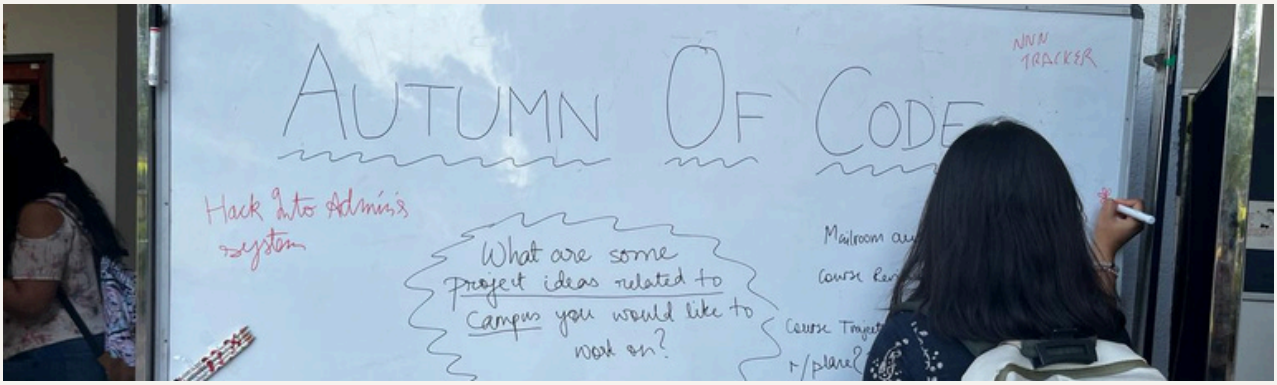
CS Society

YEARLY NEWSLETTER



The Computer Science Society brings to you the

YEARLY NEWSLETTER

TECH BYTES

Discover three key trends in technology: first, learn about the importance of aligning AI ambitions with net-zero targets for sustainability to ensure environmentally responsible innovation. Next, understand the rise of social engineering attacks, with a special focus on how compromised identities have become the main breach method according to CrowdStrike's report, highlighting the critical need for robust cybersecurity measures. Finally, explore the increasing adoption of cloud databases by enterprises, particularly advantageous for AI application development and deployment.

FACULTY Q&A

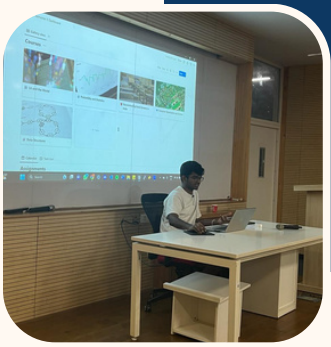
Gain valuable insights from visiting professor Partha Pratim Das from IIT Kharagpur as he shares his thoughts on research and academics during a recent interview at Ashoka University. Learn about the challenges and opportunities for computer science students from his point of view, and get tips on strengthening your foundational skills in mathematics and programming for competitiveness. He notes the limited research opportunities at Ashoka and suggests a more collaborative ecosystem for student-led research, while also advocating for the potential of interdisciplinary research.

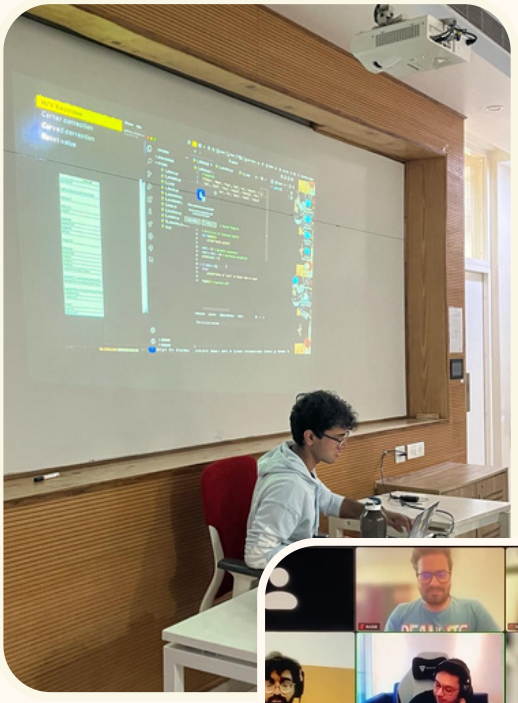
CROSSWORD!

