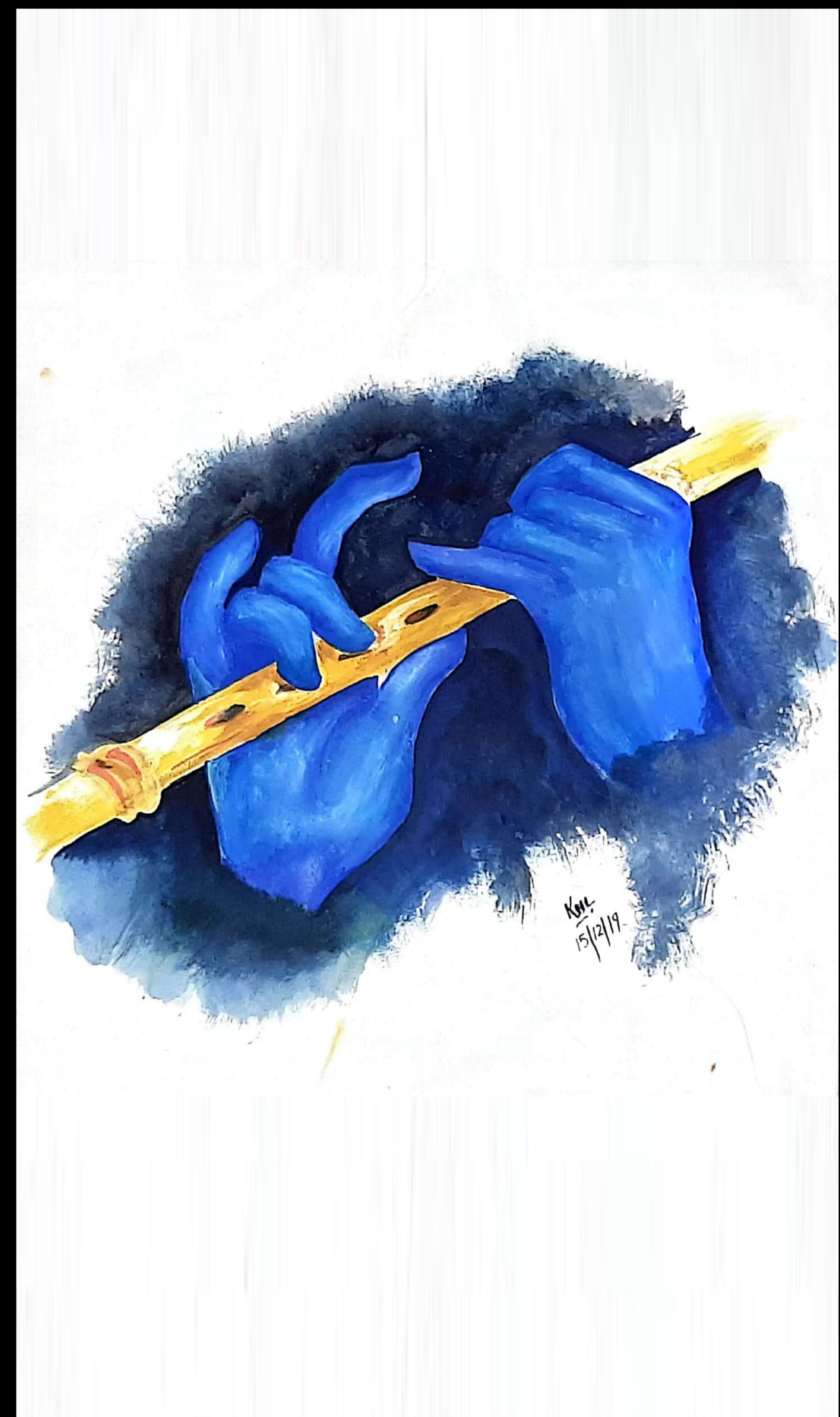
Arnab Lahiry
BS-MS 2018



Revathy Menon
BS-MS 2016



Gowthaman Suresh
PhD, Biology



Rukmini Harale
BS-MS 2019