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BUFFERED READER v5.1

Table Of Contents

From **The** HOD's Desk

FOREWORD

This is with great pride and excitement that I present to you, the ninth edition of Buffered Reader, marking the magazine's fifth year since its commencement. Over the years, BufferedReader has evolved to be the lifeline of the CSE department, gaining accolades from students, faculty and alumni alike. The hard work and perseverance shown by the Editorial and Designing team in putting up each edition of this magazine is remarkable and I extend my sincere thanks to all of them.

With the advance of Bitcoin, Ethereum, Ripple and many more cryptocurrencies, and their revolutionary effects, this edition talks about how they came into existence and why they may very well be the future of world economy.

This edition provides a glimpse into the various departmental activities, aimed at providing maximum opportunities for our students. With a heavy heart we bid farewell to the batch of 2018 and I wish them all the very best in their future endeavours. I am thankful to Ashish Gupta for sharing his wisdom and experience and I hope our students can learn a lot from him.

This edition is a testament of the long way we have come since its humble beginnings and the challenges we faced. It also reminds us that we must continue with our hard work, and it is the dedication of the students towards this magazine that will help us reach greater heights. To all the readers, your honest feedback regarding the content, quality and design of the magazine will be highly appreciated. Do share it with us at hodcse@iitism.ac.in

Haider Banka
HOD, Dept. of CSE
IIT (ISM), Dhanbad

Editorial

BufferedReader has entered its fifth year of existence, and the progress made by this magazine is a testament to the hard work and vision of every single student and faculty member who has been associated with the magazine.

Not only has the standing strength of the Editorial Board grown in size, from just 7 back in 2014 to over 20 members today, but we have also kept improving on the content and design quality with each issue. The articles have kept getting more insightful, and the design, more beautiful. The magazine has inspired other departments to start similar endeavours. And while all of us in the Board would make the case that the magazine is the crown jewel of the Department, we just hope that our work is doing justice to the dreams of our founding members.

This edition's cover story sheds light on the high-risk-high-rewards realm of Cryptocurrencies. The article offers a view of what goes on behind the scene - details which are often shrouded in the fog of complexity and a general lack of curiosity in the invention beyond an investment standpoint. Because when the dust settles after the crazed gambling on this new groundbreaking invention in financial-technology, it won't be long before they become stable enough to make a very suitable candidate for a truly international currency.

We spoke to Mr. Ashish Gupta, the gold medalist from the very first batch of the department (Class of 2002), about his journey after graduation and on how far the department has come along since then. We sincerely thank him for sharing his views with us, for the benefit of our readers still in the institute. Learning from the experiences of our alumni offers us a source of illumination as we walk into the often poorly-lit path that can be the life after college.

We would also like to express our sincere gratitude for the support and guidance from the Head of Department, Dr. Haider Banka, the faculty supervisors of the magazine, Prof. Chiranjeev Kumar, Dr. Soumen Bag, and Mrs. Tanusree Kaibartta, along with all our faculty members. The magazine could not have come this far without their efforts in making sure that all members of the team are able to do their very best work, year after year. We are all very grateful for that (Previous editions of the magazine are available at www.bufferedreader.org).

Lastly, our next edition will be the tenth issue of the magazine. Needless to say, we are all very excited about putting in a great deal of work to make it a memorable one. So, in order to create the best edition of the magazine till date, we invite all our readers to email us at bufferedreader@iitism.ac.in with their thoughts and suggestions for the magazine. Criticism is especially welcome - The tenth edition won't be the best if we don't get your honest opinion on the magazine. And every member of this team won't have it any other way.

Aditya Sood
Editor-in-Chief

CRYPTOCURRENCIES: LEGAL TENDER OF THE FUTURE

Aadarsh Singh | B.Tech. 2020
Jakshat Desai | B.Tech. 2020
Abhishek Chattopadhyay | B.Tech. 2019

If you've ever seen Guardians of the Galaxy or Thor Ragnarok, then you have probably heard of the term "units". If you don't know what "units" are, they're a form of currency, universally accepted in the world of Marvel comics. Ever wonder how such a currency can exist? With so many planets throughout the universe, wouldn't it be chaotic to have a single currency? Who would manage it? Who would decide its value? Why would everyone accept it? How would something like that possibly work? The possible answers to these questions were discovered right here on our humble planet about ten years ago, in the form of a currency which had until now only been toyed around as a novel idea, but nothing more. Incidentally, this idea even has a name straight out of a science fiction novel - Cryptocurrency.

Cryptocurrencies have been becoming the talk of the town of late! A large number of people are talking about cryptocurrencies, buying them, selling them - or simply investing. Cryptocurrency miners, traders and even brokers are rising in number with every passing day. In a time like this, one might often wonder what this hype is all about. In this article on cryptocurrency, we will take a detailed look at every aspect of cryptocurrencies and how they function.

But before diving into the vast ocean of cryptocurrency, it would be better to splash some water of it onto you - centralized currency. So what is this centralized currency? In simple terms, centralized currency means that the concentration of control of the currency is under a single authority, i.e. government, bank or any other financial institution. So basically, only a single body, our government or the bank handles our money. History has been witness to the mismanagement that this system has led to whether it is the introduction of currency peg between the peso and the dollar to fight hyperinflation by the Argentinian government in the early 1990s or the abandonment of the currency by the government of Greece during the financial crisis of 2007-08. Sandwiched between the powers of the bank and the government, the fiat currency suffers from quite a few disadvantages such as high exchange rates, slow transaction rates, potential fraud, etc.

Need for Decentralized System

Having mentioned some of the disadvantages of the current system or the centralized system, it's time to throw some light on the solution. This brings us to the concept of a "Decentralized System" - one which requires multiple parties to make their own independent decisions or a system where there is no single centralized authority that makes decisions on behalf of all the parties. As an analogy, we can consider the example of our government - a democratic body where the people of the country have the rights to elect their representatives. Similarly in a decentralized system, there is no single body that is responsible for every action. What's so good about it? Firstly, there is no involvement of a third party whenever a transaction has to be carried out. This causes the transaction to be done faster. If money can flow faster then moves can be made faster, decisions can be made faster, goods can move from point A to point B faster and so and so forth. In simple terms, it improves the global economic condition at a rapid pace.

What is Cryptocurrency?

A cryptocurrency, in the simplest of words, is digital money. In technical terms, cryptocurrency is a general name referring to all encrypted decentralized digital currencies like Bitcoin. It is electronic money, created with technology controlling its creation and protecting transactions, while hiding the identities of its users. Simply put, a cryptocurrency is basically the combination of two words: Crypto + Currency where Crypto- is short for "cryptography", a computer technology used for security, hiding information, identities and more.

Ledgers of all transactions are based on blockchain technology, which is a digital, decentralized ledger. It keeps a record of all transactions that take place across a peer-to-peer network. These ledgers are available as an encrypted copy with all the members, to allow individual verification of records.

Why Cryptocurrency ?

