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E-NEWS LETTER

Master of Computer Applications

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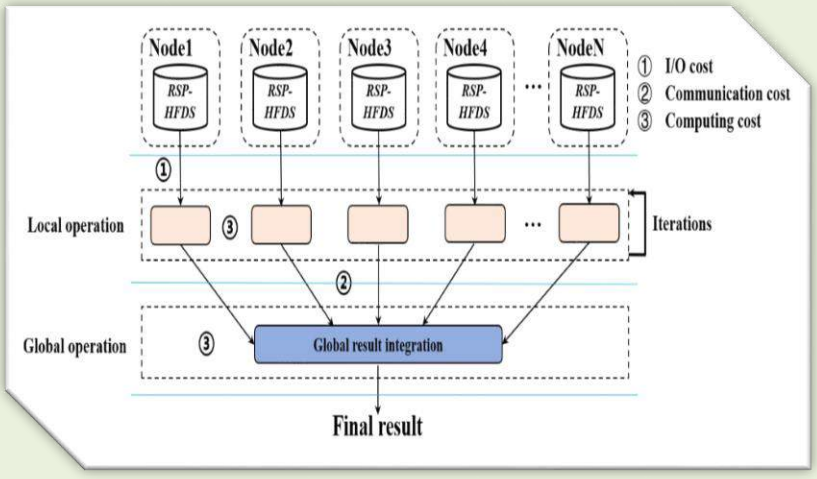
LATEST UPDATES WORLD

Alternate framework for distributed computing tames Big Data's ever growing costs

The sheer volume of 'Big Data' produced today by various sectors is beginning to overwhelm even the extremely efficient computational techniques developed to sift through all that information. But a new computational framework based on random sampling looks set to finally tame Big Data's ever-growing communication, memory and energy costs into something more manageable.



The amount of data being produced from social networks, business transactions, the 'Internet of Things,' finance, healthcare and beyond has exploded in recent years. This era of so-called Big Data has offered incredible statistical power to discover patterns and deliver insights previously unimaginable. But the volume of Big Data being produced is beginning to hit computational limits.

The scalability of complex algorithms starts to flounder at around a terabyte of data—or one trillion bytes—in a computer cluster or in cloud computing. The New York Stock Exchange for example produces about a terabyte's worth of trade data every day, while Facebook users generate 500 terabytes over that same time.

Distributed computing plays a vital role in the storing, processing and analysis of such big data. This framework deploys a 'divide and conquer' strategy to efficiently and speedily sort through it. This involves the partitioning of a big data file into a number of smaller files called 'data block files.'

These data blocks are stored in a distributed fashion across the many nodes of a cluster of computers. Each of these blocks are then processed in parallel instead of sequentially, radically speeding up processing time. The results from these local nodes are then fed back to a central location and reintegrated, producing a global result.

This divide-and-conquer operation is in turn managed by a distributed file system, which in turn is governed by a programming model. The file system is what divides the big data files, and the programming model divides an algorithm into pieces, which can then run on the data blocks in a distributed fashion.

MapReduce, developed by Google, is the most widely used programming model for distributed computing that runs on clusters and across the cloud. The name comes from its two basic operations. The Map operation is performed on the data block in a node to generate a local result. This is executed on multiple nodes in parallel to achieve the huge speed-up in processing time. The Reduce operation then collates all these local results into a global result.

This latter stage involves a transfer of local results to other master nodes or central node that perform the Reduce operation, and all this data shuffling is extremely costly in terms of communication traffic and memory.

"This enormous communication cost is manageable up to a point," said Xudong Sun, the lead author of the paper and a computer scientist with the College of Computer Science and Software Engineering at Shenzhen University. "If the desired task involves only a single pair of Map and Reduce operations, such as counting the frequency of a word across a large number of web pages, then MapReduce can run extremely efficiently across thousands of nodes over even a gargantuan big-data file."

"But if the desired task involves a series of iterations of the Map and Reduce pairs, then MapReduce becomes very sluggish due to the large communication costs and consequent memory and computing costs," he added.

So the researchers developed a new distributed computing framework they call Non-MapReduce to improve the scalability of cluster computing on big data by reducing these communication and memory costs.

To do so, they depend upon a novel data representation model called random sample partition, or RSP. This involves a random sampling of a big data file's distributed data blocks instead of a processing of all the distributed data blocks. When a big data file is analyzed, a set of RSP data blocks are randomly selected to be processed and then subsequently integrated at the global level to produce an approximation of what the result would have been had the entire data file been processed.

In this way, the technique works in much the same way as in statistical analysis, random sampling is used to describe the attributes of a population. The Non-MapReduce's RSP approach is thus a species of what is called 'approximate computing,' an emerging paradigm in computing to achieve greater energy efficiency that delivers only an approximate rather than exact result.

