THE BYTE Magazine

JUNE 2016

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An E-Magazine of CSE Department of IMS Engineering College , Ghaziabad

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PLACEMENT NEWS

THE BYTE TEAM

ARTICLE

New approach to genetic analysis yields markers linked to complex diseases

Source : MIT NEWS

Many diseases, such as cancer, diabetes, and schizophreni tend to be passed down through families. After researche sequenced the human genome about 15 years ago, they had hig hopes that this trove of information would reveal the genes th underlie these strongly heritable diseases.

However, around 2010, scientists began to realize that this wasn panning out. For one, there just weren't enough patients: In order unearth a statistically significant genetic marker, researchers wou need groups of patients much larger than what they had been able assemble so far. Furthermore, many of the variants that these studi turned up were found outside the regions of DNA that enco proteins, making it much more difficult to figure out how they mig cause disease.

A new study from MIT addresses both of those problems. I combining information on gene-disease associations with maps chemical modifications known as epigenomic marks, which contr what genes are turned on, the researchers were able to identi additional genetic contributors to a heritable cardiac disorder th makes people more susceptible to heart failure.

"This approach overcomes a major hurdle in the human genetics fie and addresses an important question surrounding the hidd heritability of many complex traits," says Laurie Boyer, the Irw and Helen Sizer Career Development Associate Professor of Biolo and Biological Engineering at MIT and one of the senior authors the study.

This strategy could also shed light on many other inherited disease the researchers say.

"The exciting part is that we've applied this to one trait in one tissu but we can apply this now to basically every disease," says Xinch Wang, an MIT graduate student and the paper's lead author. "T new direction for us now is to target some of the bigger diseases li cholesterol-related heart disease and Alzheimer's."

Manolis Kellis, a professor of computer science and a member of MIT's Computer Science and Artificial Intelligence Laboratory and of the Broad Institute, is also a senior author of the paper, which appears in the May 10 issue of the journal *eLife*.

Finding patterns

Since the human genome project was completed, scientists have compared the genetic make-up of thousands of people, in search of genetic differences associated with particular diseases. These studies, known as genome-wide association studies (GWAS), have revealed genetic markers linked with type 2 diabetes, Parkinson's disease, obesity, and Crohn's disease, among others.

However, in order for a variant to be considered significant, it must meet stringent statistical criteria based on how frequently it appears in patients and how much of an effect it has on the disease. Until now, the only way to yield more significant "hits" for a given variant would be to double or triple the number of people in the studies, which is difficult and expensive.

The MIT team took an alternative approach, which was to try to identify variants that don't occur often enough to reach genome-wide significance in the smaller studies but still have an impact on a particular disease.

"Below this genome-wide significance threshold lies a large number of markers that perhaps we should be paying attention to," Kellis says. "If we can successfully prioritize new disease genes in these subthreshold loci, we can have a head start in developing new therapeutics that target these genes."

To test the usefulness of this strategy, the researchers focused on a cardiac trait known as the QT interval, which is a measure of how long it takes for electrical impulses to flow through the heart as it contracts. Variations in this interval are a risk factor for arrhythmia and heart failure, which is one of the leading causes of death in the United States.

Genome-wide association studies had already yielded about 60 genetic markers linked with variations in QT interval length. The MIT team created a computer algorithm that first analyzes these

known markers to discover common epigenomic properties amor
them, and then uses these properties to pick out subthreshold genet
markers with similar properties that make these markers like
contributors to the disease trait.
This analysis revealed that many of the known, significant genet
variants were located in parts of the genome known as enhancer
which control gene activity from a distance. Enhancers where the
variants were found were also active specifically in heart tissu
tended to be located in DNA regions that are more likely to
regulatory, and were found in regions that are similar across prima
species.
The researchers then analyzed the variants that were only weak
associated with QT interval and found approximately 60 addition
locations that shared most of these properties, potentially doubli
the number of candidate regions previously identified using genet
evidence alone.
Next, the researchers sought to predict the target genes that the
genetic variants affect. To do so, they analyzed models of the thre
dimensional structure of chromosomes to predict the long-distan
contacts between enhancer regions harboring subthreshold varian
and their potential target genes. They selected about two dozen
those genes for further study, and from their own experimen
combined with an analysis of previous gene knockout studies, th
found that many of the predicted new target genes did have an effe
on the heart's ability to conduct electrical impulses.
"This is the smoking gun we were looking for," Kellis says. "We no
have genetic evidence from humans, epigenomic evidence from hear
cells, and experimental data from mice, together showing that the genetic differences in subthreshold enhancers influence heart function."

