



**SRMS**  
College of  
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# E-NEWS LETTER

## Master of Computer Applications

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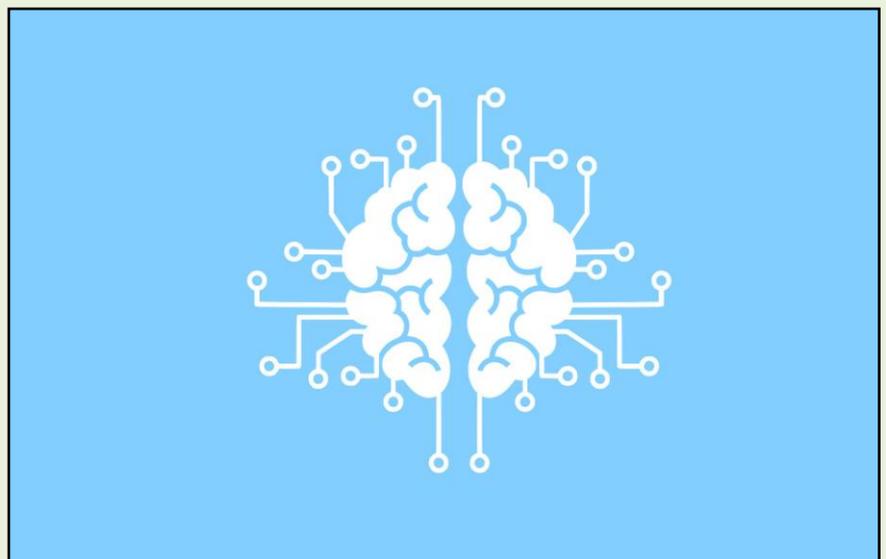
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### LATEST UPDATES WORLD

#### 'Off Label' Use of Imaging Databases Could Lead To Bias in AI Algorithms, Study Finds

Significant advances in artificial intelligence (AI) over the past decade have relied upon extensive training of algorithms using massive, open-source databases. But when such datasets are used "off label" and applied in unintended ways, the results are subject to machine learning bias that compromises the integrity of the AI algorithm, according to a new study by researchers at the University of California, Berkeley, and the University of Texas at Austin.



The findings, published this week in the Proceedings of the National Academy of Sciences, highlight the problems that arise when data published for one task are used to train algorithms for a different one.

The researchers noticed this issue when they failed to replicate the promising results of a medical imaging study. "After several months of work, we realized that the image data used in the paper had been preprocessed," said study principal investigator Michael Lustig, UC Berkeley professor of electrical engineering and computer sciences. "We wanted to raise awareness of the problem so researchers can be more careful and publish results that are more realistic."

The proliferation of free online databases over the years has helped support the development of AI algorithms in medical imaging. For magnetic resonance imaging (MRI), in particular, improvements in algorithms can translate into faster scanning. Obtaining an MR image involves first acquiring raw measurements that code a representation of the image. Image reconstruction algorithms then decode the measurements to produce the images that clinicians use for diagnostics.

Some datasets, such as the well-known ImageNet, include millions of images. Datasets that include medical images can be used to train AI algorithms used to decode the measurements obtained in a scan. Study lead author Efrat Shimron, a postdoctoral researcher in Lustig's lab, said new and inexperienced AI researchers may be unaware that the files in these medical databases are often preprocessed, not raw.

As many digital photographers know, raw image files contain more data than their compressed counterparts, so training AI algorithms on databases of raw MRI measurements is important. But such databases are scarce, so software developers sometimes download databases with processed MR images, synthesize seemingly raw measurements from them, and then use those to develop their image reconstruction algorithms.

The researchers coined the term "implicit data crimes" to describe biased research results that result when algorithms are developed using this faulty methodology. "It's an easy mistake to

make because data processing pipelines are applied by the data curators before the data is stored online, and these pipelines are not always described. So, it's not always clear which images are processed, and which are raw," said Shimron. "That leads to a problematic mix-and-match approach when developing AI algorithms."

### **Too good to be true**

To demonstrate how this practice can lead to performance bias, Shimron and her colleagues applied three well-known MRI reconstruction algorithms to both raw and processed images based on the fastMRI dataset. When processed data was used, the algorithms produced images that were up to 48% better—visibly clearer and sharper—than the images produced from raw data.

"The problem is, those results were too good to be true," said Shimron.

Other co-authors on the study are Jonathan Tamir, assistant professor in electrical and computer engineering at the University of Texas at Austin, and Ke Wang, UC Berkeley Ph.D. student in Lustig's lab. The researchers did further tests to demonstrate the effects of processed image files on image reconstruction algorithms.