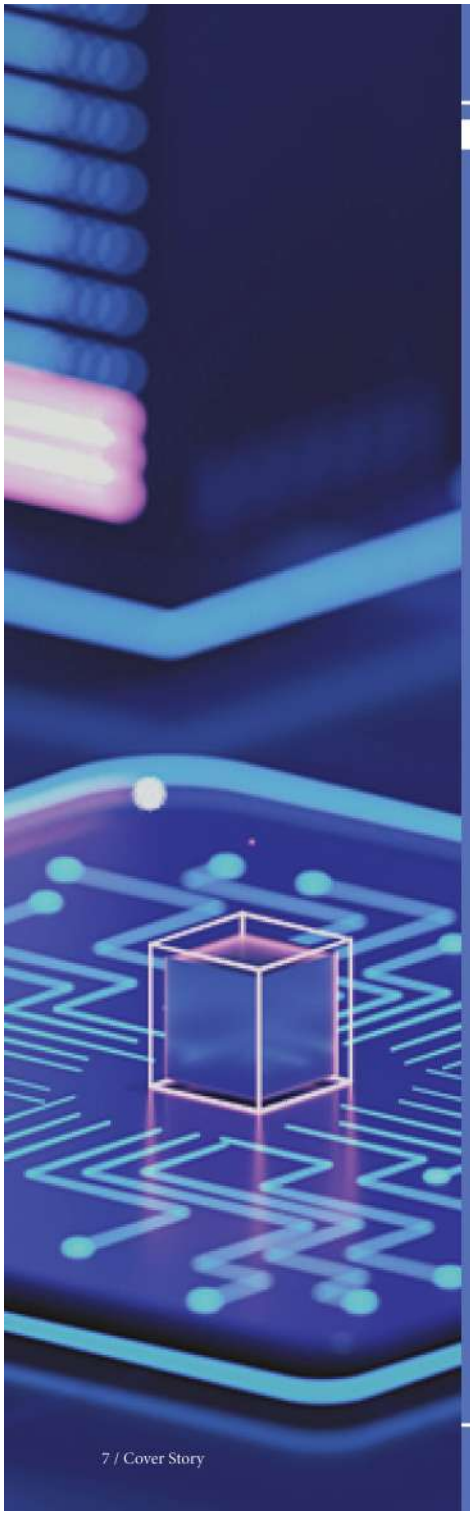
Cryptocurrencies are quicker, cheaper and more reliable than our regular government issued money. Instead of trusting a government to create money and banks to store, send and receive it, users transact directly with each other and store their money themselves. Because people can send money directly without a middleman, transactions are usually very affordable and fast.

Invention of Cryptocurrency

So how and when did cryptocurrency actually come into the scene? A pseudonymous software developer going by the name of Satoshi Nakamoto proposed Bitcoin in 2009, as an electronic payment system based on encryption. It was announced on SourceForge with these words, "Announcing the first release of Bitcoin, a new electronic cash system that uses a peer-to-peer network to prevent double-spending. It's completely decentralized with no server or central authority."

Satoshi's idea was to produce a means of exchange, independent of any central authority that could be transferred electronically in a secure, verifiable and immutable way. His goal was to invent something that many people failed to create before – digital cash.

After Bitcoin, many other cryptocurrencies were invented and are still being continually invented almost every single day - some of them being Litecoin, Monero, Dash, etc. The new inventions are made keeping in mind the shortcomings of the earlier currencies. Although today, we have as many as 1565 cryptocurrencies, Bitcoin still has more than 50% of the market share, owing to its early invention.



MECHANISM AND BLOCKCHAIN

After having dealt with the what, when, why, and who, now comes the interesting part - the how of it all. How does the transaction and exchange take place when using cryptocurrencies? A short answer would be through public key cryptography and blockchain technology:

A. Cryptography - "Cryptography or cryptology is the practice and study of techniques for secure communication in the presence of third parties called adversaries." In simple words, it is used to encrypt messages to conceal them from middlemen/unauthorised persons. Now, broadly speaking, it is of two types -

I. Symmetric Key Cryptography - When both the sender and the receiver have a common key which is used to perform encryption and decryption.

Let us consider a very simple version of this kind of cryptography, say Alice and Bob wish to transfer a secret message X (composed entirely of numbers for simplicity) and they have decided that the common key is 3. To send a message X, Alice can add 3 to all the digits of the the message and then send it to Bob, who on the other hand subtracts 3 from each digit to retrieve the original message.

II. Asymmetric Key Cryptography - This technique involves two keys, one used for encryption by the sender, and the other for decryption by the receiver.

To understand this let us take the help of a common analogy of mixing colours. All of us know that it is easy to predict the colour formed on mixing two colours, but one cannot tell which two colours were used to create the new colour. This is called a trapdoor function i.e. a one way function. Coming back to Alice and Bob, this time, both of them are aware of a public base colour (say Yellow). They then choose a private colour of their own (let Alice's private colour be Blue and Bob's private colour be Red), and combine some of that with the base colour to create a public mixture. They can then send these mixtures to each other (Alice sends Yellow + Blue and Bob sends Yellow + Red). Here lies the interesting part – Although the colours are publicly visible, it is not possible to guess the base colour just by looking at this mixture.

Having received each other's mixture, Alice and Bob can then mix in their own private colour again, to produce a blend of three colours (Yellow + Blue + Red). Interestingly, each of them will have the same colour, since the order in which we mix paint is irrelevant.

B. Network of Investors - In the world of cryptocurrency, all the participating members are connected to each other through a complex peer-to-peer network, used to validate transaction records.

Now that you have a rough idea about the components involved, let us go a step further and explain how the transactions take place behind the scenes.

Let's say Alice wishes to transfer an amount of 'X' bitcoins to Bob. Assuming both of them use bitcoin wallets, Bob generates a new public key through his wallet which is actually a new bitcoin address. Now, Alice signs the request (a combination of the public key and the amount), with her private key corresponding to the address with which she's transferring from.

VERIFICATION PROCEDURE

Participating members throughout the network compete with each other to be the first to verify a transaction, as the reward for doing so are newly minted bitcoins. One such connected peer verifies the transaction between Alice and Bob. After successful verification, a new transaction block is added to the blockchain. This transaction is now irrevocable.

GETTING YOUR HANDS ON CRYPTO COINS

Now that you know about the need and the mechanism, you might feel like you want to get into the business yourself. In order to obtain a bitcoin, litecoin or any other cryptocurrency, you have a choice of either mining or purchasing them.

Mining a cryptocurrency is similar to mining any other mineral which hasn't been taken out of ground yet. Just as those minerals are yet to be discovered, the cryptocurrency coins which haven't been mined yet are undiscovered. Basically, each block in the blockchain is like a mathematical puzzle. The answer to this puzzle is a number which when passed as input to a hashing algorithm, along with the data in the block, gives an output in a certain range. Whoever finds this number first receives some amount of cryptocurrency as reward. All the miners who were working on that block now have to move on to the next one. The reward per block keeps reducing as more and more mining takes place, and the extent of reduction varies from one cryptocurrency to another. Since the reward keeps reducing, there eventually comes a time when the currency exhausts. This finite nature is one of the reasons why people choose to invest in cryptocurrencies. As the source keeps depleting, the exchange rate has a chance of rising. For instance, there are approximately 21 million bitcoins in existence, and at the current rate of mining, all of them are expected to be obtained by the year 2140. As more of them are being discovered daily, their price is rising. However, this may not be true for all cryptocurrencies as the hashing algorithms and number of coins depend on the cryptocurrency under consideration.

After getting to know all this, it's possible that you would have made up your mind to become a miner yourself. However, it isn't that easy: Once you have a wallet for storing your coins, you need to install a mining software. Though the software is free, the hardware and the resources required can put a lot of pressure on your finances. This fact cannot be emphasised enough, especially when it comes to popular crypto coins. Unless you have sufficient disposable income at hand, it is not advisable to go about mining bitcoins solo.

Cryptocurrency Mining

Mining other coins does not require as much upfront investment as compared to Bitcoins, however they still require a powerful Graphics Processing Unit (GPU). Miners usually have to customize their hardware to get enough speed to make their mining profitable. Since a lot of miners are working on the same block at a time, this speed needs to be considerably high for it to yield coins in a profitable manner. Since most of you wouldn't be able to spare so many resources, maybe going solo is not the best option.