Skipping ahead

Boyer's lab now plans to apply this approach to learning more about congenital heart defects.

"We know very little about the genetic etiology of congenital heart defects. Every 15 minutes a baby is born with a congenital heart defect, and it's a devastating set of defects," she says. "We could now go back to some of these genomic and epigenomic studies to improve our understanding of the biology of these different defects."

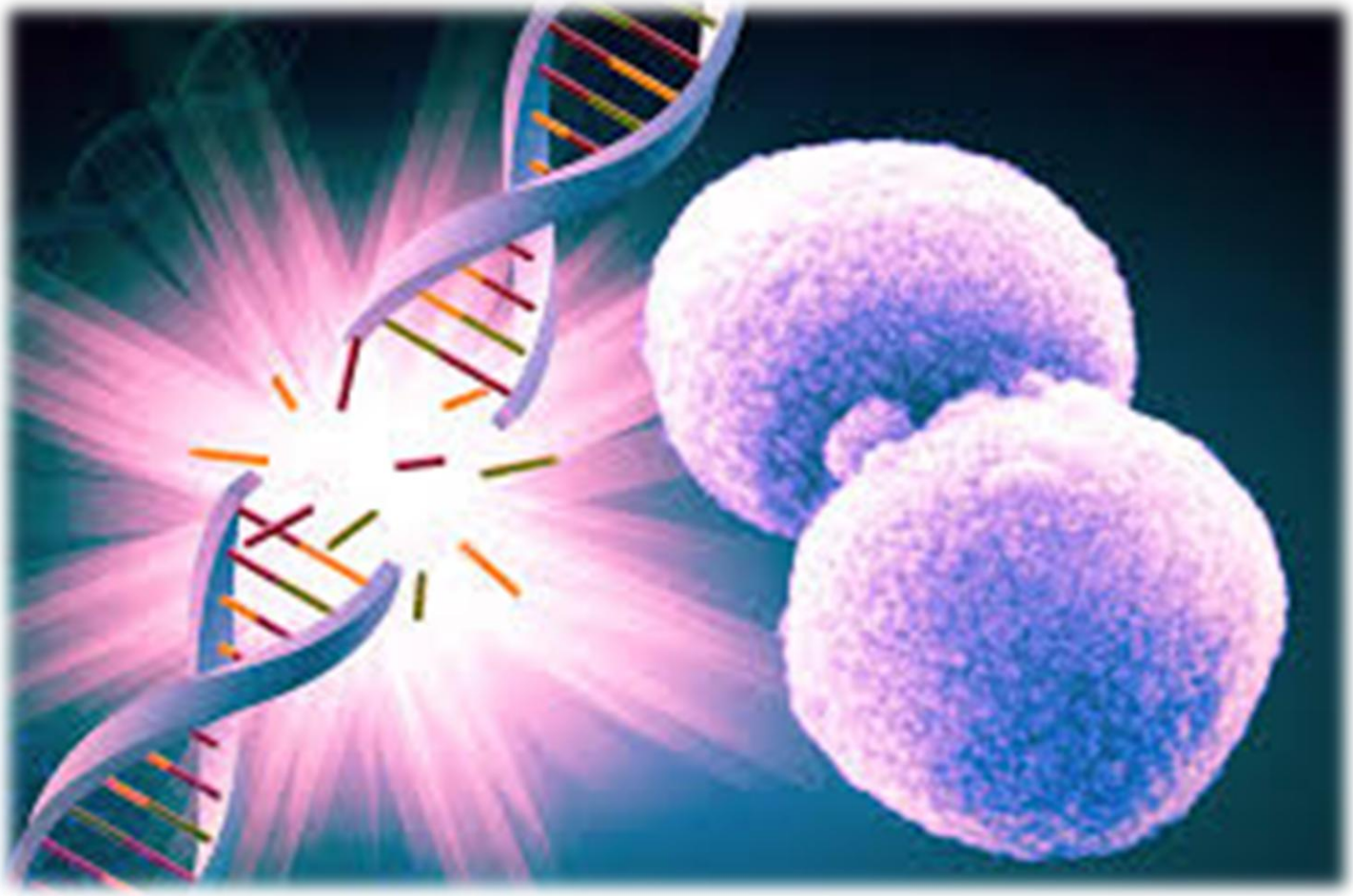
This approach developed by the MIT team is general and should allow researchers working on many traits to identify genetic markers that are invisible when using genome-wide association studies alone. This can speed up the development of new therapies, especially for rare diseases, where gathering sufficiently large groups of patients can be very difficult and sometimes impossible.

