Monthly News Letter
15th June 2022
Volume 2, Issue 3

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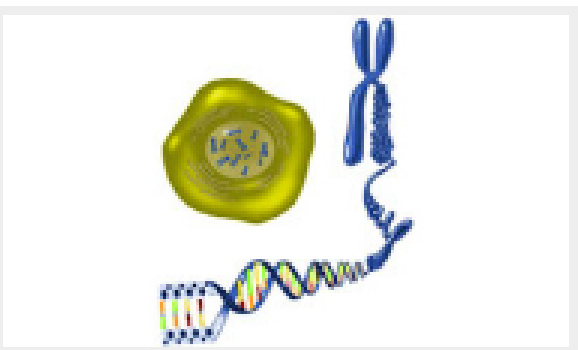
Inside This Issue

Samvaad Editorial : Data Storage: What the future holds in DNA ?

In the recent decade, there has been a paradigm shift in data storage. With the amount of data being created, the world is on the verge of a data storage disaster. We have seen a huge surge in the use of digital tools in the last few years as a result of Covid-19. Videoconferencing and online teaching-learning tools have become commonplace. Artificial intelligence, augmented reality, virtual reality, Industry 4.0, and the Internet of Things (IoT) are all part of a modern culture that generates more than 3 quintillion bytes of data and increasing every day.

Humans have been inspired by nature, which has aided in the development of various technology. Data science cannot be self-contained without deriving inspiration from DNA, the very foundation of human existence. Catalog Technologies, a Boston-based business, is working on DNA-based data storage and depends extensively on molecular biology methods to print synthetic molecules to store the information.



The data, can be read by sequencing the sample and running it through a proprietary software program to return it to its original text, photo, or video form. It is recently shown that a DNA molecule can store 14 gigabytes of data and 215 petabytes will need only 1 gram of DNA. Irrespective of all these developments, the DNA storage remains a niche field. The DNA storage and DNA computing could be an emerging field that promises solution to the data storage.

Dr. Narendra R. Deore

Professor, Mechanical Dept., Associate Dean - Industry Institute Interaction
Institute SIG Coordinator, PCCoE.

The DNA, inherited from the human anatomy, is a messy organic molecule, that looks nothing like the magnetic disk drives or switching arrays that make up the fundamental building blocks of our storage infrastructure. DNA consists of four nitrogenic bases Adenine (A), guanine (G) cytosine (C), and thymine (T). These bases in a group of three different combinations of 0s and 1s are encoded in the form of A (00), G (01), C (10) and T (11).

This data when synthesized in the artificial DNA, can be preserved for the longer time. Moreover, the experiments show that the synthesized DNA can be further replicated trillion times using polymerase chain reaction, thus forming as many copies with no considerable loss of data.

This technology was first reported in 1988, when Joe Travis, Harvard University encoded 35 bits of data. New York based group of scientist, in 1999, coded a 23-character message in DNA. A data like high quality video, Shakespeare's sonnets, a film, operating system, is being stored and retrieved over the years using DNA. Off recently, in June 2019, the Catalog developed the fastest coding write that encoded 125 GB per day of data at substantially lower cost, however system was 176 times slower than conventional read/write speed of the hard disk drives. Some of the universities and organizations like Massachusetts Institute of Technology (North Carolina State), North Carolina State (Kyle Tomek, PhD Student), Columbia university, ETH Zurich, the New York Genome Center, Microsoft, Applied DNA Sciences, Anika Biosciences, are focusing on exploring this technology to store the "hard" data for scientific purposes.

Before DNA to become mainstream, it must overcome some formidable technical difficulties. DNA synthesis and sequencing are difficult methods that cost a lot of money, time, and resources. Encoding data is a slow process, with rates of around 400 bytes per second. This is millions of times slower than a silicon memory chip's microsecond timeframes. Synthesizing DNA molecules is also prohibitively expensive. Experts calculate the cost to be $800,000 for Microsoft's 200 MB project and $7,000 for the synthesis of 2 MB of data for the DNA Fountain project.