The alternative to going solo is to join a mining pool. The logic is pretty simple: Let's say you are a regular fellow with a regular build, digging the ground in hopes of finding some underlying treasure. Now let us assume that there is another group of diggers, also having similar builds, digging together for the same treasure. It is pretty obvious that the group would be able to dig faster and more efficiently compared to you. Hence the chances of the group finding the treasure are significantly higher. The only issue is that being part of a group would mean sharing the reward. A mining pool can be compared to the treasure hunting group wherein miners pool in their resources and share the rewards. If you are a small scale miner or a beginner, then a mining pool is the best way to get small rewards in a short period of time.

Buying and Selling

After you've earned your precious coins, i.e. cryptocurrencies, you might want to know how to cash them. A sale can directly be made between acquaintances and associates. However, if no one you know is into cryptocurrencies, then maybe you would want to do something else.

There are cryptocurrency exchange platforms on which people can buy and sell coins in exchange for money or other cryptocurrencies. There might be some interface charges involved, which may vary from platform to platform. These platforms differ in terms of whether the sale is made between small investors, institutional holders, traders, etc. Sale can also be made using platforms which help individual buyers and sellers connect with each other. The transactions between them can be done using cash deposits, bank transfer, etc. The methods mentioned above are common for most cryptocurrencies.

However, in case of Bitcoins, special devices called ATMs are also available, which provide Bitcoins in exchange for cash. Over 3,500 Bitcoin ATMs have been established across the world as of August 2018. Some of the ATMs also offer the option to provide cash to the seller in exchange of Bitcoins. There are also a bunch of applications and websites which help users in finding nearby ATMs.

CAUTION

Till now you've mostly read positive things about cryptocurrencies, but in reality the path is not filled with rainbows and sunshine. Just like every other thing in the universe, cryptocurrencies come with their own set of drawbacks.

What has been discussed here is just the tip of the iceberg. Since the technology involved is fairly new, often people dump their money without fully understanding the scheme. They fail to understand that cryptocurrencies are not a grow-rich-quick scheme. A lot of variables affect the outcome, and hence there is a fair chance that you might burn your wallet if you invest mindlessly.

Another drawback is that if you lose the password to your crypto wallet, there is no possible way to retrieve your coins. So if you are someone with a poor memory you need to be extremely careful with your crypto wallet passwords. Payments made using cryptocurrencies are irreversible. A transaction made using cryptocurrencies cannot be cancelled and hence you should take extreme care while dealing with one.

Apart from the points mentioned above, another issue with cryptocurrencies is their volatility. The price of a certain cryptocoin can rise to thousands of dollars at one moment, and fall down to nothing at the next without any warning. So there are no guarantees that the price of any of these currencies would stay stable. Hence corporations are apprehensive of accepting payments made through them. This leads to the next disadvantage: Cryptocurrencies aren't widely accepted as a form of payment. Thus, you can't go to your local supermarket, and offer a litecoin as payment for your groceries.

So if you're thinking about mining or buying a cryptocurrency, you need to keep all the pros and cons of the same in mind.

CONCLUSION

The basics of several areas of cryptocurrencies have been covered and now it's up to you what you want to do with all this information. You can look up more stuff and find out ways to grow your capital by diving deep into the cryptocurrency world by researching in this field and investing in several different coins, or by starting a mining rig of your own. You might even find a cryptocurrency which, like the "units" from MCU, might be used universally someday - the possibilities are endless.

Though cryptocurrencies face several obstacles today, the future might not be the same. With more and more new technologies coming up, new trends come into practice and old ones get outdated at a rapid pace. Who knows, maybe ten years down the line, cryptocurrencies would be able to fully take over online payments. Till then, it is better to stick to the centralized currencies being offered to us and hope that cryptocurrencies gain the stability and reliability that is required to make the world go round.

Hackfest '18

Pandre Vamshi | B.Tech. 2020
Abhishek Chattopadhyay | B.Tech. 2019

The event spanned one and a half day, from 24th March 2018, 12:00 midnight IST to 25th March 2018, 12:00 noon IST. The teams competed for prizes worth over INR 3,00,000 along with internship opportunities.

With an immense opportunity for the students to showcase their talents in creating models which are indeed eye-catching, a 36-hour long hackathon was organized at IIT (ISM) Dhanbad fondly named Hackfest'18. This being the prime event of the college for Computer Science and Information Technology, raised extensive participation from different parts of the country. The battle of codes, without any wind up, prolonged for 36 hours i.e a day and a half without any break. Hosted by the Computer Science and Engineering Society and ACM Student Chapter, IIT(ISM) Dhanbad, the event had brought up interesting projects from all the participants who showed up with their talents in the form of technical innovations.

HackFest '18 was the third iteration of the hackathon since its inception in 2016 and was conducted in the Penman Auditorium in the IIT (ISM) Campus. Equipped with the turmoil of electric cords and young minds each team with their wisdom of thoughts explicitly tried to prove themselves as the best. The ambience in the auditorium was perfectly pitched with the enthusiasm of students, who were attracted by beautiful banners on the walls and appealing Hackfest '18 T-shirts. Distinguished people from the tech industry, Samsung R&D Institute-Bengaluru, Whiz Mantra, Mozilla and Techfleeters joined the students, consolidated them in making fascinating projects that would bring an impingement in modern society.

Not everyone could qualify for this formidable fixture. A total of hundred and seventy-five teams had registered, of which a hundred and fifty teams were from within the institute IIT (ISM) Dhanbad and the remaining twenty-five were from various institutes across the country. After an explicit assortment of all the participants, only forty-five of them made into the final hackathon.

The inauguration ceremony took place at 7 pm on 23rd March. Prof. G. Udayabhanu, the Dean of Academics was the Chief Guest of the inaugural function. Dr. Tarachand Amgoth delivered the welcome address. Prof. Prasanta K. Jana addressed the gathering, describing the need for such an event. Prof. G. Udayabhanu spoke on the fact that the field of technology is here to stay. Dr. Dharavath Ramesh stressed the importance of technology in today's world. Mr Azhaan Zahabee, the Student Coordinator, introduced the gathering with the rules and regulations of the event and and wished them luck.

A day before the onset of the Hackathon, Samsung R&D had released its problem statement. Out of forty-five, fifteen teams were shortlisted to work on its problem statement, based on their initial solutions, while the rest continued on with their respective projects. Top three teams of the Samsung challenge were awarded a two-month internship at Samsung R&D, Bengaluru.

Amazon pay coupons worth INR 15,000, 10,000 and 5,000 for first, second and third rank holders respectively, were sponsored by Samsung, VR headsets sponsored by Hackerearth, along with paid licences and credits from Sketch, Temboo, Digital Ocean, Bugsee and Creative Tim were some of the prizes. Stickers and goodies from Mozilla and GitHub were also up for grabs with added incentives like internship opportunities in Whizmantra and Techfleeters and more. Participation in the fest came with perks such as free food, unlimited coffee, intriguing seminars and workshops and an ambience encouraging utmost productivity. With a sea of laptops, electronic modules, a complex network of wires and bobbing heads discussing and writing code for hours without break, the sight was a peek into a future expected to be driven by technology. The projects ranged from fiction-to-reality, android

Winners of the Samsung Challenge

1st Position

TEAM HACK_VIPERS
Pritam Ghosh
Rohit Kumar Ratnesh
Sudeep Shivnikar
Kushagra Mohan
Arnab Ghosh

2nd Position

TEAM MOTEAM
Mohit Tripathi
Aditya Sharma
Pratyush Mishra
Amandeep Singh
Abhay Gaur

3rd Position

TEAM THAROORIANS
Harmandeep Singh Kahlon
Prabodh Tripathi
Vaasudev Narayanan
Rutika Moharir
Puja Kumari

Winners of Hackfest '18

1st Position

TEAM BITSPLEASE
Anirudh Jain
Ajeet Singh
Shril Kumar
Madhavan Venkat

2nd Position

TEAM INT_ELLIGENCE
Ahsas Sood
Sarita Kumari
Shalini Verma

3rd Position

TEAM TRANNSDUCERS
Sai Ruthvik
Sumanth Kalluri
Neelesh Kumar Yadav
Nishad Mandlik
Ashutosh Raut

apps to machine learning applications, electronic modules to web development and so on.