Approximate computing is useful in those situations where a roughly accurate result that is computationally cheaply achieved is sufficient for the task at hand, and superior to a computationally costly effort at trying to deliver a perfectly accurate result.

The Non-MapReduce computing framework will be of considerable benefit for a range of tasks, such as quickly sampling multiple random samples for ensemble machine learning; to directly execute a sequence of algorithms on local random samples without requiring data communication amongst the nodes; and easing the exploration and cleaning up of big data. In addition, the framework saves a significant amount of energy in cloud computing.

The team now hope to apply their Non-MapReduce framework to some major big data platforms and use it for real-world applications. Ultimately, they hope to use it to tackle application problems of analyzing extremely big data distributed across several data centers.

DEPARTMENT ACTIVITY

- **Zero Hour Activity (Badminton Match)**
  9th February-2023

Venue: SRMSCET Multipurpose Hall

On 9th February-2023, the MCA department organized a Badminton Match in the club activity hour. In which all the faculty members were present to motivate students.
This game was held between two teams:

Team 1- Aditya Sarswat, Manthan Gupta, Ritik Kumar Saxena, Yashi, Prashant Rajpoot, Gyanendra, Mansi Prajapati, Vishal kashyap and Saurabh Tiwari

Team-2: Vishal Sharma, Pradeep Kumar, Sanskriti Gupta, Yashika, Pankaj Kumar, Rahul Kuniyal, Mohit Kumar, Nikhil Kumar, Abhishek Maheshwari

All the players were holding a good time and giving their best performance but from Team-1 Manthon Gupta won the match.

- **Placement of MCA Final Year Student**
  (Batch-2021)

SRMSCET, Bareilly congratulates MCA Final year student Ms. Chanchal Rathor for her placement with Zimozi. Her achievement is an inspiration to all our students and a testament to the quality of education we provide.

COLLEGE UPDATE

- केंद्रीय बजट **2023-24** पर एक विशेष चर्चा आयोजित
  4th February-2023

Venue: New Seminar Hall, SRMSCET

श्री राम मूर्ति स्मारक कॉलेज ऑफ इंजीनियरिंग एंड टेक्नोलॉजी **(**एसआरएमएससीईटी**)** बरेली में **04** फरवरी**-2023,** को 'केंद्रीय बजट **2023-24**-एक परिचर्चा'पर एक विशेष पैनल के साथ चर्चा का आयोजन हुआ। जहाँ पैनलिस्ट ने छात्रों के लिए उन्हें केंद्रीय बजट, विभिन्न आर्थिक सुधारों और आर्थिक और उद्योग विकास में बजट की भूमिका के बारे में विषय में बताया।

विशेषज्ञों के प्रतिष्ठित पैनल में सीए विनय कृष्णा, सीए रोहन गर्ग, सीए रवि जौहरी और सी.ए. रुचि जैन शामिल थे।

- महिला अधिकारिता, साइबर सुरक्षा और यातायात प्रबंधन पर एक जागरूकता कार्यक्रम
  7th February-2023

Venue: SRMS Centennial Auditorium

फरवरी 2023 में सड़क सुरक्षा माह के एवज में, श्री राम मूर्ति स्मारक कॉलेज ऑफ इंजीनियरिंग एंड टेक्नोलॉजी (SRMSCET), बरेली ने जागरूकता पैदा करने के उद्देश्य से सेमिनार, कार्यशाला और एक रैली सहित कई कार्यक्रमों का आयोजन किया। यह आयोजन महिला अधिकारिता (मिशन शक्ति), साइबर सुरक्षा और यातायात जागरूकता के बारे में प्रकाश डाला।

कार्यक्रम की शुरुआत सरस्वती वंदना और संस्थान गीत के साथ-साथ ऑडिटोरियम में सम्मानित अतिथियों के स्वागत के साथ हुई, जिनमें डॉ. राकेश सिंह (मुख्य अतिथि, आईजी बरेली), अखिलेश चौरसिया (सम्मानित अतिथि, डीआईजी बरेली) और नीता अरविरहार (उप निदेशक, मिशन शक्ति), आदित्य मूर्ति (ट्रस्ट सेक्रेटरी एसआरएमएस ट्रस्ट), इंजीनियर सुभाष मेहरा (ट्रस्ट सलाहकार एसआरएमएस ट्रस्ट), लवलेश कुमार सिंह (कार्यक्रम समन्वयक), डॉ प्रभाकर गुप्ता (डीन एकेडमिक्स) और डॉ अनुज कुमार (हेड टीडीपी सेल) उपस्थित थे।