The cost was incurred primarily due to a technological breakthrough, and researchers think that as DNA synthesis processes advance and take less machine time, the cost will drop dramatically. DNA data storage has a bright future in the long run, but due to cost and time constraints, its early use will be limited to critical archive applications.

Guest Article: Undergraduate studies an effective Leadership Platform

In the past Indian diaspora has seen great leaders emerging from the academic institutions. They have immensely contributed to the Indian ecosystem at global level. The journey begins at the early stages in the institute. The leadership qualities seek to empower students to build their aptitude towards high-performance contribution and self-knowledge through participation in both formal and informal opportunities.

There is always need to have the student candidates having the skills to be a high-performing contributors and student candidates having the skills to be an effective leader. The key contributors for an individual to perform are through their ability, likability, and drive. On the contrary, the leadership demands a broader range of character traits, including high levels of integrity. However, the leaders should have the ability to foresee and predict the future, not to glory the past. Hence, to develop sustainable ecosystem, one needs to appreciate high-potential students, not just top performers.

Students are greatly benefitted by a certain level of technical competence to establish their credibility. However, broad knowledge of ecosystem does help student to elevate to the leadership role. Students having expertise in one domain, often hindered by fixed mindsets and narrow views. Students with broad knowledge are able to remain open and to adapt, no matter how experienced they are. They succeed because they are able to continually learn. Professionals like software developers, salespersons, and stockbrokers having exceptional domain knowledge, technical skills, discipline and abilities to self-manage are successful in their tenure.

However, what sets them apart from the rest is their ability to understand the growing complexity, uncertainty, and change. In today's ever-changing world, individuals should be flexible and lean towards adapting as fast as the technologies surrounding them.

Things that have works in past or current may not work in future and needs to build the strategies by assessing the situations and undergoing though constant transformation.

Ms. Pradnya Pawar,
Alumnus of PCCoE and currently working on her own startup

This indicates motivating people who think differently and placing them into key decision makers roles. Give them support and time to prove themselves.

Some takeaways from student journey that might help.

Time is a finite resource; no one has more than the other, what matters is how much we do in the time we have. It's all about setting aside time. Every day, we are confronted with a jumble of never-ending duties and distractions. We require appropriate techniques to assist us in focusing and narrowing down on the most critical and significant jobs. Some tips to try

- **Mark the day in calendar:** Put meetings, birthdays, and other important dates or schedules on Google/phone calendar. One way to become popular with friends and family.
- **Start your day with a plan and end it with an audit:** Set aside 10 to 15 minutes in the morning to plan out the day. Prepare the checklist to track the deadlines and prioritize what has to be accomplished. Before going to bed, review the unfinished tasks and plan the things accordingly.
- **Forget the mental note; write it down:** Keep a notepad/diary handy and make a note. The to-do list for the day.
- **Effective 24 Hours:** Skip the time hours where you are engaged or busy, focus on free time and plan. Make sure, each second counts.
- **Make WhatsApp self-groups:** Create a group with yourself only. This will help us organize our own things and ideas. Store documents, images or forwards, for handy access.
- **Don't spread yourself too thin; delegate:** Delegation of the work is helpful. We must be aware of our bandwidth and limitations. Trying to handle everything on our own can leave us drained and frustrated. Share work with others that will give us breather for other high-priority activities. It is a very important part of the productivity toolkit.
- **Schedule your distractions:** Manage the Modern-day distractions like WhatsApp, Facebook, YouTube, Twitter, Insta-gram and whatnot, effectively. Fix time slots for attending to distractions.

Persistent Corner: Health is Wealth

Along with keeping the mind sharp, it is also required to keep your body fit and healthy. "***It is health that is real wealth and not pieces of gold and silver.***" are the wise words by Mahatma Gandhi. Hence, it becomes each and every one's responsibility to ensure that we are healthy.

Persistent helps its employees to understand their health by providing free annual checkups, so when anything out of the ordinary is found, it can be taken care of as soon as possible. Not only that, Persistent also has a HealthCare plan provided for each employee to take care of themselves, as well as their families.

Even if you have everything materialistic in the world, it won't do you much good unless you have your health to experience those things. So stay safe, take care and since there are COVID cases increasing everyday, observe constant vigilance.