Starting with raw files, the researchers processed the images in controlled steps using two common data-processing pipelines that affect many open-access MRI databases: use of commercial scanner software and data storage with JPEG compression. They trained three image reconstruction algorithms using those datasets, and then they measured the accuracy of the reconstructed images versus the extent of data processing.

"Our results showed that all the algorithms behave similarly: When implemented to processed data, they generate images that seem to look good, but they appear different from the original, non-processed images," said Shimron.

"The difference is highly correlated with the extent of data processing."

### 'Overly optimistic' results

The researchers also investigated the potential risk of using pre-trained algorithms in a clinical setup, taking the algorithms that had been pre-trained on processed data and applying them to real-world raw data.

"The results were striking," said Shimron. "The algorithms that had been adapted to processed data did poorly when they had to handle raw data."

The images may look excellent, but they are inaccurate, the study authors said. "In some extreme cases, small, clinically important details related to pathology could be completely missing," said Shimron.

While the algorithms might report crisper images and faster image acquisitions, the results cannot be reproduced with clinical or raw scanner, data. These "overly optimistic" results reveal the risk of translating biased algorithms into clinical practice, the researchers said.

"No one can predict how these methods will work in clinical practice, and this creates a barrier to clinical adoption," said Tamir, who earned his Ph.D. in electrical engineering and computer sciences at UC Berkeley and was a former member of Lustig's lab. "It also makes it difficult to compare various competing methods, because some might be reporting performance on clinical data, while others might be reporting performance on processed data."

Shimron said that revealing such "data crimes" is important since both industry and academia are rapidly working to develop new AI methods for medical imaging. She said that data curators could help by providing a full description on their website of the techniques used to process the files in their dataset. Additionally, the study offers specific guidelines to help MRI

researchers design future studies without introducing these machine learning biases.

## COLLEGE UPDATE

### 1. TECH UTSAV

5<sup>th</sup> March 2022 | SRMSCET, Bareilly

*तकनीकी कौशल जटिलता की महारत है,  
जबकि रचनात्मकता सादगी की महारत है।*

एसआरएमएस सीईटी बरेली के इलेक्ट्रिकल और इलेक्ट्रॉनिक्स इंजीनियरिंग विभाग द्वारा एक दिवसीय तकनीकी उत्सव का आयोजन 5<sup>th</sup> March-2022 को किया गया

दिन की शुरुआत उद्घाटन समारोह के साथ सरस्वती वंदना और दीप प्रज्वलन से हुई। गणमान्य व्यक्तियों को पौधे और बैज भेंट किए गए, जिसके बाद एच.ओ.डी, एसआरएमएससीईटी डॉ. ए.एस. यादव द्वारा स्वागत भाषण दिया गया।

संबंधित श्रोताओं को डीन शिक्षाविद डॉ. प्रभाकर गुप्ता के द्वारा संबोधित किया गया और टेक उत्सव 2K22 के संपूर्ण उद्देश्य की शुरुआत की गई।

इस दिन टेक-टॉक, सर्किटटिक्स, डिकोड द हिडन, सैपशॉट, रिग द बेल, कॉफ़्री क्लैच, वेबोप्स, लाइन फॉलोअर रोबोट जैसे कई कार्यक्रम शामिल थे, जिसमें छात्रों द्वारा सभी के साथ एक उत्साहपूर्ण भागीदारी दिखाई गई।

अंत में, कार्यक्रम समापन और पुरस्कार वितरण समारोह की ओर अग्रसर हुआ जिसमें सभी आयोजनों के योग्य विजेताओं को प्रमाण पत्र और पुरस्कार से सम्मानित किया गया।

अंत में, धन्यवाद प्रस्ताव प्रतीक गोयल द्वारा दिया गया और समारोह का समापन राष्ट्रगान के साथ हुआ।





## 2. OATH CEREMONY OF TYRO CLUB 10<sup>th</sup> March 2022

*Venue: Centennial Auditorium SRMSCET*

Tyro Club 2020-22 Oath Ceremony was held on 10<sup>th</sup> March-2022 at the SRMSCET premises, paving the way for all Tyro members to stand silent on their promises.



The ceremony of lighting the lamp along with the enchantment of Saraswati Vandana permeated the sacred vibration around the aura. Former Tyro President Ms. Shivangi Shukla addressed the spectators with her delightful words, and finally, the oath-taking ceremony of the Tyro President and the new Tyro team filled everyone's eyes with graceful enthusiasm. The event took a big turn when a farewell video for the ex-Tyro team played. Ex-Tyro President and Ex-Tyro Secretary Honored with Memorabilia. Finally, the ceremony ended in a much appreciated moment with the thanks giving of Tyro Secretary Ms. Vanshika Gupta.



