Department of Computer Science & Engineering

VISTARA
"The Connecting Dots"

(A Annual App Based Magazine)
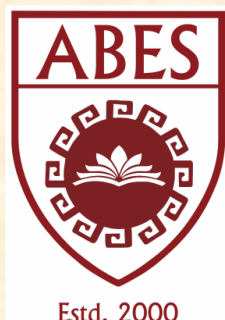
ABES Engineering College, Ghaziabad
(Session: 2017-18)

Website: www.abes.ac.in

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Department of Computer Science & Engineering, ABES-EC, GZB.

Message from Director's Desk

It is gratifying to learn that Department of CSE is coming out with an *e-newsletter* encompassing recent accomplishments and future projections. Bright and talented students usually perform remarkably well, however it is heartening to see a weak student from a rural background progress steadily from poor performance to better performance, moving towards excellence.

Prof. (Dr.) M. K. Jha

I congratulate the department for NBA accreditation and while preparing for it everyone must have realized future challenges and the level of efforts needed in future. Education is not an act of acquiring knowledge but learning a skill to lead life and forming one's personality. I envisage, in the coming years, a strong need for interdisciplinary talent to be imparted to students. This requires a different level of preparation level to be attained by faculty members.

I am confident that the *e-newsletter* would be thought provoking and would help in dynamic team development in line with future requirements.

With best wishes,
Prof. (Dr.) M. K. Jha

Department of Computer Science & Engineering, ABES-EC, GZB.

Message from HOD's Desk

Computer Science deals with the theory and methods of processing information in digital computers, but when we add engineering to it then it deals with design and build of computer hardware and software, and the applications of computers in science, business and arts. The department is providing learning based state-of-the-art education in computer science with its clear vision and mission since its inception. We have ICT equipped lecture halls and laboratories with latest hardware and software facilities.

Prof. (Dr.) Shailesh Tiwari

Computer Science & Engineering Department is a NBA accredited department. Now a day's globalization of academic and applied research is growing with speedy pace. Computer Science & Engineering stream has several heating areas with lot of thrust. Currently our education system is not in its best shape and will require lot of efforts to improve it. The main challenge for technical institute is to make a balance between curriculum delivery and value-addition. Technical education needs collaboration with industries so that we can bridge the gap between academia and industries.

This need lot of support from industries. We have already started some initiatives that offers joint program in different domains. Such initiatives bring critical changes in technical education and enhance practical knowledge, information about latest technical and industry trends. We have to inculcate value-addition courses with curriculum that deliver the current technical needs of the industries and students become industry ready.

A technical skilled engineer can also think about entrepreneurship initiatives. Our department is doing lot of efforts to bridge the gap between academia-industry.

Department of Computer Science & Engineering, ABES-EC, GZB.

Message from Editorial Team

The magazine Vistara is an idea behind which a dream and an aspiration is bounded. A dream seen by a student who had faced lack of information in past few years in his college life.

This will provide a platform to the talented one's and will aware the student as well as personnel who is part of ABES-EC Family.

Our theme line says a lot "connecting dots". Everyone has certain passion which should be grown but the thing we face is misleading from our aim or in my words "dots".

So we are here to connect these dots.

Editorial Team

Anjali Grover (Assistant Prof.)
Dr. Akash Punhani (Associate Prof.)
Rohit Rastogi (Associate Prof.)
Saurabh kr. Srivastava (Assistant Prof.)
Prof. (Dr.) B.P Sharma
Anurag Waliya (Assistant Prof.)
Rohan Tyagi (3rd year)
Saket Kushwaha (3rd year)

Department of Computer Science & Engineering, ABES-EC, GZB.

January-2017 (13 -14 January 2017)

Two Days FDP on "Digital Image Processing and Data Sciences"

Image processing is more accurately defined as a means of translation between the human visual system and *digital* imaging devices. **Data science**, also known as **data**-driven **science**, is an interdisciplinary field about **scientific** methods, processes and systems to extract knowledge or insights

from **data** in various forms, either structured or unstructured.