Mr. Ritvik Bhavan
Lead Software Engineer

Other Initiatives

A National Workshop on Foster Care Services in association with "Swanath foundation"was conducted from 12th to 13th May 2022 at PCET's Campus Akurdi Pune. For this workshop trainees came from all over India. As mentioned, it was a 2 day workshop to discuss and educate social workers related to Foster Care Services. Chief Guests for this event were Dr. Nitin Karmalkar, Dr. Govind .N. Kulkarni , Mrs. Seema Kamble, Mrs. Shreya Bhartiya and Dr. Deepak Walokar.

Around 47 trainees participated in this workshop for two days. Total 25 NSS volunteers from PCCOE and 7 volunteers from Pune Business School managed and helped trainees and other people working under this workshop.

On both days 12th and 13th people attending this workshop were introduced with the concept of foster care, need of it and also different laws to be kept in mind while being a part of this service, also few orphans who are achieving great success in their life shared their journey and inspired people. All NSS volunteers, PCCoE, closely witnessed the reality of society, problems faced by orphans and also what we can do to bring a change for them.

Vice Chancellor of SPPU Dr. Nitin R. Karmalkar interacting with trainees.

Founder "Swanath Foundation" Mrs. Shreya Bhartiya explaining about their foundation.

PCCOE Technical Feast

1. Dr. Abhay Lingayat has published a paper titled “Current status and prospect of integrating solar air heating system for drying in various sectors and industries” and in Elsevier, Journal – Sustainable energy technologies and assessments, with impact factor 5.353.
2. Dr. U.G. Potdar has published a paper titled “Experimental Investigation on the role of group combustion mode in lifted spray flames with kerosene fuel” in Journal Atomization and Spray, Begell House.
3. Dr. Mohit Prasad et al. has published a paper on “Annealing temperature effect on structural and optoelectronic properties of γ-In2Se3 thin films towards highly stable photodetector applications” in Journal of Molecular Structure 1265 (2022) 133336 Sopus indexed, IF.3.196.
4. Dr. Sonali Patil, Dr. Sheetal Bhandari, Dr. Sudeep Thepade, Dr. Roshnai Raut and Shashikant Athawale have published a paper on “Improved resilience of secret sharing scheme with augmented multifarious features” in Internation Journal of Information Technology published by Springer Nature Singapore.
5. Mr. Sachin Jadhav has published a patent on “Integrated Driver Behaviour and Battery Optimization Techniques using Machine Learning”.