"Instead of waiting for years until subthreshold variants are elucidated with genetics, we can skip ahead and begin characterizing the prioritized regions and genes immediately," Boyer says.

"We expect that an expanded set of candidate drug targets can shorten the path to new therapeutics by decades for many devastating disorders, and help translate these insights into tangible improvements in human health," Kellis says.

The research was funded by the National Institutes of Health and the National Health, Lung, and Blood Institute Bench to Bassinet Program.

Other institutions contributing to this study include Massachusetts General Hospital, and the Hubrecht Institute and the University of Groningen, both in the Netherlands.



INDIA LAUNCHES PROTOTYPE SPACE PLANE ON 1ST TEST FLIGHT

BY : Amit Kumar Gautam
Asst . Proff.
Dept. Of CSE

On May 23, 2016 local time, India launched the first test flight of its Reusable Launch Vehicle Technology Demonstrator, a winged, unmanned spacecraft that resembles a miniature space shuttle. The uncrewed vehicle launched atop an HS9 rocket from Satish Dhawan Space Center, on Sriharikota Island just off the east coast of India, at 9:30 p.m. EDT Sunday (1:30 a.m. GMT; 7 a.m. India Standard Time on Monday, May 23.

The rocket fired for 90 seconds, taking the 1.5-ton space plane to a maximum altitude of 40.4 miles (65 kilometers). (It's generally accepted that the boundary where outer space begins is located at 62 miles, or 100 km, above Earth's surface.)

The 21-foot-long (6.5 meters) RLV-TD then came back down to Earth, hitting the atmosphere at five times the speed of sound and ultimately splashing down in the Bay of Bengal at a designated spot about 280 miles (450 km) from the launch site, ISRO officials said. They declared the 770-second mission a success.

"In this flight, critical technologies such as autonomous navigation, guidance and control, reusable thermal-protection system, and re-entry mission management have been successfully validated,"

The RLV-TD, a key step forward in India's goal of developing a reusable orbital launch system, is the latest in a series of robotic space planes to take flight.

For example, the U.S. Air Force's X-37B vehicle — which is slightly bigger than the RLV-TD, at 29 feet (8.8 m) long — has performed four classified orbital missions since 2010, including one that is still going on today. And the European Space Agency launched its Intermediate eXperimental Vehicle (IXV) on a brief test flight to suborbital space in February 2015.

Then there are the crewed space planes. The most famous, of course, was NASA's space shuttle, which carried astronauts on a total of 135 orbital missions between 1981 and 2011, when the fleet was retired.

The Soviet Union also developed a similar shuttle, called Buran, which was designed to carry crews, but whose single spaceflight, in 1988, was uncrewed. The Buran program was canceled in 1993, shortly after the fall of the Soviet Union. Several crew-carrying private space planes are currently in development as well. Virgin Galactic and XCOR Aerospace are working on suborbital vehicles called SpaceShipTwo and Lynx, for example, and Sierra Nevada Corporation is building an orbital space plane called Dream Chaser.

Scientists Find New Way to Generate Random Numbers, Encryption Could Get a Boost

Dr. Upasana Pandey
Associate Professor, CSE

Two researchers from the University of Texas have published a paper that details a new algorithm for combining two sources of entropy to obtain a higher-quality random number that can be used to bolster encryption operations with less computational resource usage.