Manasvivani , Ghaziabad
17.01.2017, Tuesday : P-3

एबीईएस में उत्कृष्ट कार्यक्रम आयोजित

गाजियाबाद। एबीईएस-ईसी में डिजीटल इमेज प्रोसेसिंग और डाटा साइंस पर शिक्षक उत्कृष्टता कार्यक्रम का आयोजन एबीईएस इंजीनियरिंग कॉलेज में कंप्यूटर साइंस एंड इंजीनियरिंग विभाग द्वारा डिजीटल इमेज प्रोसेसिंग और डाटा साइंस के विषय पर शिक्षक उत्कृष्टता कार्यक्रम (फैकल्टी डवलपमेंट प्रोग्राम) का आयोजन किया गया। इस शिक्षक उत्कृष्टता कार्यक्रम का उद्देश्य इमेज प्रोसेसिंग, विश्लेषण और कम्प्यूटेशनल इंटेलिजेंस जैसे क्षेत्रों में काम कर रहे विभिन्न विभागों के शोधकर्ताओं और संकाय सदस्यों को वास्तविक दुनिया में विकसित होने वाली समस्याओं के समाधान पर ध्यान देने के लिए किया गया था। इस सत्र के उद्घाटन में कंप्यूटर साइंस एंड इंजीनियरिंग विभाग के विभागाध्यक्ष प्रो0 शैलेष तिवारी ने डीआई एवं अनुसंधान क्षेत्र में डाटा साइंस के महत्व पर प्रकाश डाला।

Speaker Details:

Dr. K. V. Arya from IIITM, Gwalior
Dr. Shampa Chakrabarty from NSIT Delhi
Ms. Shilpi Sengupta a freelancer
Dr. M.A. Ansari from GBU Gr.Noida.

Participants Details: Entire CSE department

Technovation'17

Technovation club is part of CSE Department, under the banner of this club CSED organizes events every year to acknowledge and appreciate the exceptional and outstanding performance and efforts of teachers, students and administration of the college. This year it was held on 20th April 2017. We as a technical club appreciate the hilarious performances of students by awarding them prizes and certificates. This year too we awarded some outstanding performances in various events which includes Photoshop workshop, C++ Workshop, Apti-Stumper, Mega event-"Vertigo" and various others. We were also accompanied by our last year members of Technovation club including alumni.

Last year Club heads **Naveen Gupta** and **Shwet** passed on their responsibilities to **Apoorv Saran** and **Pooja Manchanda** of current 3rd year batch. The whole prize distribution ceremony went successfully under the mentorship of **Anmol Jain** Sir and **Mradul Jain** Sir.

Department of Computer Science & Engineering, ABES-EC, GZB.

CSI Student Chapter

Skill Expo'17

Skill Expo 17 was organized by ABES CSI Student Chapter under the guidance of **Prof. Yogesh Mittal (SBC CSI &HoD MCA).**
The event was held on 31-March-2017, and was a grand success. More than 230 students from ABES and other colleges from Delhi NCR took active part in this. The event was coordinated by Mr. Parul kundra (Asst. Prof. MCA) and Mr. Desh Deepak Pathak (Asst. Prof. CSE).

There were two events -
Coding
> Event was held online using hackerrank.com
> There were 10 questions.
> Time limit was 1 hour.
Debugging
> This event was held offline in computer labs.
> There were 3 bugged coded in C/C++ and Java.
> Students were desired to do all questions in any one language

The list of winners is as follows:

Coding Winners List

Debugging Winners List

Position	Participant Name		College	Cash Prize
1	Shubham Srivastava	Vasudeva dixit	ABESEC	1500
2	Ashutosh Chauhan	Arpit gupta	ABESEC	1000
3	Shivam khatri		ABESEC	500
Consolation	Sachin	Kishun Vishwkarma	ABESEC	Nil

Position	Participant Name		College	Cash Prize
1	Charvee Garg	Purnima Ajith	ABESEC	1500
2	Tarun Sethia	Shreya Bharti	ABESEC	1000
3	Kartik Chahuan	Rajat Sharma	AKGEC	500
Consolation	Nandini tayal	Mitali Saxena	ABESEC	Nil

Participation	No. Of students
Insiders	211
Outsiders	20
Total	231

Department of Computer Science & Engineering, ABES-EC, GZB.