Faculty Achievements

1. Mr. Sopan Aghav has delivered an Orientation Session on “Entrepreneurship Development " for the students of Information Technology for IT department students on Wednesday 12/05/2022.
2. Dr. Sandip Mali has delivered a session on “Water conservation” in RIT Polytechnic, Sakharle, Sangli under “Jalshakati Abhiyan” on 2/05/2022.
3. Mr. S. P. Banne has delivered session on “Shear Strength of Soil” in PVPIT Bavdhan Pune on 3/05/2022.
4. Mr. S. P. Banne has delivered session on “Shear Strength of Soil” in D. Y. Patil College of Engineering Pune on 6/05/2022.
5. Mr. S. P. Banne has delivered session on “Earth Pressure” in DYPIEMR, Akurdi Pune on 13/05/2022.
6. Dr. A K Gaikwad worked as a Session Chair for the 2nd National Conference on, “Engineering and Technology 2022 (NCIET)”, in Civil Engineering department of AISSMS CoE, Pune on 21/05/2022 and another for 2nd National Conference on, “Advances in Construction Management-2022”, on 22/05/2022 held at College of Engineering, Pune.
7. Dr. A K Gaikwad worked as a Reviewer in 2nd National Conference on Innovation in Engineering and Technology (NCIET 2022) organized by AISSMS College of Engineering, Pune on 20th May 2022.
8. Dr. A K Gaikwad delivered an expert Lecture on Curves SE Civil students in DY Patil CoE and Research, Akurdi, Pune on 18/05/2022.
9. Mr. D. A. Anarse (AS&H) has Completed 2 credits course on Research and Publication Ethics organized jointly by the Research Cells of Ramnarain Ruia Autonomous College and K. J. Somaiya College of Science and Commerce Mumbai during 14th March to 1st April 2022.
10. Dr. Sandip K. Jagadale has delivered a guidance talk on “Important Keys for Success” and “Pathways to Success” in Board & CET/JEE/NEER to 11th and 12th Science Students at Bharti Institute on 8/5/2022.
11. Mr. D.A.Anarse (AS&H) has Completed 2 credits workshop on "Research Methods and Technique conducted by our college in association with the University of Mumbai during May 04, 2022 to May 10,2022.
12. Mr. Ganesh Tarte, Dr. Saziya Shaikh, Mr. Dinesh Kute and Mrs. Sujata Bhamre (AS&H) have attended a 3 days International Conference on Algebra and Discrete Mathematics (ICADM-2022) organized by Dept of Mathematics, SPPU, Pune during May 26-28,2022.
13. Dr. N. B. choapde was Chairman of committee to Conduct Viva-Voce (open defence) for Ph D of Ms Yogita R Gajare at Savitribai Phule Pune University, Pune on 31/05/2022
14. Dr. N. B. Choapde was a Referee for the PhD Thesis entitled, ‘Approach for Automated Detection & Classification of Masses in Mamographics Images “, submitted by Mr Pramod B Bhalerao in Swami Ramanand Teerth Marathwada University, Nanded, May 2022.
15.Dr. N. B. Chopade was Vice-chancellor Nomminee (General) and Chairman of Local Inquiry Committee to conduct PhD Admission Interview at Dr D Y Patil Unitech Society’s, Dr D Y Patil Institute of Technology, Pimpri, Pune at SPPU Pune, on 07th June 2022.
16. Dr. N. B. Choapde is now a Member of All India Council for Technical Skill Development (AICTSD/Professor/69118)
17. Dr. N. B. Choapde worked as Subject Expert to Conduct Pre-PhD Thesis Presentation of Ms.Smita Desai at Research Center of at Dr D Y Patil Institute of Engineering & Technology on 12/05/2022
18. Dr. N. B. Choapde worked as Subject Expert to conduct PhD Research Review at AISSMS’s Institute of Information Technology on 04/05/2022.
19. Dr. N. B. Choapde has delivered a Session on “ NEP 20 : for Higher Educational Institutes”, for Faculty of S B Patil College of Architecture & Design, Pradhikaran, Nigdi, Pune on 25th May 2022
20. Dr. Sandip T. Mali was an External examiner for topic finalization of Ph.D. scholar in Civil Engineering in Dr.D. Y. Patil Institute of Technology, Pune on 23rd May 2022.
21. Dr. Sandip T. Mali was an Examiner for Pre-synopsis of Civil Engineering RSCOE on 14th May 2022.

PCCOE Expression



Mock Interviews were conducted by AS & H faculty for total 885+ SY. B. Tech students by 43 Industry Experts from Accenture, TIAA,Kirloskar Pneumatic, KPIT, Wruth IT,Persistent,Cummins,Philips, Quantiphi, DXC Technology, Hyundai, Cognizant, ARAI.

PCCoE EDC Cell Activities


A Workshop on "Negotiation Skills for Entrepreneurs" on Monday, 30th May 2022 for MCA students

Start-Up Katta (स्टार्ट-अप कट्टा)

PCCOE Announcements

Harish and Digvijay from BE Computer 2022 Batch got a Job Offer with CTC 61 Lacs in Uber

Dr. N. B. Chopade received an Award to PCCoE for Valuable and Exemplary Contribuition in Higher Education Sector

Bharat Abhimaan Webinar Series

National Board of Accreditation

Congratulations to PCCOE Family!!!!!

All Programs Mechanical Engineering, Electronics and Telecommunication Engineering, Computer Engineering, Information Technology and Civil Engineering is Accredidated by

National Board of Accreditation for 3 years

from Academic Year 2022-23 to 2024-25

Best Outgoing Student of the Year 2022

Ms. Nupur Kulkarni from BE IT is the Winner of "Best Outgoing Student of the Year Award 2022" Ripu Daman Singh Trophy