The esteemed judges of HackFest '18 were Dr. Soumen Bag and Dr. A.C.S. Rao, Assistant Professors from the CSE Department and Dr. Dripto Bakshi, co-founder NEEV, and advisor to Whiz Mantra.

The event also included a workshop conducted by Mozilla at 1:00 pm on 25th March. They showcased their web VR platform, A-Frame. In other events, there was a stand-up comedy act staged by Gaurav Tripathi, a second year ECE student, on the evening of 24th March. After an intense period of 36 hours, in which teams stood true to their fancy names, team BitsPlease emerged as the winner of Hackfest '18. They came up with a Machine-Learning and Natural Language Processing logic based fake news detector application. The second position was bagged by team Int_Elligence which came up with a Hand Talk Assistive Glove, so the deaf and mute people could communicate with the same ease as the normal people do. tRANNSducers, the team that was positioned third in the hackathon, aimed to build an IRis - IR based Audience Response System.

The event ended with a vote of thanks to all the organisers who worked tirelessly to make the event a reality and stood true to the hopes of the participants. The faculty members, the CSES, and ACM Student Chapter were also thanked for their support and encouragement. In the end, the judges gave the students some guidelines on how to move on and also appreciated their hard work and persistence. The event brought to the fore a series of interesting projects undertaken by groups of undergraduates with little or no help that left everybody impressed. The stature that Hackfest '18 manifested was never seen before and raised the bar to a new level.

INTERNS' EXPERIENCE

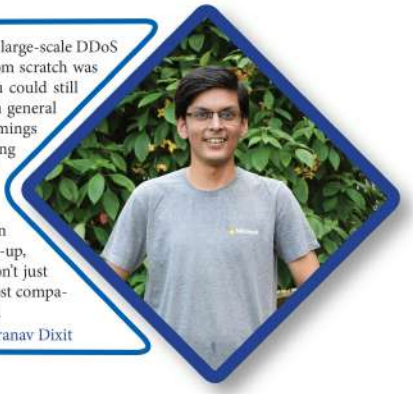
Harmandeep Singh | Dual Degree 2020
Monosij Ghosh | B.Tech. 2019

Amazon is an amazing place to start one's career at. At Amazon, interns are treated at par with SDEs. Most of the interns get projects that go into production within a very short period of time. For internships, Amazon tests students on their knowledge of Data Structures and Algorithms. GPA is only required as a cut-off for appearing in the coding rounds.
During my internship, my projects were based on Node.js and React.js, which were completely new to me. The only hurdle was getting accustomed to the coding practices in these frameworks. I learnt how Amazon operates on such a large scale, and how to write meaningful code for a software company.
For converting an internship to a pre-placement offer at Amazon, one needs to complete his tasks and show leadership principles through the tasks. Manager and Mentor reviews are important in the conversion process.
All in all, Amazon is moving at a very fast pace. There is a huge learning curve. You get to interact a lot with bright-minded people and learn new stuff. Moreover, my projects were customer facing and it was a great feeling that the work I did as an intern had a meaningful impact.

-Apurva Gaurav Singh

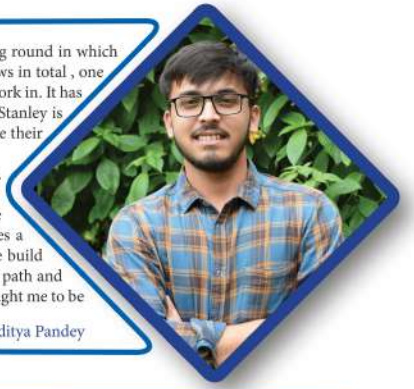
Samsung is a great place to intern. The domain of work and the variety of projects offered by the company is huge. The project I was given to work upon was completely new to me. My mentor and his teammates were extremely helpful and helped me a lot in learning the stuff. As far as work life is concerned, Samsung has a 45 hour per week policy which one can complete according to his convenience. Though the overall work environment is pretty flexible, the hecticness of the work depends upon the team to which you are allotted. There is no work from home policy, so once you get home you can relax completely.
During the course of the internship, Samsung conducted a coding test followed by technical and HR interviews and a project presentation. The cumulative performance in all the rounds is considered for giving out the final offer.The research profile was only open to people having GPA greater than 8.5. But it ultimately comes down to your technical skills and hard work. Samsung has a great research and development. I learnt a lot in these two months and I wish all the very best to the future aspirants.

-Mayank Bajpai



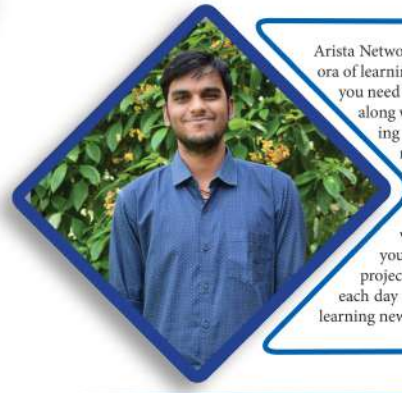
My project at Microsoft focused on securing big corporates and enterprises from large-scale DDoS attacks. Achieving scalability while implementing an enterprise-level project from scratch was a key learning point for me. There were no prerequisites for the project - you could still manage things well without knowing a thing about C#, or even development in general for that matter. The work culture at Microsoft is amazing; there were no fixed timings - you could come and go as you please, as long as you met the deadlines. Asking questions is encouraged, but don't expect to be spoon-fed.To those aspiring for an internship at Microsoft, I'd recommend focusing on fundamentals and having a solid grip on Data structures and Algorithms. Try to avoid mugging up GeeksForGeeks. Start from a brute-force solution and then improve the solution step-by-step, writing clear code at each step. Personal projects are a big thumbs-up, they really speak about your passion. Their size or utility doesn't matter, but don't just stick to mainstream topics. GPA doesn't matter significantly in interviews for most companies (it does for eligibility), but having a decent one surely is an added advantage.

-Pranav Dixit



I bagged my internship at Morgan Stanley through Codeathon, an online coding round in which top 200 students get a chance to be interviewed. There were 2 rounds of interviews in total , one purely technical and other HR plus technical. Morgan Stanley is a great place to work in. It has a very open work culture and values diversity. The work-life balance at Morgan Stanley is simply great. Employees are not bound to a 9 to 5 job - they just have to complete their projects before the deadline and thus manage their time accordingly.
Morgan Stanley focuses a lot on training so that you can upgrade yours skills. In my case it included brushing up my data structure, algorithms and Machine Learning concepts. As for bagging a PPO, mentor's feedback is what matters the most. I also had a technical interview and your performance in that also carries a certain weightage. As an intern, I learned the importance of networking. I have build acquaintances, who I turn to when I have questions regarding my desired career path and work. Along with that, this internship gave me an insight into professional life, taught me to be humble and most importantly be passionate about my work.

-Aditya Pandey



Arista Networks is one of the best companies to start your career at. The company gives a plethora of learning opportunities and helps in overall career development. For getting an internship, you need to have a good knowledge of Data Structures, Algorithms and Computer Networks, along with a good grasp over C language and Linux. Also, a decent GPA is a must for clearing the initial cut-off. During the internship, I had to get acquainted with the development infrastructure of the company. The project required the knowledge of several topics which were new to me. I used to clear my doubts from my mentor who was really helpful. Arista also provides a healthy work-life balance. The focus is on the quality of work and not the deadline. From designing a problem to writing well-documented codes - I learnt a lot. As far as PPO is concerned, you should put your best effort to complete the work assigned and try exploring few things beyond the project, because mentor review is the deciding factor for getting an offer. Arista is evolving each day which is visible in their work culture and has great scope for freshers if they enjoy learning new things.