Feb-2017 (09-10 Feb 2017)

3rd IEEE International Conference

ABES Engineering College organized two days 3rd IEEE International Conference on Computational Intelligence and Communication Technology (CICT 2017) on Feb 9-10, 2017. In this conference, More than 300 papers were submitted from national and international authors in the conference and about 130 papers were presented by researchers from industry and academia. Researchers from China, Taiwan, South Korea, and other countries participated in the conference.

Dr. Mohan L. Kolhe presented his views on 'Smart Grid- Charting a New Energy Future". He explained that modern source of energy for transport will be Hydrogen. Dr. T.C. Sami, DRDO, Kanpur enlightened the audience on topic" Smart Materials for stealth application in defense". Dr. S. N. Singh, IIT Kanpur presented his talk on topic-"Intelligent System Applications in Solving Engineering Problems". Dr. J. Ram Kumar, IIT Kanpur also presented his talk.

Dr. Arvind Chaubey from NIT Jamshedpur presented his talk on "Soft Computing Approach to Communication Systems". Various esteemed person from different institutes from India presented their research work on different stream like Computational Science, VLSI Design, and Communication Technology etc. Dr. Vishal Goel, Dr. Deepak Kumar, Dr. S. S. Tyagi, Dr. Vineet Sharma, Prof. Sanjeev Gupta were present on the occasion.

Faculty Seminar

Month – 28thJan 2017

- **Ms. Manu Sharma** – "Research areas in Artificial intelligence"

Ms. Manu discussed various topics which are trending in artificial intelligence area.

- **Ms. Neha Shukla-** "Research areas in Data Mining"

Ms. Neha explained the various techniques such as BOW, identification of the texts through cuckoo search and particle swarm optimization.

- **Ms. Nupur Chauhan-** "Research areas in Soft Computing"

Ms. Nupur discussed a local search enhanced differential evolutionary algorithm for sparse recovery. Signal recovery problem in compressed sensing can be mathematically modelled as a regularized problem, which aims at searching a sparse solution.

PAPER PRESENTED/ PUBLISHED IN INTERNATIOAL CON-FERENCE

- Shailesh Tiwari et al. "Secure message broadcasting in VANET over Wormhole attack by using cryptographic technique " at "International Conference on Computing, Communication and Automation (ICCCA) ", Greater Noida, 21 December, 2017.

- Saurabh Kr. Srivastava, Roshan Kuamri and Sandeep Kr. Singh ,"An Ensemble Based NLP Feature Assessment in Binary Classification " at "ICCCA ".Greater Noida, 21 December, 2017.

- Manu , A. Goel , "Encryption algorithm using dual modulus " at "3rd International Conference on Computational Intelligence & Communication Technology (CICT) ", Ghaziabad, 13 July, 2017.

- Munesh C. Trivedi, Vikash Kumar Singh, Mohan L. Kolhe, Puneet Kumar Goyal, Manish Shrimali , "Patch-Based Image Denoising Model for Mixed Gaussian Impulse Noise Using L1 Norm " at conference on "Intelligent Communication and Computational Technologies ",10 oct 2017

- Nishit Walter, Nitin Rakesh, Rakesh Matam, Shailesh Tiwari , "KRUSH-D Approach for the Solution to Node Mobility Issue in Underwater Sensor Network (UWSN) " at conference on "Networking Communication and Data Knowledge Engineering ", 11 Nov-2017

- Monica Sehrawat, Kushagra Goel, Yatin Agarwal , "Optimizing the performance of Edge Detection Algorithms for Digital Images " at "ICTT "12 Dec2017

- Rastogi R., Chaturvedi D.K., Sharma S., Bansal A., Agrawal A., 'Audio Visual EMG & GSR Biofeedback Analysis for Effect of Spiritual Techniques on Human Behavior and Psychic Challenges', in Proceedings of the 12th INDIACom; INDIACom-2018; IEEE Conference ID: 42835, 14th – 16th March, 2018 at BharatiVidyapeeth's Institute of Computer Applications and Management (BVICAM), New Delhi (INDIA)) ISSN 0973–7529 and ISBN 978-93-80544-14-4, pp 252-258.