Page 07/10 challenges you to a crossword puzzle. Test your knowledge and uncover new terms and concepts across various domains of computer science and information technology. From algorithms to programming languages, computer organization, networks, and more--see how many you can solve! Feel free to reach out to us for answers at cs.society@ashoka.edu.in.

CS@ASHOKA

Get meaningful insights for navigating CS at Ashoka with general tips, math fundamentals, which language to practice with, academic and career trajectory insights and some pointers to help get you started with master's application preparation!





TECH BYTES

Bytes from the tech world: 2024 predictions

Product development will be expedited through generative AI - technology companies will continue to use hyper-automation to proficiently scale systems for their clients and MSPs. This would involve exploring new ways to inculcate generative AI to accelerate product growth.

Quantum computing: The next worldwide shift after AI - Quantum computing would transform sectors such as finance but would also challenge the current encryption standards in the industry.

Focus on the sustainability aspect of artificial intelligence - If AI needs to be implemented at a larger scale, businesses need to find ways to reconcile technological aspirations with their net zero targets.

Rise of social engineering attacks - CrowdStrike's Threat Hunting report shows that 80% of breaches occur through compromised identities. These attacks will continue to be the main method for attackers so get ready to learn about cyber security!

The rise of cloud databases - Enterprises are finding that cloud databases provide more flexibility, scalability and cost-effectiveness. Also, cloud serves as the ideal foundation for the development and deployment of AI applications.

LEARNING, COLLABORATING, INNOVATING:

Professor Das' Recipe for CS Success at Ashoka

Professor Partha Pratim Das, a visiting professor at Ashoka University from the Department of Computer Science and Engineering at IIT Kharagpur, recently shared insights on research and academics during our new professor interview series.

His perspective sheds light on some challenges and opportunities faced by computer science students at Ashoka. One key challenge Professor Das highlighted is that Ashoka's computer science students may need to improve their foundational skills in mathematics and programming to become more competitive compared to their peers at other universities in India.

He suggests focusing on strengthening these fundamental skills, as they form the basis for advanced coding and problem-solving abilities.

Additionally, Professor Das pointed out the limited research opportunities for students at Ashoka. He noted the absence of student-led research and a more hierarchical structure, which can make it difficult for students to actively engage in research. To address this, he proposed creating a more collaborative research ecosystem, where faculty members, doctoral students, and master's students work together, combining their diverse expertise.

Professor Das strongly advocates for interdisciplinary research, particularly between computer science and fields like biology and bioscience. He believes that merging computer science with other disciplines can lead to groundbreaking discoveries and solutions to global challenges in areas such as healthcare and sustainability.

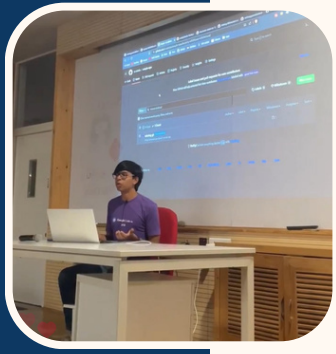
Drawing from his personal experiences, Professor Das shared insights on the value of a close-knit college community and peer support. During his college days, students from various disciplines and batches lived together in hostels, fostering a sense of camaraderie and mutual assistance.

He emphasizes the importance of building strong relationships with peers, engaging in interdisciplinary interactions, and cultivating a supportive network for academic and personal growth.

One of Professor Das's research studies is a perfect example of innovation in interdisciplinary fields. The research involves exploring the use of technology, such as graphical language and e-learning tools, to capture and transmit the intricate nuances of classical dance forms of India.

This innovative approach aims to transcribe dance movements, provide tutoring systems, and analyze the physical aspects of dance performance using technology.