आयोजन के दौरान शालू, एसआई साइबर क्राइम पुलिस स्टेशन, बरेली भी मौजूद रहीं , जिन्हें टायरो अध्यक्ष स्तुति सक्सेना ने एक पौधा भेंट किया।

इस कार्यक्रम के दौरान देशभक्ति और महिला सशक्तिकरण के गीत चल रहे थे, साइबर सेल बरेली की टीम ने साइबर अपराधों और उनकी घटनाओं की गंभीरता पर जानकारीपूर्ण सेमिनार दिया। अरुण कुमार सिंह, हेड कांस्टेबल साइबर सेल बरेली ने विभिन्न वित्तीय धोखाधड़ी प्रस्तुत की और गर्व से कहा कि बरेली की टीम 2022 में ऐसे अपराधों के पीड़ितों को 55,33,825 रुपये वापस कराने में सक्षम रही ।

सोशल मीडिया फ्रॉड पर एक अन्य सेमिनार प्रेजेंटेशन में शालू ने समझाया कि इस तरह के फ्रॉड से कैसे निपटा जाए, और इससे भी महत्वपूर्ण बात यह है कि इनसे कैसे बचा जाए। इसके बाद मुन्ना लाल, पीटीओ बरेली द्वारा सड़क जागरूकता भाषण दिया गया, जिन्होंने हेलमेट और सीट बेल्ट के महत्व को बताया। इस बीच, एसआरएमएस सीईटी परिसर से अभयपुर मुख्य सड़क तक छात्रों द्वारा सड़क जागरूकता के लिए रैली निकाली गई।

महिला सशक्तिकरण पर बोलते हुए, नीता अरहिरवार ने खुलासा किया कि कैसे महिला हेल्प डेस्क अब उत्तर प्रदेश के हर पुलिस स्टेशन का एक हिस्सा है। उन्होंने यह भी बताया कि परियोजना में अपने योगदान की संख्या से बरेली यूपी के मिशन शक्ति में पहले स्थान पर है।

कार्यक्रम का समापन डॉ प्रभाकर गुप्ता द्वारा दिए गए धन्यवाद प्रस्ताव के साथ हुआ।

- **XXII Convocation at SRMS CET, Bareilly**
  8th February-2023

Venue: SRMS Centennial Auditorium

SRMS Trust is a well-known brand and one of the top leading institutions in education and healthcare that has generated notable Alumnus/Alumni. SRMS Engineering Institutions held its 22nd Convocation on February 8, 2023 at SRMS CET Bareilly to honour and felicitate the Alumni Batch 2021-22 of SRMS CET Bareilly, SRMS CETR Bareilly, and SRMS CET Unnao on the occasion of the

113th Birth Anniversary of Late Shri Ram Murti ji. 27 deserving students received gold, silver, or bronze medals, certificates, and cash prizes for their exceptional and noteworthy performances in academics, athletics, and all other areas, in addition to the 310 graduates who received degrees.

The renowned ceremony kicked off with a gathering of dignitaries and other academic procession participants in the robe tent before moving on to the SRMS Centennial Auditorium. The event began with Saraswati Vandana, College Geet, and University Kulgeet. The Chief Guest was Professor Dr. KK Aggarwal, Former Chairman of the National Board of Accreditation in New Delhi. The Guest of Honor was Rajiv Chawla, Founder and Chairman of the Integrated Association of Micro, Small, and Medium Enterprises of India in Faridabad. And the Founder and Chairman of the SRMS Trust was Shri Dev Murti Sir. The secretary and president of the Tyro Club, Sudhanshu Verma, gave a plant seedling to each attendee as a sign of welcome.

Following that, Aditya Murti Sir, the trust's secretary, presented a warm welcome and motivational speech outlining the trust's significant contributions to social, academic, and medical services. Following this, Professor Dr. Prabhakar Gupta, Dean Academics, SRMS CET, Bareilly, gave a talk on Trust Engineering Institutes in which he also recounted the illustrious history of SRMS Trust. He described numerous specialist courses and briefed the audience on the upgrading of several on-campus laboratories.

He also spoke on student success in hackathons, the AKTU sports meet, literary festivals, and research papers written by several faculty members.

The degree and medal winners received blessings from Shri Dev Murti, who also exhorted them to keep up with the speed of technological advancement. He stressed on time management, job ethics and humanity in life. Degrees were granted to MBA, MCA, M Tech, M Pharm, B Pharm, and B Tech (CETR Bareilly, CET Unnao, CET Bareilly) alumni after Shri Dev Murti extended "Deeksha" to degree recipients. The most deserving MBA, MCA, B Pharm, B Tech, etc. students received medals in addition to certificates and monetary awards. The honoured visitors also received mementos.