-Rajat Chaurasia

The selection procedure for Walmart consisted of a coding-cum-MCQ round followed by an HR interview. I was asked about the reason for my inconsistent GPA, but after a satisfactory explanation it didn't play much of a role. I worked on two projects, one related to Machine Learning, and another to design a productivity improvement utility. The major difficulty that I faced during my internship was adapting to the coding style of the company. Making my Proof-of-Concept scalable was also a major hurdle. The work environment at Walmart is very encouraging and fun – It's like a mini-hackathon every day. It's important to keep your team in the loop while working on your project. Ask questions regarding your approaches and discuss ideas with the team. Work aside, one important thing I learned was how to pick music to work to. For me, video game music worked perfectly! I would advise my juniors to work on good projects. You should also be able to communicate your thoughts and ideas to the interviewer clearly. Rather than mugging up the best approach, try to come up with multiple solutions to a particular problem. Improve your problem-solving skills and thinking

-Pulkit Singhal

DEPARTMENT HIGHLIGHTS

Pandre Vamshi | B.Tech. 2020
Aditya Thakre | B.Tech. 2019

Short Term Course: GIAN Course

1) Prof. Obaidat, University of Jordon was the foreign speaker in the GIAN course on "Security of e-Systems & Networks" during 10.02.2018 to 14.02.2018.

2) Meeting with Prof. Obaidat, the University of Jordon on 12.02.2018 for possible collaboration.The following points were discussed:

1) Joint research paper publication
2) Joint project submission
3) Joint Ph.D. supervision
4) Ph.D. evaluation in the fields of wireless networks (including WSNs), Security and cloud computing.

Change of Headship

As a Head of the department, the scope and weight of your responsibilities are inevitably wider and greater. Associate Professor Dr. Haider Banka has been appointed as the new Head of the Department.

CodeISM

Competitive coding is one of the vital requisites to get hired in any major software giant. CodeISM, the Official Coding Club of CSE Society, was founded to acuminate the student's coding skills, right from the first year.

Covering all the concepts ranging from Number Theory to various advanced algorithms and giving regular assignments on various coding platforms like SPOJ, Codeforces and Codechef made the learning process quite engrossing. Not only did this facilitate the students in moulding their ingenuity at a faster pace but it also helped them test their coding skills. Apart from the regular classes and doubt clearing sessions, the CodeISM team was also active in helping the students through social media and personal contacts.

With the assistance of Assistant Professor Dr. Amgoth Tarachand, the CodeISM classes took place with immense enthusiasm. The team consisted Anupam Wadhwa, Shivam Jindal, Rahul Hooda, Harsh Goyal, Ayush Kumar, Aarush Juneja and Harmandeep Singh Kahlon.

Ph.D. Awarded

1. Siba Mishra on Efficient Cost Estimation and Testing Approaches for SOA Systems.
2. Kumar Nitesh on Developing Efficient Algorithms for Wireless Sensor Networks.
3. Preeti Chandrakar on Design and Analysis of Remote Login Authentication Schemes.

Smart India Hackathon (SIH) - 2018

IIT (ISM), Dhanbad nominated 12 teams for participation at the SIH 2018, of which 2 teams made it to the Grand-Finale. Both the teams were shortlisted for the problem statement of Ministry of Railways along with 41 teams from all over the country, the nodal centre being Udaipur. The team JanMitra bagged the 1st runner-up prize. Team JanMitra worked on the problem statement titled "Machine Content Reading of the Customer Feedback". The team consisted Waris Quamer(Leader), Adarsh Jain, Davender Kumar, Mani Shankar Bajpai, Amisha Kumari and Shubhangi Bharti.

amdocs Innovation Lab 2.0

Two teams from the campus made it to the Grand finale out of 16 teams. The teams were given different real-time problems and further, they were given an internship to work on it.

Team1: Pratyush Kesarwani, Abhijeet Kumar.

Team2: Waris Quamer, Davendra Kumar.

HANDWRITTEN FORGERY
EFFECTS ON OUR SOCIETY

Dr. Soumen Bag
Assistant Professor

A fraudulent addition or alteration in financial or legal documents, such as bank cheques, business contracts, medical bills, academic certificates, etc., not only causes non-recoverable damage to institutions but also the subsequent compensation of individual concerned, and also demolishes the financial condition of the commonwealth. Cheque fraud and counterfeiting are among the fastest growing problems affecting the Nation's financial system.

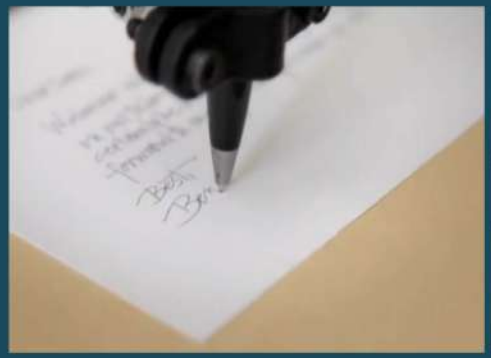
White-collar crimes through addition or alteration of valuable data on financial or other legal documents are among the fastest emerging problems around the world. A fraudulent addition to cheques, contracts, and other authorized documents may cause irreparable damage in terms of human suffering as well as serious financial loss. Several such cases are reported every day to law enforcement agencies around the globe. According to Ernst & Young [Source: http:/www.ckfraud.org/statistics.html], more than 500 million cheques are forged annually, with losses totalling more than $10 billion all over the world. According to a report issued by the American Banker, an Industry Bankers Magazine, estimation of losses from cheque fraud will grow by 2.5% annually in the coming years [Source: National Check Fraud Center, USA, http:/www.ckfraud.org/statistics.html].

Solutions to examine such fraud cases are still limited to literature, specially, the automatic detection of fraud by non-destructive techniques, which has a lot of limitations. From this point of view, it has numerous significance in terms of financial safety and security for a Nation. This kind of forgery activity causes huge negative impact on the economy of a Nation. These types of events also create a very bad impact in our social life. So it has worldwide importance in the research field of Forensic Science.

> ***Cheque fraud and counterfeiting are among the fastest growing problems affecting the Nation's financial system.***

It is a big challenge to identify frauds in authorised documents automatically using some software, particularly when frauds are done with same color ink and with same orientation. Alteration is a broad term its meaning is a change either by addition, deletion, or by adding additional strokes. Few specific examples of handwritten forgery activities in legal documents in terms of alteration are: (1) Payee name may be changed in a bank cheque; (2) Cheque may be raised to a higher amount; (3) A contract may be changed after the parties have come to an agreement and signed it; (4) Data on an official document may be changed, (5) Alteration may happen in medical or Academic records, etc.

Forensic analysis demands for human expertise in visual inspection of the document. Writer identification is a widely studied research topic. Script dependent approaches of writer identification derive patterns of how individuals write the alphabets in a language. Similarly, offline signature verification tends to look at curvature and other features in a signature. Inspite of latest advances in research, organizations like Forensic Labs and Banks rely on human expertise for signature verification. Pen ink identification/differentiation is another widely studied topic in Forensic Science. In document forensic, it is often important to be able to separate ink strokes of two different pens automatically, especially when frauds are done by same color ink and orientation. Fraud detection techniques can be categorized in two major pathways. The first approach is based on destructive techniques ranging from basic and modern chromatographic techniques to neutron activation analysis and chemical analysis. The second category, non-destructive techniques, includes different approaches in the fields of machine learning and modern chromatographic image processing. Few particular non-destructive approaches like Raman spectroscopy and infrared spectroscopy need special kind of imaging set up to carry out the experiments. Only a handful of approaches attempt to carry out the analysis of pen inks on images captured in visible light spectrum using normal imaging equipment. In these techniques, two basic steps, namely feature extraction (e.g., contrast, homogeneity, energy, intensity from different colour channels, etc.) and classification (e.g., MLP, NN classifier, SVM, etc.) are used to get fast processing and better accuracy.