The world of computer science and encryption is ablaze with discussions about the "Explicit Two-Source Extractors and Resilient Functions" study published in July 2015 but recently updated in March, which details a theoretical breakthrough in regards to random number generation.

For a long, long time, the weakness in CSPRNGs (Cryptographically-Secure Pseudo-Random Numbers Generators) was the origin of the random number, called entropy source or entropy pool.

In most cases, for many computer systems, this is taken from the user's mouse movements, keyboard input, disk IO events, signal interrupts, network packet inter-arrival times, or other hardware-based events.

Depending on the existing entropy pool at the time when a cryptographic system pulls the random number for its operations, the source of this number indirectly dictates the quality of encryption. Most attacks on encryption systems are aimed at weak random number generation sequences and sources.

Algorithm is viable only in theory, no practical implementation available

What the two researchers managed to do is to devise an algorithm that removes the need for one high-quality source of random numbers. Their algorithm allows developers

in theory for now, to merge two lower-quality sources and obtain a high-quality number.

The work of David Zuckerman, a computer science professor, and of Eshan Chattopadhyay, a graduate student, both at the University of Texas, was welcomed with open arms by the computer science community.

Xin Li, an Assistant Professor at the Department of Computer Science of the Johns Hopkins University, has already started to put effort into deriving the algorithm to work with more sources.

Taking into account that this algorithm is also resource-light and stronger at the same time, its technical implementation might be only a matter of time, with countless smartphones and IoT devices awaiting a boost in security.

LATEST TECHNOLOGY

INDIAN RAILWAYS GOES GREEN AS SOLAR-POWERED TRAIN

Aiming to materialise its ambitious plan of harnessing solar energy to run trains, the Indian Railways is set to try its first train powered by the solar panels.

Gopal Sharma, the PRO North Western Railways told ANI that the trial run of this train will be conducted by the end of this month.

"This train will be run as a passenger train, the route to be decided after the trial run. This is the initiative by the Railways to make use of alternative source of energy," he said.

"The prototype of the solar power-enabled coach where the entire train will be fitted with solar panels is going to be used for the trial," he added.

Sharma further said that as per the plan, the train would be pulled by conventional diesel-run engines while the solar panels will provide all the internal electricity needs for lights and fans on both AC and non-AC coaches.

When asked on the profits the Railways aims to generate by using these solar panels, Sharma said that this can be ascertained only after a trial run is over. Meanwhile, the Indian Railways has been focusing on alternate source of fuels with trials already on to use CNG, biodiesel and natural gas among others.

According to studies, a train using solar power can reduce diesel consumption by up to 90,000 litres per year and also bring down the carbon dioxide emission by over 200 tonnes. The CNG is being used in local trains on Rohtak-Rewari section of Delhi Division. The dual fuel concept of using CNG and diesel has also helped in saving fuel and money.

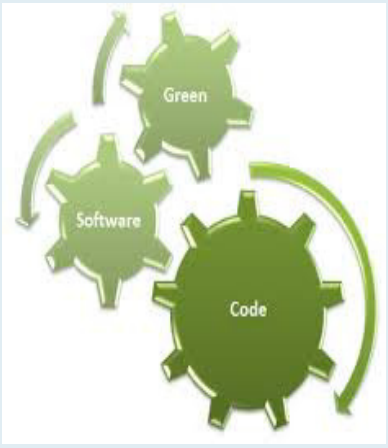
THE BYTE, JUNE 2016

Programmers Aren't Writing Green Code Where It's Most Needed

LIPIKA GOEL

Asst.Prof, CSE Dept.

Confession? We don't write green code. We mean, it might be green code just by coincidence, but we never really thought too much about the relative energy consumption demanded by this design pattern or algorithm versus some other. Sadly, this is true even when we are working with actual hardware and low-level software, such as that written in plain C for embedded devices (in my case, for an Arduino board or other microcontroller platform). What's more, we don't think the green code idea has *ever* come up in years of computer science classes.