The event took a great turn when a farewell video for the ex-Tyro team was played. The ex-Tyro President and ex-Tyro Secretary were honored with memorabilia. The air was filled with excitement as the piece entitled “*Zoya Khan Jawaab Do*” was performed by the students and finally the ceremony ended in a much appreciated moment with a vote of thanks from Tyro Secretary Ms. Vanshika Gupta.

All the dignitaries Hon'ble Chairman Shri Dev Murti sir, Trust Secretary Shri Aditya Murti sir, Dean academics CET Dr. Prabhakar Gupta sir, Director, Training Development and Placement Dr. Anuj Kumar sir, Director, Pharmacy Dr. Nitin Sharma sir, Principal CETR Dr. Sanjeev Puri sir, Principal IMS Dr. S.B. Gupta sir, Dean Academics CETR Dr. Ankur Kumar sir, Dean student welfare Er. Kapil Bhushan sir, Chief Proctor Dr. A.S. Yadav sir and all the guests were present during the oath ceremony.



### 3. XXI CONVOCATION CEREMONY-2022 24<sup>th</sup> March-2022

**Venue: Centennial Auditorium, SRMSCET, Bareilly**

SRMS Trust Institutions marked its 21<sup>th</sup> convocation ceremony on 24<sup>th</sup> March, 2022. The event began at 10:45 AM with MOC by Mrs. Ruchi Shah extending her warm wishes to all the dignitaries, parents and students on this pristine occasion.

The Chief Guest for day was Prof (Dr.) Pradeep Kumar Mishra, Hon'ble Vice Chancellor, Dr. A.P.J. Abdul Kalam Technical University, Lucknow and Dr. S.D. Sudarsan Executive Director C-DAC, Bengaluru.

The blessings of Goddess Saraswati were invoked by the lamp lightening ceremony and Saraswati Vandana.

It was followed by a welcome address from Hon'ble Chairman, Shri Dev Murti Sir. Prof. (Dr.) Prabhakar Gupta sir presented the annual academic report. Finally, the convocation was declared open by the Hon'ble Vice Chancellor sir. Henceforth, the guests delivered the convocation address and blessings.

The degrees were distributed to the M.Tech, MCA, M. Pharma, MBA, B.Pharma, B.Tech CET & CETR students. It was wrapped up by the distribution of medals and cash prizes to special awardees.

Hon'ble Vice Chancellor of Dr. A.P.J. Abdul Kalam Technical University, Lucknow has given Deeksha to all the Degree Recipients and awarded the degrees to all the successful students of various courses of **SRMSCET Bareilly, SRMSCET & CETR Bareilly and SRMSCET Unnao.**

It was a moment of optimism for all the degree holders. After this, the Medals were conferred upon to the meritorious students with Cash Prizes for their Excellent Academic Performance during the course.

Total 15 Gold Medals, 6 Silver Medals and 6 Bronze Medals were awarded to the meritorious students of various courses. The names of Gold Medalists of different courses were:

1. Er. Ashita Saxena (B.Tech)
2. Er. Prem Prakash gupta (B.Tech)
3. Er. Nikita Verma (B.Tech)
4. Er. Ankit Haseeja (B.Tech)
5. Er. Shailesh Kumar Yadav (B.Tech)
6. Er. Chirag Mehrotra (B.Tech)
7. Er. Km. Pragati Patel (B.Tech)
8. Er. Aniket Sharma (B.Tech)
9. Er. Lalita Kashyap (B.Tech)
10. Er. Saurabh Kumar Singh (B.Tech)
11. Er. Harsh Srivastava (B.Tech)
12. Er. Faiz Zama (B.Tech)
13. Ms. Hafsa Khan (B.Pharm.)
14. Ms. Kirti Singh (MBA)
15. Ms. Apoorva Sharma (MCA)

The vote of thanks was given by Director of Pharmacy, Prof. (Dr.) Nitin Sharma sir.

The Convocation Ceremony ended with a ray of hope and joy that inspired the students to achieve great heights of success and create a new benchmark in their profession.