> ***Now-a-days, we are living in a digital society. Our country is changing progressively to become a digitally smart country. This is one of the key missions and visions of our government. From this point of view, this is the right time to give much more emphasis on different aspects of Forensic Science to make Digital India Mission successful.***

ADIEU

Mehul Mistry | B.Tech. 2020
Aadarsh Singh | B.Tech. 2020

The Computer Science and Engineering department organized the annual farewell program for the batch of 2018 on 1st May 2018 at Golden Jubilee Lecture Theatre (GJLT). Invitations were sent to all the undergraduate and postgraduate final years to enjoy, sing, dance and cry for one last time together. As always the fabulous function started on a high note with the pre-final year students reaching Sapphire hostel with a dhol whose echoing sounds excited each and every final year to get on the streets to show off their dance moves while putting all other thoughts aside.

Soon enough the dance mob reached GJLT which was lighted up by decorations for the grand event with every final year in a jovial mood, ready to witness the grand occasion. The event started at 18:00 hours with Abhishek Chattopadhyay and Anushka Jaiswal taking upon the province of hosting the farewell along with Ayush Kumar and Rutika Moharir being the informal anchors. The proceedings began with an enlightening speech by the Head of the Department, Professor Prasanta K. Jana who addressed all the students by emphasizing upon the new world awaiting them with a wonderful anecdote. With his speech, he edified the students to be active in the system in which they would be working in the future. The first performance of the night was a beautiful song with a dulcet voice by Jayant Sharma followed by a dance by final years for which the entire crowd rejoiced. Amidst all the cultural performances, faculty members of the department, including Dr. ACS Rao, Dr. Dharavath Ramesh, Dr. Arup Kumar Pal and Dr. Amgoth Tarachand were called on the stage to share their wonderful words of wisdom and distribute the mementos to all the final years. They reflected their thoughts on hardwork and time management, not to mention the importance of college life towards a person's career.

> **“Fare thee well!
> And if forever,
> Still forever,
> Fare thee well.”**

The night transformed into a complete charade of laughter and joy with the hilarious play by second years where they enacted some of the beloved final years in various funny scenarios like Exams, Pre-Placement and Basant. The hilarity ensued to a different dimension with the "Lollipop Awards" distributed by the pre-final years to final years for absurd things like "Mr. Pareshan", "Richie Rich" and "Pujari of the year" to name a few. The cultural performances ranging from a literally rocking performance by Nishit Dabi on his electric guitar to a fascinating dance performance by girls from the final year were all highlighted by crazy hooting from the crowd. Many other final years also put forward an amazing show of their singing and dancing talents.

Professor Chiranjeev Kumar, the former HOD put a spotlight on the contributions of all the students in various departmental activities and shared his appreciation for all that the students went through with him. It was followed by multiple emotional songs by some final years to which the crowd sang along in a cosmic nostalgia. The night reached its conclusion with the prize distribution for winners of the events conducted by the ACM student chapter and CSE. Finally, some videos were played for the final years as a parting gift and memoir to cherish upon in the future. This was followed by a grand dinner arranged by the department and the CSE society, wherein the juniors got to interact with their to-be passouts and have a multitude of quality selfies with all of them.

All good things must come to an end - so do not cry because it is over, but smile because it happened. This is where a new chapter of life commences and we wish you the best in reaching every milestone you work for. You have been really very encouraging, supporting, care taking and truly behaved to us like friendly guardians in this college, helping us through many ups and downs of college life. We heartily wish you a prosperous and triumphant future. You will always be part of our lives no matter what. Although the time of goodbyes has come, Farewell is not forever but only for a little while so until we meet again.

"Don't be dismayed by good-byes. A farewell is necessary before you can meet again. And meeting again, after moments or lifetimes, is certain for those who are friends."

STUDENT ACTIVITIES

COMPUTER SCIENCE AND ENGINEERING SOCIETY

Code Marathon

The fourth edition of the annual month-long competitive programming competition Code Marathon was conducted by the Department of Computer Science and Engineering in collaboration with the Class of 2009 and CodeISM. Staying true to the format of previous years, the event consisted of three divisions - one each for the first and second years, and one for the third and final years. However, for the first time since its inception, the event consisted of three rounds instead of four – the last one being a "Mega Round" of 6 hours with IOI rules. The participation recorded this year was greater than ever before, as participants contended in nail-biting competition to win the race to the top. The problem setters for the competition were Anupam Wadhwa, Ayush Kumar, Harmandeep Singh Kahlon and Shivam Jindal.

WINNERS

Division 1

Jayant Sharma
Ajit Kishor
Kushagra Mohan

Division 2

Ankur Dua
Vibhor Shukla
Srijan Jaiswal

Division 3

Pawan Mohan Dogra
Rachit Mishra
Apurv Mayank

The alumni cannot be thanked enough for their contribution. The event lived upto to its expectations and raised the bar even higher.

QuizWiz

QuizWiz v5.0, the fifth iteration of the annual quizzing event organized by the Computer Science and Engineering Society (CSES), was held on 10th February, 2018. The event lived up to its expectations, giving tech-savvy students an opportunity to showcase their skills. Each team consisted of 4 participants - one from each year for the UG teams, and two from each year of M.Tech. For the PG teams, a wildcard entry round was conducted online for first-year students in the days leading to the main event. Participants were kept on their toes with a variety of rounds, including one where teams had to create questions from a newspaper for other teams to find the answers to.

WINNERS

First Position

Soham Satyadharma
Abhishek Chattopadhyay
Pratyush Mishra
Ray Apoorva Nath

Second Position

Azhaan Zahabee
Monosij Ghosh
Nasir Sayyed
Vikram Kirti Lilhore

Third Position

Team 1

Rajat Jain
Pranav Dixit
Pranjal Gupta
Tushar Mittal

Team 2

Aadhil Ahmed
Mohak Maheshwari
Vaibhav Mittal
Tarun Lalchandani

Audience Round Winner

Aditya Sharma

Buffered Reader v4.2 Quiz

In the last edition of Buffered Reader, we had asked a few questions wherein students had to decipher some encrypted lines of texts and send the answers to us. We had promised exciting prizes to the ones who would be able to successfully decipher the maximum number of lines in minimum time.Following is the list of people who sent the winning entries:

WINNERS

Third Year

Aadarsh Singh
Saurav Chirania
Aditya Kumaran

Final Year

Sai Krishna Chowrigari
B. Guna Shekhar
Tanishk Kithannae

Batch 2018

Ayush Bhatia
Aman Chaudhary
Aadil Ahmed

ACM Student Chapter, IIT (ISM), Dhanbad

PowerPuff Coders

PowerPuff Coders is an online coding competition held exclusively for girls. It aims at encouraging coding spirit among the female demographic. ACM Student Chapter IIT(ISM) Dhanbad conducted the second revision on 28th April 2018, on the HackerRank platform. The event was put in 2 divisions: Division 1 consisted of 2nd year ,3rd year, final year UG students, MTech, JRFs and Alumni while Division 2 consisted of 1st year UG students. The contest began at 10:30 PM and lasted for 2 hours. It saw a total of 39 participations. Prizes worth Rs.7000 were awarded to the winners.