According to the 38th International Conference on Software Engineering. In interviews and surveys conducted with 464 software engineers from a range of disciplines—including mobile, data center, embedded, and traditional software development—researchers found that where green coding most matters, its practice is rare.

"Despite its increasing popularity as a research topic, little is known about practitioners' perspectives on green software engineering," the paper notes. "Even basic questions such as 'What types of software commonly have requirements about energy usage?', 'How does the importance of reducing energy usage compare to other requirements?', and 'How do developers find and correct energy usage issues?' do not have clear answers."

"Despite its increasing popularity as a research topic, little is known about practitioners' perspectives on green software engineering,"

Green software development is as it sounds. In their own words, the researchers behind the new paper, a team drawn from IBM, Google, Microsoft, and the University of Delaware, were looking specifically for answers relating to how software engineers think about battery life/energy usage when they write requirements, design, construct, test, and maintain their software.

The researchers presumed that, of the different flavors of developer surveyed, those writing software relating to mobile devices, data centers, and embedded systems would be most likely to use green practices. These are, after all, the domains where energy use is most critical.

"Based on the interviews, we initially theorized that practitioners with

experience in mobile ('battery life is very important, especially in mobile devices'), data center ('any watt that we can save is either a watt we don’t

have to pay for, or it’s a watt that we can send to another server'), and embedded ('maximum power usage is limited so energy has a big influence on not only hardware but also software') would more often have requirements or goals about energy usage than traditional practitioners ('we always have access to power, so energy isn’t the highest priority')."

This turned out to be accurate for only mobile developers, who used green practices more than any other group, with 53 percent reporting that they "almost always" or "often" wrote applications with energy usage requirements. For embedded and data center developers, 75 percent and 86 percent of those surveyed rarely or never programmed according to energy usage requirements, respectively.

As to why this is, the researchers were able to get some insight from more qualitative interviews with study participants. The reasons given aren't actually all that surprising. In the words of one data center program manager:

Main concern is marketshare and that means user experience is a priority. We can be more efficient to try to cut costs, but since we don’t charge by energy used this doesn’t make us more attractive to users. So we tend to focus on other things like performance or reliability.

Embedded systems developers, meanwhile, offered several reasons for disregarding energy usage. One of these is that, while embedded systems usually involve programming at hardware levels, the systems involved very often have access to non-battery power. Another reason given was that developers often rely on hardware and not software to provide energy efficiency. And finally: “Ensuring the deterministic, real-time behaviour of our embedded device is more important than saving energy.”

LITERARY

WORKING WOMEN....

Deeksha Upadhyay
IT 2ND YR

Today there is no field where the women have not shown their worth. From holding highest public office in bureaucracy to holding highest political position, the women have shouldered all kinds of responsibilities with grand success. A lot of change has taken place, in their position in this man dominated society. With this gradual transition from household life to working women the sufferings of women have increased manifold.

The women were the centre and foundation of the social and cultural life of the family. Men make houses and women make homes' is the traditional belief. The duties of woman were just contained to bring up the children, and caring every family member with her loving and amiable, characteristics which she naturally owes. It was the traditional faith that man is for thy field and woman for the home.

Today the women enjoy equality of status, equality of opportunity with men. She became financially independent and economically sound, she became the major decision maker, and she became the policy maker in various new fields. She ventured into outer field During office hours she has to work equally or say more sincerely than her male counterparts. She has to fulfil her duties at home even after office homes. The working atmosphere in the offices, particularly, for the women is also not so congenial. Most of the male counterpart treat the woman an easy scope goat for fulfilling their sexual desires.

The incident of intentional touching, double meaning dialogues, unwarranted comments, piercing in her private affairs are some of the common examples which create lot of irritation and make the women unnecessarily defensive. The incidents of one side sexual advancement by the boss, staring at her body parts, alluring her with quick promotion in return, are generally to be faced by a working woman. With women entering into new fields, she become more vulnerable to the dangers like eve-teasing, sexual advancement, transfers, etc. The women can only explain to have frights and hardships experienced by her while working in office. In the present male dominated, patriarchal society, people find it difficult to accept the women as independent personality. In addition to these hardships, the women are bound to play the traditional role of child bearing and child rearing. She can't desist from her role as a mother and as a wife

Our society had been a male dominated society; the changes are gradually being digested. With necessity of time absences of joint families the financial independence of women are making the male absorb the change slowly but gradually.