- Rastogi R., Chaturvedi D.K.,Satya S., Arora N., Singh P., Vyas P., 'Statistical Analysis for Effect of Positive Thinking on Stress Management and Creative Problem Solving for Adolescents', Proceedings of the 12thINDIACom; INDIACom-2018; pp 245-251.

ARICENT- NASCOM FOUNDATION TRAINING PROGRAM

ARICENT Foundation in collaboration with NASCOM took initiative for Corporate Social Responsibility. The aim of the ARICENT foundation is "Engineering the Future". To accomplish its goal ARICENT foundation selected some premium institute for preparing industry ready engineer.

Department of Computer Science & Engineering at ABES Engineering College was one of the selected one. ARICENT conducted a test for short listing the students, and 187 students qualified the test for taking participation in training.
The training course includes technical and non technical courses. It includes Core and Advance Java with complete project guidance following SDLC, aptitude, safety and health and soft skills and communication skills. The complete duration of this training is 200 hours, which took two months to complete.

The first phase of the training was scheduled from March 21, 2017 to April 21, 2017. The trainers from industry Mr. D. Sivaram and Mr. B. Chandra Shekhar having rich experience trained our students on Java technologies.

The second phase started from June 5, 2017 to July 15, 2017. During this time students developed their complete projects using Java Technologies. The students appeared for NASCOM certification and got certification from NASCOM, which is a value added certificate for their future, as per current market scenario.

The overall program was coordinated under the supervision of Dr. Shailesh Tiwari, Head and Professor, Department of Computer Science & Engineering and program coordinated by Mr. Anmol Jain, Associate Prof. , Department of Computer Science & Engineering.

Department of Computer Science & Engineering, ABES-EC, GZB.

Faculty Participations

- **Mr. Saurabh Kumar** has attended a Seven Day Advanced Level FDP on "Human Values & Professional Ethics" Organized by Dr. Abdul Kalam Technical University, Lucknow. (10 May to 16 May 2017)

- **Mr. Gopal Gupta, Mr. Abhishek Goyal & Mr. Harsh Khatter** has attended Five Day FDP on Android Skilling at KIET, Ghaziabad. (27-31 Mar 2017)

- **Mr. Saurabh Kumar** has attended Three Days International Conference on Human Values in Higher Education at IIT Kanpur. (9-11 Feb 2017)

- **Mr. Saurabh Kumar** has given a responsibility by AKTU for Co-Facilitating a Eight Day FDP on Human Values & Professional Ethics at UIT, Allahabad. (10-17 Jan 2017)

- **Ms. Manu, Ms. Neha, Ms. Nupur** attended an International IEEE Conference "CONFLUENCE-2017" at Amity University, Noida during 12-13 January 2017.

JOURNALS PUBLISHED

[1]M. C. Trivedi, S. Mishra, and V. K. Yadav, "Metamorphic cryptography using strength of chaotic sequence and XORing method," *J. Intell. Fuzzy Syst.*, vol. 32, no. 5, pp. 3365–3375, 2017.

[2]   R. Rastogi, N. Arora, S. Satya, P. Singh Tawar, and D. K. Chaturvedi, "Study on the Efficacy of Electroencephalography Biofeedback with Mindful Meditation on Mental Health of Youths," *Int. J. Syst. Softw. Eng.*, vol. 5, no. 2, pp. 1–13, 2017.

[3]   G. Raghav and H. Khatter, "Automated Diagnosis of Blood Infections using Neural Network and Fuzzy Inference System," *J. Bio-Medical Instrum. Eng.*, vol. 2, no. 1, pp. 13–22, 2017.