The rank holders are as follows:

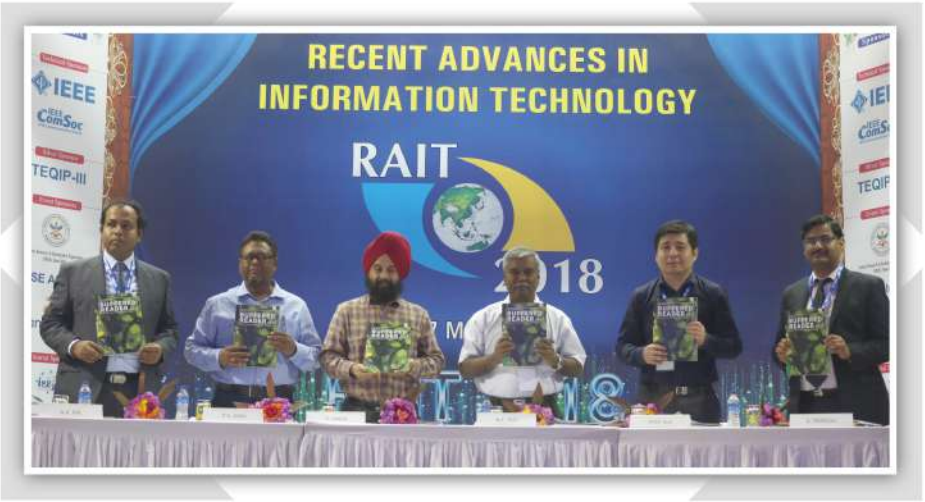
WINNERS

Division 1

Dola Sinha
Yukta Bajaj
Harshita Mritunjay

Division 2

Anjali Rani
Soumya Pal
Saloni Mohta



RAIT 2018

Jakshat Desai | B.Tech. 2020
Saurabh Shwetabh Singh | B.Tech. 2020

The evolution of technology is taking place at an extraordinarily rapid pace in the current century. Concepts, processes, and devices are getting outdated every day and new and better ones are taking their place. This progress is being made possible by the new developments and research taking place in various fields, especially in the field of computer science. In order to keep a track of this progress and in order to acknowledge and honour the ones who are contributing towards it, the Department of Computer Science and Engineering of Indian Institute of Technology (Indian School of Mines) Dhanbad, has been organising the IEEE International Conference on Recent Advances in Information Technology (RAIT) since 2007.

The fourth iteration of the RAIT conference was organized by the CSE department at IIT(ISM) Dhanbad from 15th to 17th March 2018. The General Chair of the conference was Prof. P K Jana, the former HOD of the CSE department of IIT(ISM) Dhanbad. Dr. Sachin Tripathi was the Program Chair and Dr. Arup Kumar Pal was the Program Co-Chair. The conference was approved by the Kolkata Chapter of the IEEE Communication Society, which contributed a lot in making it an event of international stature.

Throughout the conference, several technical sessions, keynote addresses, invited talks and tutorial sessions were conducted. Technical sessions involved research paper presentations wherein the participants from various different institutions presented their findings and ideas in front of a panel, which judged them to decide whether their research would be published. The keynote addresses were given by the Chief Guest, Prof. Bimal Kumar Roy on the topic "Some Problems in Cryptology" and the Guest of Honour, Mr. Feng Xue on the topic of supply chain quality transformation, advanced manufacturing and cognitive solutions. The invited talks and tutorial sessions had experts talking about various new concepts and cutting edge technologies. Within the course of three days, several instances of the events mentioned above were conducted, each of which led to the churning of knowledge and ideas in the field of research.

The first day of the conference commenced with the inaugural session which was graced by Prof. G. Singh, the Acting Director of IIT(ISM) Dhanbad. The Chief Guest for the event was Padma Shri Prof. Bimal Roy from ISI Kolkata and the Guest of Honour was Mr. Feng Xue from IBM Singapore. The inaugural session was followed by two keynote addresses, two invited talks and several technical sessions.

The first invited talk was delivered by Prof. Subramaniam Ganesan from Oakland University, through Skype. He delivered a lecture on several interesting topics such as IoT embedded system lifecycle, soft and hard real-time system characteristics, the definition of validation and verification, modeling embedded system hardware and software along with the case study of embedded IoT system. In the second talk, Dr. Piyush Harsh from Zurich University of Applied Science, Switzerland presented the outcome of a research project undertaken by him in the area of cloud computing. Before concluding, he also mentioned the process by which Indian academic institutions, researchers, and students can participate in future research cells from the European Commission.

During the course of the day, several technical sessions were conducted on topics ranging from IoT and cloud computing to Software engineering and Information retrieval. Sessions were also conducted for presenting research from various other miscellaneous backgrounds. The first day of the conference concluded with a cultural night programme in which students from IIT (ISM) Dhanbad presented their performances to the participants, guests, and the faculty.

security which was sponsored by ISEA project phase-II. The session was conducted by Prof. G.P. Biswas of IIT(ISM) Dhanbad and Prof. Sukumar Nandi from IIT Guwahati. In today's world information is the new currency and hence, the session was conducted in order to raise awareness of Information Security among students, academicians, and industry professionals. In the course of the session, Prof G.P. Biswas talked about elliptic curve cryptosystems and their security under hard assumptions and Prof Nandi talked about the vehicular networks security challenges and their possible solutions. This session was followed by an invited talk by Prof. Iti Saha Misra from Jadavpur University in which he talked about some prospective applications of cognitive radio for 5G communication and IoT services. While these events took place, technical sessions on various topics such as track cryptography and network security, machine learning, etc were conducted simultaneously throughout the day. The second day of RAIT-2018 culminated with a cultural evening in which the awe-inspiring performances presented by various artists didn't fail to mesmerize the audience.

On the final day of the conference, two invited talk sessions along with several other technical sessions were conducted. The first invited talk was presented by Prof. Jayanta Mukhopadhyay from IIT Kharagpur. He talked about the approaches and principal behind image processing algorithms in the block DCT domain with illustrations. In the next talk, Prof. P.K. Jana presented a survey on the machine learning algorithms which had been developed to solve various issues of WSN, followed by a detailed presentation of energy efficient routing and clustering of information in WSN along with future research direction. The technical sessions conducted on the third day focused on soft computing, image and video processing, wireless communication, etc. After all these events, the Valedictory session, which marked the conclusion of RAIT-2018 was conducted. The session was graced by Prof. D.C.Panigrahi, the former Director of IIT(ISM) Dhanbad and the chief guest of the session was Prof. Anupam Basu, the Director of NIT Durgapur.

Dr. Amit Chaudhuri from C-DAC Kolkata was the Guest of Honour. The session was also chaired by Prof. P K Jana, Dr. Sachin Tripathi, and Dr. Arup Kumar Pal. All of them shared their thoughts and ideas about RAIT-18 and with that, the three-day conference finally came to a successful end after the vote of thanks by Dr. Arup Kumar Pal.

During the course of three days, a total of 279 papers were received. After being judged by international and national reviewers, 129 papers were accepted and 128 were presented in all of the 18 technical sessions. The conference aimed at promoting research and information technology and the sessions and events that were conducted during it successfully led to doing so. With the successful conclusion of RAIT 2018, next iteration of the conference will certainly be awaited with great anticipation.

In talks with,

Ashish Gupta

Computer Science and Engineering,
Batch of 2002,
IIT (ISM), Dhanbad

Q1. Sir, you graduated from the very first batch of the department. Could you tell us what it was like studying in the initial days of the department?