XXII CONVOCATION
Shri Ram Murti Smarak Trust Institutions
Shri Ram Murti Smarak College of Engg. & Tech. Bareilly
Shri Ram Murti Smarak College of Engg., Tech. & Research Bareilly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SRMS
XXII CONVOCATION
Shri Ram Murti Smarak Trust Institutions
Shri Ram Murti Smarak College of Engg., Tech. & Research Bareilly

- **The Power of Intellectual Property Unleashed by SRMSCET!**
  13th February-2023

Venue: New Seminar Hall, SRMSCET

Under the National Intellectual Property Awareness Mission 2.0, SRMS College of Engineering Technology, Bareilly organized a Webinar on the subject of "IPR Awareness Programme" in cooperation with the Department for Promotion of Industry and Internal Trade and the Office of the Controller General of Patents, Designs, and Trademarks. The 75th Azadi ka Amrit Mahotsav, which focused on "Creative India; Innovative India," included a webinar on February 13 that benefited all of the college's students and professors.

Rajneesh Pratap Singh, a SRMSCET Alumnus and NIPAM officer and Examiner of Patents & Designs at the Indian Patent Office New Delhi, CGPDTM, DPIIT, Ministry of Commerce & Industry, Government of India, served as the webinar's Distinguished Guest and Keynote Speaker.

The principal of SRMS CETR, Professor Dr. LS Maurya, welcomed the guests to the ceremony and officially kicked it off. Rajneesh Pratap Singh gave a special talk in which he imparted insightful knowledge about intellectual property, the value of copyright, and the necessity of patenting technical institute research and tests. He claimed that while Indian researchers are doing an excellent job of obtaining patents, more needs to be done to orient their effort in the appropriate direction.

- **टायरो क्लब- 2023 का 'शपथ समारोह'**
  23rd **February-2023**

Venue: SRMS Centennial Auditorium

एस.आर.एम.एस. कॉलेज ऑफ इंजीनियरिंग एंड टेक्नोलॉजी, बरेली अपने छात्रों के समग्र विकास में विश्वास करता है, जिसके लिए पाठ्यक्रम से परे की गतिविधियों को समान महत्व दिया जाता है। इसके लिए कॉलेज का टायरो क्लब छात्रों को विभिन्न मंच देकर उनकी अंतर्निहित प्रतिभाओं को विकसित करने में महत्वपूर्ण भूमिका निभाता है, और इसका उद्देश्य छात्रों के बीच रचनात्मकता और कला को बढ़ावा देना है। 23 फरवरी, 2023 को टायरो क्लब 2023 का 'शपथ समारोह' एसआरएमएससीईटी में आयोजित किया गया

आयोजन के दौरान, नए सदस्यों ने टायरो क्लब के मूल्यों और मिशन को बनाए रखने के दृष्टिकोण को आगे बढ़ाने के लिए जिम्मेदारियों के साथ शपथ ली। कार्यक्रम की शुरुआत सभा के सभी गणमान्य लोगों के स्वागत के साथ हुई, जिसमें आदित्य मूर्ति जी, ट्रस्ट सचिव; डॉ प्रभाकर गुप्ता सर, डीन एकेडमिक्स सीईटी; डॉ. आरती गुप्ता, डायरेक्टर फार्मेसी; इंजीनियर कपिल भूषण, डीन स्टूडेंट वेलफेयर; डॉ सोवन मोहंती, चीफ प्रॉक्टर और कई अन्य अतिथि उपस्थित रहे ।

कार्यक्रम की शुरुआत दीप प्रज्ज्वलन समारोह और सरस्वती वंदना के साथ हुई, इसके बाद गणेश वंदना और कथक नृत्य रचना का एक अद्भुत उद्घाटन नृत्य हुआ। इसके तुरंत बाद गणमान्य लोगों को पौधे भेंट किए गए। टायरो के पूर्व अध्यक्ष रौनक तिवारी ने सभी को अपने मनमोहक शब्दों से संबोधित किया। अंत में, नए टायरो अध्यक्ष, स्तुति सक्सेना ने कर्तव्यों के ऐतिहासिक हस्तांतरण को चिह्नित करते हुए शपथ ली।

पूरे उत्सव में एक भावनात्मक मोड़ देखा गया जब पूर्व-टायरो टीम के लिए एक विदाई वीडियो चलाया गया, जिसे आदित्य मूर्ति जी द्वारा स्मृति चिन्ह के साथ सराहा गया। उन्होंने अपने विशेष संबोधन में नई टीम को बधाई और शुभकामनाएं देते हुए कहा, 'आप सभी इस संस्थान की धड़कन हैं।' समारोह का समापन टायरो के सचिव सुधांशु वर्मा द्वारा धन्यवाद ज्ञापन के साथ हुआ।