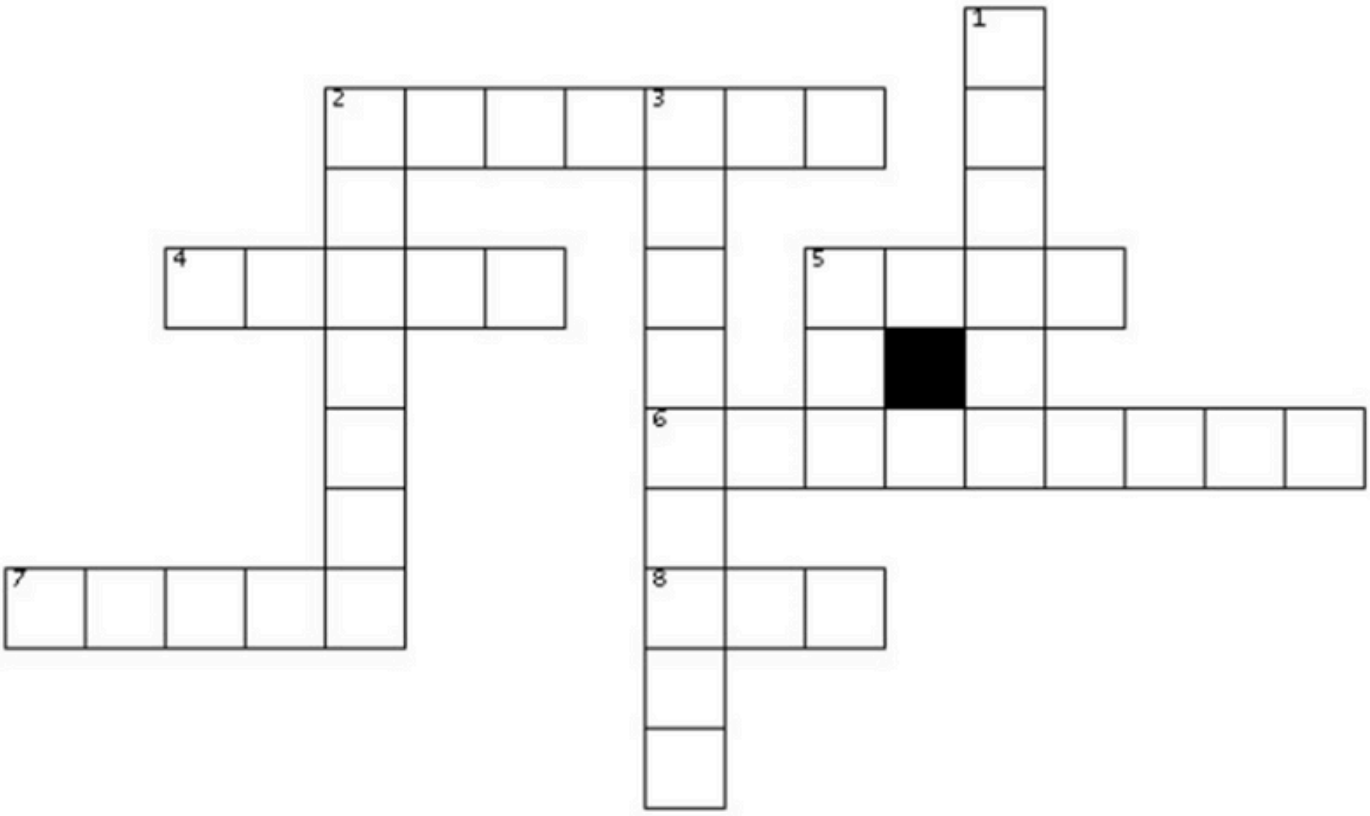
Throughout the interview, Professor Das emphasized the significance of collaboration, continuous learning, and pushing the boundaries of innovation. By embracing these principles, students can unlock their potential for research success and contribute to shaping the future of computer science.



In summary, Professor Das's insights highlight the importance of strong foundational skills, collaborative research ecosystems, interdisciplinary approaches, peer support, and continuous innovation in the field of computer science. By addressing these aspects, Ashoka University can foster an environment conducive to academic excellence and groundbreaking research.

Here are the key takeaways for students from Professor Das's insights:

- Focus on strengthening foundational skills in mathematics and programming to build a solid base.
- Explore opportunities for interdisciplinary projects that combine computer science with other fields like biology or bioscience.
- Actively seek out student-led research opportunities or propose new research initiatives to faculty.
- Build strong relationships and collaborate with peers from diverse academic backgrounds.
- Engage in peer support networks and study groups to foster academic and personal growth.
- Continuously learn and push boundaries by exploring innovative applications of technology.
- Participate in extracurricular activities that promote a close-knit community and interdisciplinary interactions.