I'd love to see more women working as Managers and CEOs...

THE BOY MIDNIGHT & PARK....

Anurag Mishra
Asst.Prof. . CSE

Kamal is a very frequent face in our society. Doing odd jobs for most of the residents for the sake of a piece of sandwich or frozen bread. He speaks very little, never comb his hair, I think he never baths too. He monitors everything so keenly, so much deep sense of analysis in him with tons of inputs with zero output. Kamal had a family just two months ago. His mother used to work as maid in the society and his father was security guard. But God had destined him a lonely long life ahead. He lost his family in a accident, when a blue line bus tried its best to finish every hope of life for 7 year old boy.

We have a park in our society with a small merry go round, one ladder game with a net for cricket boys. Park remains almost full with kids till dinner or till their parents don't come from their work place. After it, park observe a silence for next 20 hours. This was daily routine of the park. serving for 4 hours a day. I never saw Kamal in the park, even not, when his parents was employee of the society. And of course these middle income group residents showing off as one of the richest persons of the world or universe would mind a lot if their kids will play with a boy like Kamal.

Kamal was not a regular employee at any home, because as per govt rules, nobody can hire him as servant or house hold slave. Its Friday night, time around3:43 am, i am still asleep, we never took any kind of help from Kamal, no matter even we never gave a single rupee or a frozen bread to him. I am not comfortable at all in assigning a work to a boy who really deserve something else. I certainly fear from this combination right persons, wrong time, wrong work. But others was very much used to of it, with easy scolding practices with Kamal. Some also tried their beating capabilities over him. but children have small memory for such things, they often assumes these cruelness of the world with the scolding of their parents. I decided to write this at this moment only because I could not express better if I write it next morning. around 3 hours before I heard some mechanical voices which used to roam around in the society within four evening hours. I could not resist myself from being in the balcony to check who is using park in the midnight. I saw almost all the ferries busy out there without even finding anyone merry were rounding at slow pace, see-saw was oscillating. I saw a boy sitting at the top of the ladder on the verge of sliding, but he was not sliding. I waited in the balcony to see him sliding. My flat is at 10 th floor and its hard to identify someone at around 1 in the night with dim light of post lamps. I decided to check out myself who be in the park so late, so busy. As I approached the park I could identify the face in the park, Kamal was there to fulfill his dreams for thousands of the evenings. He was playing like this is his first and last chance of his life to play in this park. He was happy, satisfied and most importantly childish. I felt good, I wanted to see him playing in the park for 20 hours every day.

Value of the park could not been better served. I took my cell phone out and told him to make various poses at every bit of the park. initially he resisted but easily was in its comfort zone. He was so happy without even I had hardly offered anything in terms of food or money. I said him Kamal, enjoy every night in the park. he didn't tell anything as usual..

Was smiling....thinking....analyzing……..

Q & A

This is why F and J keys have a raised bump on your keyboard

99.99% of keyboards have bumps on the 'F' and 'J'. A good amount of people don't know why.

The 'F' and 'J' keys have bumps so that you can feel them. If you know where these 2 keys are, you can find all the other letters by feel.

For "Touch typing" you put your left pointer finger over the 'F' and your right pointer finger ofer the 'J'. However, this isn't good enough for some people. The reasons why varies. Some people work with their hand and have developed callouses. Other times, the keyboard's bumps are too tiny or may have been worn down. Other times, people use the number keys or the function keys and need "Bumps" on them to find them without looking down. Some people with low vision use them as well to help them type better.

That is why there are after market KeyboardBumps™. Purchase them if you want to use your keyboard better.