I joined ISM in 1998 and being the first batch there was excitement as well as uncertainty about placement and recognition in the industry. There used to be a constant discussion about choosing Petroleum instead of CSE as the former was considered as USP of ISM Dhanbad. CSE department was new with very basic infrastructure. Even colored computers came in the computer center when we were in 2nd Semester and initial excitement was to make new Yahoo/Hotmail email accounts. Except for a few, many of our batchmates worked on computers for the first time. We used to have limited faculty and there was mutual learning as we went through the CSE syllabus. Our HOD, Dr. A. Chattopadhyay along with Prof. P.K. Jana and Prof. G.P. Biswas was very helpful and put a lot of efforts into making sure CSE department shines and has a good name in the industry. They had arranged external faculty from BE college, Jadhavpur University, ISI Kolkata for taking elective courses on Image Processing, Computer vision, Graph theory and Artificial Intelligence. Overall there were many initial challenges and hiccups being the first batch. Our learning was more experimental than experiential which brought out the best from us.

Q2. College life is always an important phase in everyone lives. What were your favorite parts of college?

College life is very refreshing and gives a new perspective on life. You become more independent and responsible, and learn the aspects of time management. You make a lot of friends for life. They are like a family away from home. There is a sense of competition among the peers but in the end, everyone is fighting his own battle. For me, the best part of college was making friends for life with whom you study, play, roam around, spend time and talk at length without any constraints..

ALUMNI PEN

Aditya Sood | Dual Degree 2020
Saurabh Shwetabh Singh | B.Tech. 2020

Q3. It has been 16 years since you graduated. We would love to know about your journey since then.

During our final year, two companies had come for campus placement. I got placed in one of them and was very excited to join the new company but unfortunately, due to downtime of IT industry in 2002, all of us got rejection letters during our final semester. I then decided to pursue higher studies and joined M. Tech. in Computer Science in ISI Kolkata. Most of our batchmates took a similar decision of further study (MS/MBA) or applied to jobs off campus. In today's time, I feel everyone is doing great in his/her own domain.
After completing my M. Tech. In Computer Science from ISI Kolkata, I joined Novell Software in Bangalore. My second company was NVIDIA Graphics where I worked on making video encoder/decoder powering mobile/handheld devices (currently known as Tegra series). I switched again in 2007 to Freescale Semiconductors (currently NXP India Pvt Ltd) and since then I am with Freescale/NXP for past 11 years and serving as Engineering Manager (System Validation). We make networking SoCs which goes in Router/IoT/Industrial/Auto Gateway applications and now venturing into 5G wireless space.

Q4. The institute was recently granted the status of an IIT. What are your thoughts on the same?

IIT is a great brand and I feel it helps the institute in getting the right status. The JEE entrance examination for ISM started in 1997 and at that time we also thought that the 'IIT' tag could have added a lot of value to the CSE department. ISM is a well-known name for all the other streams like Mining, Petroleum and Mineral Engineering. Granting the IIT status will only add more luster to the name of ISM and a large part of the industry will now connect to ISM.

Q5. What advice would you give to the current crop of students to make the most of their time at the college?

I feel students should focus on gaining a solid understanding of basic CS concepts of algorithms, data structures, OS, Networking and Computer Architecture. It will be good to have proficiency in different languages like Python, C, C++ etc. Languages are like ingredients of making food. With these ingredients, one can make various delicious dishes (applications). Apart from learning, cherish the college time as you won't find that atmosphere anywhere else.

Q6. As an industry veteran of 16 years in one of the most fast-changing fields, how do you keep yourself updated?

Learning never stops and there is so much to learn every day. We are making next-generation SoCs which are more powerful, energy efficient from previous ones. One needs to read up lot many more documents to keep up with the technology. The Internet is a good source of information as well and having a lot of tutorials on any new subject. But it all starts from the basics. If basics are unclear, advanced concepts will also become unclear. So it is important to keep your foundations strong.

Q7. What are your suggestions for possible goals the department should focus on in the current times?

In the current world, I feel there are upcoming trends for many new technologies and CSE department should focus on these areas as elective courses.
5G wireless is one of the key technologies of the future having a vision of massive broadband, a large number of connected devices, and mission-critical applications like driverless cars. Computer vision for ADAS kind of applications.
Artificial Intelligence/Machine Learning is the technology for the future, which has already entered into our daily lives.
Security/Cryptography is an evergreen area which is always needed when everything is connected (IoT/Cryptocurrency applications).

Q8. What is the one thing you wish you knew before starting out on your professional journey?

Nothing in particular. Just go with the flow. Your knowledge will take you through the journey.

Q9. What were some important lessons (personal and professional) that you learned during your college years?

There are different phases of life. At some point in time something seems to be of utmost importance and after some time it's of no value. It's good to have healthy competition among peers/friends but after all, everyone's journey is different. So, stay focused on your goals, keep learning and enjoy life with family and friends. Never ignore your health which is the real treasure.

Q10. Lastly, anything you would like to say to the students and faculty members of the department?

I feel CSE department in current time is doing great. A lot of top-notch MNCs are coming for campus recruitment and giving good opportunities to students. It's all because of the hard work of faculty and students because of which IIT (ISM), Dhanbad is getting the recognition in the industry. Keep up the good work and take IIT (ISM), Dhanbad to newer heights. All the best!

TECH MILESTONES

Mehul Mistry | B.Tech. 2020

Lattice Cryptography

Cryptography has evolved from 64-bit encryption to 256-bit encryption and as quantum computers become conventional, it would no longer be enough. Enter Lattice Cryptography - lattices are complex high dimensional algebraic structures. Theoretically, even a million-qubit quantum computer cannot crack the data encoded within these structures. It will also enable the computers to operate while in an encrypted state. This opens up the possibilities of a completely secure credit referencing system thus giving a new definition to cybersecurity by making it invulnerable to hackers.

5G Technology

It is the next generation of cellular technology which promises to be about 10 to 100 times faster than the current speed. Qualcomm, the mobile hardware giant claims that this would be the next biggest thing after electricity and the new generation of mobile phones supporting 5G are not far away. 5G technology will achieve its expected efficiency using a combination of MIMO and small cell concepts along with device to device communication. Previous generations like 3G and 4G were huge breakthroughs and 5G technology already sounds promising enough to be a world changer.

Medical Alert Smartwatches

Smart watches have been in the market for a long time now but this CES 2018, many companies have unveiled a new generation of medical alert devices to be worn on the wrist. Apart from the regular functions of sleep monitoring and step tracking, the new smartwatch unveiled by Omron helps to measure medically accurate blood pressure rates in real time. HeartGuide, as it is called, has a stiff inflatable band to take the oscillometric measurement like a doctor's pressure cuff and is capable of assessing the heart rate for a stroke even while asleep.

> Every once in a while, a new technology, an old problem, and a big idea turn into an innovation.

Digital Twins

As the name suggests, digital twinning denotes a digital replica of the physical asset be it an object, process, system or a body. A digital twin does not act as a replacement for the physical object or service which it represents. Instead, it acts as a vehicle for monitoring and testing around the physical object without actually having to be in close proximity to it. This is achieved by incorporating sensors in the asset to gather real-time-data which then updates the state of the digital twin. Hence acting as a placeholder which can be accessed remotely.

Real-Time Translation

After the launch of Google Pixel Buds which offered mediocre real-time translation using the built-in Google Assistant, a Brooklyn based company called Waverly Labs has launched a product called PILOT which offers on point real-time translation. Reportedly the company has developed its own translation software in-house only using third-party sources to verify the accuracy. Other companies like Microsoft are also working on an AI technology which can translate face to face.

Beam of Invisibility

Invisibility was thought to belong only to the domain of fiction until recently. The researchers from Vienna University have developed a technique to bestow the gift of invisibility upon objects using a beam. The strategy is to render the object's materialistic properties such that it becomes transparent to different wavelengths of light. Soon the highly acclaimed cloak of invisibility would not just remain a story, but would turn into reality.

Meet The Team

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