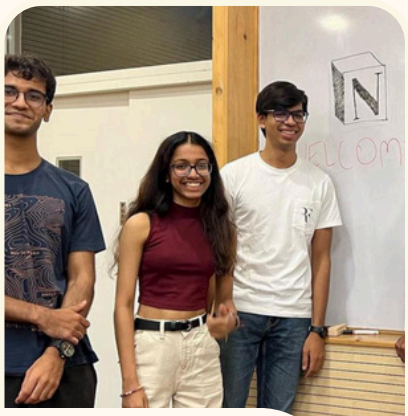


ACROSS

2. Sending an email pretending to be someone else
4. Fastest system memory
5. Unit of measurement for computer memory
6. The instructions to follow to carry out a task
7. A protocol for secure web pages
8. An organisation that provides internet access

DOWN

1. A device used to connect two networks together
2. Data on the internet is divided up into these
3. Another name for repetition
5. Unexpected problem with software or hardware



CS @ ASHOKA

Computer Science at Ashoka can be quite rigorous and stressful. So here's a guide with some useful resources, course-specific advice, and some general studying suggestions to give you a headstart.

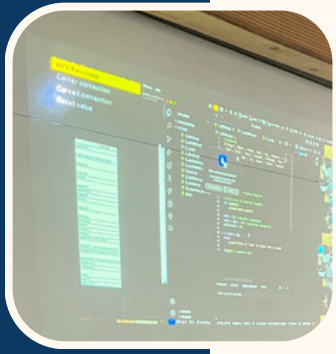
General tips (Stuff you should know)

- GitHub: Get familiar with cloning, pushing, pulling, and branches as well as resetting commits. Not only will Git skills come in very handy in some courses, they are essential for any programmer. Here is a course to help you get started: https://youtu.be/RGOj5yH7evk?si=dhIS9-8rOiCzOV1f

- Refresh your math fundamentals:

A strong foundation in elementary probability and statistics, set theory, functions, calculus, linear algebra and proof-writing skills will give you a significant headstart in almost all your courses.

As you progress through courses in Ashoka, you will realise that C will be a necessity in most practical components of Data Structures, OS, PLDI, etc. Rather than learning it as you do these courses, there are many benefits of getting used to it early on in your journey.
It can not only help you with a strong foundation in programming concepts (DSA), but it can also teach you memory management skills, which will be useful for the theoretical parts : of many courses. Here is a guide on getting started: https://youtu.be/KJgsSFOSQv0?si=gMh3h1xemDVhP1B5



- Subpoint: if on Windows, having a Linux subsystem like WSL could be useful as C produces quite a few Windows-specific bugs in correct code. Alternatively, online compilers generally work as well. The advantage of WSL is that one can utilise Makefiles which becomes especially useful for courses like OS and PLDI.

- LaTeX is a typesetting system, sort of like a coding language for documents, that is especially useful for writing maths. Over the duration of your CS degree, multiple courses will require you to submit work in LaTeX, and some courses will have it as an option rather than handwritten work. Being fluent at using LaTeX beforehand, therefore, is a good idea as the initial learning phase can be slightly challenging but familiarity with it can boost productivity and the presentability of your work.

Below is a comprehensive tutorial:
https://youtu.be/ydOTMQC7npo?si=L8Q5niJYQieag3S3

Planning ahead:

Figuring out your career path

The following courses are good indicators for whether certain careers pique your interest:

- Systems design and development: COS, OS, PLDI etc.
- Software engineering: DS, DAA etc
- Machine learning/AI work: IML, NLP, AML etc.
- Cybersecurity: Networks, CSP etc.

If you want to explore any of the above (or more) paths, the following website may be useful in mapping out your job journey: roadmap.sh

This website offers a variety of roadmaps, guides, and educational content designed to help developers in their career progression. It includes role-based roadmaps for specific fields like Frontend, Backend, DevOps, Full Stack, Android, AI and Data Science, Blockchain, QA, Software Architect, and more. Additionally, it provides skill-based roadmaps focusing on specific technologies or languages such as React, Angular, Vue, JavaScript, Node.js, Python, SQL, and others.