Today's above 80% people have android phone. So here I am come with the solution of this problem. Android is an operating system for phones which developed by Google. Above one millions android phones are sold every day that is inform by Google. Now the day, every one does their work on android devices like browsing, Shopping, Banking, entertainment and so more. People also want to save his/her important data on it. And then sometimes your most important data are deleted accidentally. If your data are deleted from Computer or laptop there is many recovery methods and with the help of these you can easily recover your data. But what you can do if this problem comes on your Android device. If you don't know about **How to Recover Delete Data from Android** so do not worry about it. Because today I am sharing best method of **How to Recover Delete Data from Android with**you.
So Let's Start: – **How to Recover Delete Data from Android?**

Method 1. Use Dumpster Android App

Dumpster is an app of Android Devices for save data it can works like Recycle bin on Computer's OS. Dumpster Android app is the best recovering app when your data is deleted from your android phones. With the help of Dumpster Android App you can easily recover delete Files or data from your Android using dumpster app. Dumpster can recover all type of data like pdf, zip file, doc file, images, videos, audio , mp3, mp4, avi file, mpg file, jpg, rar and all common file type. You don't need to root your device and also do not required internet connection.

Feature Dumpster Android App

1. *No internet connection required*
2. *Rooting Android is also not required*
3. *Can Restore backup by single click*
4. *Preview your deleted before recovering*
5. *Can also Send your data to dumpster server*
6. *Scheduled auto-clean of old deleted data*
7. *Auto clean backup files at a given period*

1. Download and install Dr Fone software

Firstly download and install Dr. Fone software. Once the software install on your computer for recover your data.

2. Connect your Android device to computer with the option USB Debugging

After successfully installation of software now you have to need a connection from your phone to pc with the option USB Debugging.

Go to Phone **Setting** => **About Phone** => **Developed option** => **USB debugging**.
Now connect your android device to computer.

3. Analyze and Choose Scan mode

Now analyze your android phone first then choose scan file. After completing scan you have to click **"Next"**, you will select file type (Image, Video, Messages, Audio, Contact etc) which you want to recover.

4. Preview your Data

After all process you can easily preview your data which you want to recover. After that click on **"Recover"**.

5. Safe your data for future

Once you click on recover option. Your data will save in your computer. Now copy data and paste it on safe place.

PLACEMENT NEWS

PLACEMENT NEWS

UNION BANK OF INDIA RECRUITMENT 2016: 208 SPECIALIST OFFICERS

Post Name: Specialist Officer

Credit Officer: 150 posts

Chartered Accountant: 20 posts

Statistician: 02 posts

Information Security Officer: 02 posts

Manager (Risk): 10 posts

Assistant Manager (Risk): 08 posts

Security Officer: 16 posts

Age Limit as on 1st May 2016: 21-40 years

IMPORTANT DATES:

Last date for Apply Online : **10.06.16**

Apply online: **http://www.unionbankofindia.co.in**

Qualification:

Credit Officer: Bachelor Degree in any discipline from a recognized University/ Institution/Board and Certificate from a recognized Institution

Chartered Accountant: Candidate should have completed/passed final examination of Chartered Accountant

Statistician: Masters in Statistics from a University/Institution/Board recognized by Govt. of India/approved by Govt. Regulatory bodies

Information Security Officer: Bachelor of Engineering/Bachelor of Technology in Computer Science/Information Technology/Electronics/Electronics & Telecommunications/Electronics & Communications/Information Science & Engineering from a University/Institution/Board

Manager (Risk): Post Graduate degree with specialization in Finance from a University/Institution/Board or MBA/Post Graduate Diploma in Business Management with specialization in Finance

Assistant Manager (Risk): Post Graduate Degree with specializations in Finance from a university/institution/board or MBA/Post Graduate in Business Management with Specialization in Finance

Security Officer: Graduate degree in any discipline from a university/institution/board

Selection Procedure: Online Examination and/or Group Discussion and/or Personal Interview

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Dear Readers

We write this in a positive frame of mind and we're really glad that we've got this far.

It was crazy when we started it but when it all came together we were more than happy.

The whole industry is undergoing profound changes and we'll be talking about a few of them.

We're very proud of the work displayed here by the writers, photographers and designers who made this issue possible.

We hope you enjoy reading these articles, as seen through the IMS student's journalistic eye.

.....FROM THE BYTE TEAM