## FACULTY ARENA

### HOLI (FESTIVAL OF COLORS)

17-18<sup>th</sup> March-2022

होली क्यों मनाई जाती है और क्या सिखाती है।

जीवन रंगों से भरा होता चाहिए! प्रत्येक रंग अलग-अलग देखने और आनंद उठाने के लिए बनाए गए हैं। यदि सभी रंगों को एक में मिला कर देखा जाए तो वे सभी काले दिखेंगे। लाल, पीला, हरा आदि सभी रंग अलग-अलग होने चाहिए, पर साथ ही हमें इनका आनंद भी एक साथ उठाना चाहिए। इसी प्रकार व्यक्ति द्वारा जीवन में निभाई जाने वाली भूमिकाएँ, उसके भीतर शांतिपूर्ण एवं पृथक रूप से अलग-अलग विद्यमान होनी चाहिए।



उदाहरण के लिए यदि कोई व्यक्ति अपनी "पिता" वाली भूमिका कार्यालय में भी निभाने लगे तो भगवान् ही मालिक

है। पर हमारे देश में कभी-कभी नेता पहले पिता बन कर और बाद में नेता बन कर सोचते हैं।

हम चाहे जिस भी परिस्थिति में हों, हमें अपना योगदान शत-प्रतिशत देना चाहिए और तब हमारा जीवन रंगों से भरा रहेगा! प्राचीन भारत में इसी संकल्पना को “वर्णाश्रम” कहा गया है। इसका अर्थ है-प्रत्येक व्यक्ति-चाहे वह डाक्टर, अध्यापक, पिता या कुछ और हो, उससे वह भूमिका पूरे उत्साह के साथ निभाने की अपेक्षा की जाती है। व्यवसायों को आपस में मिला देने से उत्पादनियता पर विपरीत प्रभाव पड़ता है।

यदि कोई डाक्टर व्यवसाय करना चाहता है तो उसे अपने डाक्टर पेशे को प्राथमिकता न देते हुए, अलग से व्यवसाय करना चाहिए न कि चिकित्सा को ही अपना व्यवसाय बना लेना चाहिए। मन के इन भिन्न ‘पात्रों’ को अलग एवं पृथक रखना सुखी जीवन का रहस्य है औरहोली हमें यही सिखाती है।

सभी रंगों का उद्गम सफेद रंग से हुआ है पर इन सभी रंगों को आपस में मिलाने पर ये काले रंग में परिवर्तित हो जाते हैं। जब हमारा मन उज्ज्वल और चेतना शुद्ध, शांत, प्रसन्न एवं ध्यानस्थ हो तो विभिन्न रंग एवं भूमिकाओं का जन्म होता है। हमें वास्तविक रूप से अपनी सभी भूमिकाओं को निभाने की शक्ति प्राप्त होती है। हमें अपनी चेतना में बार-बार डुबकी लगानी होगी। यदि हम केवल बाहर ही देखते रहे और आस-पास के बाहरी रंगों से खेलते रहे तो हम अपने चारों ओर अन्धकार पाने के लिए मजबूर हो जाएंगे।

अपनी सभी भूमिकाओं को पूरी निष्ठा एवं गंभीरता के साथ निभाने के लिए हमें भूमिकाओं के मध्य गहन विश्राम लेना होगा। गहन विश्राम में बाधा पंहुचाने वाला सबसे बड़ा कारक इच्छाएं हैं।

इच्छाएं तनाव की द्योतक हैं। यहाँ तक कि छोटी सी/ तुच्छ इच्छा भी बड़ा तनाव देती है। बड़े-बड़े लक्ष्य अक्सर कम चिंताएं देते हैं ! कई बार इच्छाएं मन को यातना भी देती हैं।

एक ही रास्ता है कि इच्छाओं पर ध्यान ले जाएँ और उन्हें समर्पित कर दें। इच्छाओं अथवा कर्म के प्रति सजग होना या ध्यान ले जाने को “कामाक्षी” कहा जाता है। सजगता से इच्छाओं की पकड़ कम हो जाती है, और आसानी से समर्पण हो जाता है और तब अपने भीतर अमृत धारा फूट पड़ती है। देवी “कामाक्षी” ने अपने एक हाथ में गन्ना पकड़ रखा है और दूसरे में एक फूल।

गन्ना काफी सख्त होता है और उसकी मिठास प्राप्त करने के लिए उसे निचोड़ना पड़ता है। जबकि फूल कोमल होता है और इससे रस निकालना बेहद आसान है। वास्तव में जीवन में भी तो यही होता है। जीवन इन्ही दोनों का मिश्रण है! इस परमानन्द को बाहरी संसार से प्राप्त करने की तुलना में अपने ही भीतर प्राप्त करना काफी आसान है जबकि बाहरी संसार में इसके लिए बहुत प्रयास करने पड़ते हैं।

**विजय कुमार दुबे**  
**असिस्टेंट प्रोफेसर**  
**एम.सी.ए. विभाग**