We would recommend you to explore your interests through the trajectories provided in the website to gain a holistic and thorough understanding of your career path.

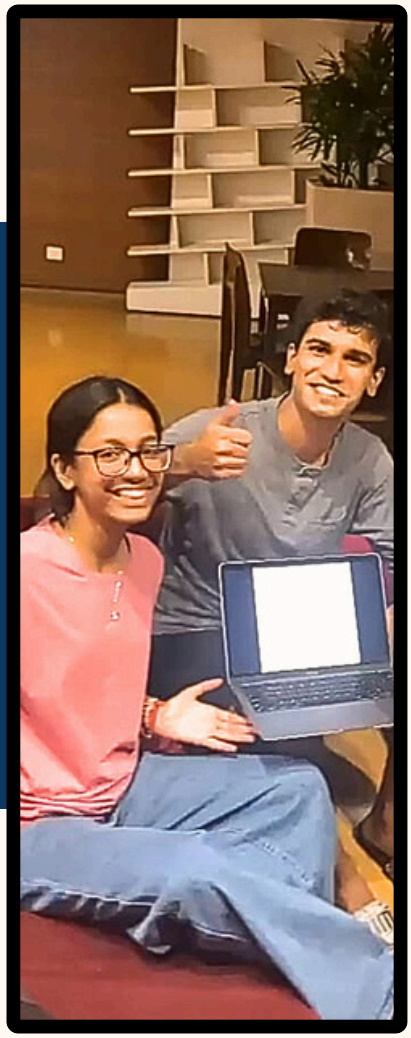
Masters Preparation

- Try your best to maintain good grades throughout your undergraduate degree.
- Make sure to do something outside of your academics alongside your degree. This could be a TAship, a research position or project with a professor, an internship etc.
- Polished, well-written essays are essential to any good Masters application. Take help from the people around you in writing the best essays possible.
- A TAship or RAship can be a good way to get close to a professor, which in turn can make getting an LOR easier.
- GRE: Ashoka frequently offers GRE bootcamps along with profile building sessions, you would benefit greatly by attending them. You can get started by taking a free test from any of the multiple resources available online.

Finally, here are some helpful links for some courses at Ashoka:

- Discrete Mathematics: https://ocw.mit.edu/courses/6-042j-mathematics-for-computer-science-fall-2010/pages/readings/; https://www.youtube.com/playlist?list=PLl-gb0E4MII28GykmtuBXNUNoej-vY5Rz
- Computer Organization and Systems: https://www.youtube.com/playlist?list=PLJ1LeUHJNHKg05E5_7DTeV3GLCt3ehkHB
- Data Structures: https://www.youtube.com/playlist?list=PLJ1LeUHJNHKg05E5_7DTeV3GLCt3ehkHB; CLRS
- Algorithms: https://www.youtube.com/playlist?list=PLJ1LeUHJNHKg05E5_7DTeV3GLCt3ehkHB; CLRS; Kleinberg & Tardos
- ML: https://github.com/josephmisiti/awesome-machine-learning
- Security: https://github.com/sbilly/awesome-security
- Networks: https://github.com/nyquist/awesome-networking
- Cryptography: https://github.com/sobolevn/awesome-cryptography

THANK YOU



We hope you enjoyed our first newsletter, that's what our term for the CS Society looked like!

Now that we have come to an end of our session, we have a few thank you's to give that have been long due:

Thank you to the core team - **Kahaan Shah, Diya Tripathi, Natasha Sobti, Roshan Pathak, Himangi Parekh, Ananya Raj Girish, Malvika Choraria and Mihir Aggarwal** - whatever CS Soc is today it wouldn't have been without all of your efforts and contributions, and we are so grateful for all of them.

Thank you to **Bhumika Mittal and Rajat Varma** for guiding us as we settled in our roles and being there to back us throughout.

Thank you to **each and every member of the society**, the CS society is nothing without its members, your initiatives and efforts are what make us who we are and we could not be more grateful for it.

And, finally, thank you to **Manya Garg and Maaher Bhagwagar** for taking up the responsibility and the role for the next leadership - we are so proud and confident that you'll take this society to much greater heights <3

That's it from our side - it was an honour to lead this society and learn so much from each one of you.
Signing off,
Aryan and Roshni

OUR SOCIALS