[4]   S. Kumar, P. Ranjan, R. Ramaswami, and M. R. Tripathy, "Energy Efficient Multichannel MAC Protocol for High Traffic Applications in Heterogeneous Wireless Sensor Networks," *Recent Adv. Electr. Electron. Eng.*, vol. 10, no. 3, pp. 223–232, 2017.

[5]   S. Kumar, P. Ranjan, R. Ramaswami, and M. R. Tripathy, "Resource efficient clustering and next hop knowledge based routing in multiple heterogeneous wireless sensor networks," *Int. J. Grid High Perform. Comput.*, vol. 9, no. 2, pp. 1–20, 2017.

[6]   B. Sharma, R. Prakash, S. Tiwari, and K. K. Mishra, "A variant of environmental adaptation method with real parameter encoding and its application in economic load dispatch problem," *Appl. Intell.*, vol. 47, no. 2, pp. 409–429, 2017.

[7]   G. Raghav and H. Khatter, "Blood Diagnostic Disease Using the Fuzzy Inference System and Neural Network," *Journal of Research in Computer Science and Engineering*, vol. 2, no. 3, pp. 13–22, 2017.

[8]   RohitRastogi, DK Chaturvedi,,Navneet Arora, Piyush Trivedi, Pankhuri Singh(2017). 'Role and efficacy of Positive Thinking on Stress Management and Creative Problem Solving for Adolescents', International Journal of Computational Intelligence, Biotechnology and Biochemical Engineering By Mantech Publications,1-27 pages, in Vol 2, No 2 (2017) issue,Published in Vol 2, No 2 (2017) 821-880-PB.

Healthcare Text Analytics

Healthcare postings on social media s are particularly challenging due to its sparse layout and its limited character size. Compared to previous method based on "bag of words" (BOW) model, recently we proposed a uniquely study that identifies text based enrichment protocol and learns how semantically different aspects of feature selection such as BOW, term frequency inverse document frequency (TF-IDF), and latent semantic indexing (LSI) when applied sequentially with classifier improves the overall performance.

To study this enrichment concept, our ML model is tested on two kinds of diverse data sets: D1: Disease and D2: Web-KB4 dataset. The proposed system was tested using three diversified classifiers (a) C1: support vector machine with radial basis function (SVMR), (b) C2: Multi-layer perceptron (MLP) and (c) C3: Random Forest (RF). Using the incremental feature enrichment from F0 to F2, the system has given **6%** of improvement over the previous results.

Saurabh Kr. Srivastava (M.Tech.(CSE), Ph.D (P))
Sr. Assistant Professor

IoT Application in Healthcare Industry with ML and Biofeedback Therapies

The Biofeedback therapies have been popular for long for the treatment of various mental challenges, stress and chronic headache like TTH type headache. Stress due to TTH headache is a very frequent occurrence in all our lives. A TTH symptom experienced for long by an individual with no relief or with increased frequency, it is termed as "distress". Weakened cognitive and physiological control is due to TTH originated stress and results in performance reduction. It can lead to symptoms like headache, gastrointestinal disturbances, elevated blood pressure, chest pain, insomnia, peptic ulcers, sexual dysfunction, skin ailments, etc.

The physiological responses to TTH based stress may differ with regards to acute and chronic stress. Stress related disorders are often termed as "psychosomatic" disorders which involves the mind and body. These are the disorders in which the mind makes the body vulnerable for tousled. Tension-type headache (TTH) is prevailing and chief diseases in psychosomatic medicine because of its correlation with psychosocial factors. Prime Negative effect induced in one's life is results of events like deaths of close family members, surgery and divorce. In past years, such incidents have been passably related to attribute of headache.

Biofeedback therapies include the use of non-pharmacological treatments that utilize scientific instruments to evaluate, amplify, and feedback physiological information to the patients being monitored, thereby promoting control and manipulation of physiological parameters.

No doubt, everyone will accept the key role or researchers in academic industrialization and "collegialization" of research. There is a vast increment in the research methods in enterprises and industries due to commercialization of academic process and its related organizations.

Now due to availability of Internet in the easy rates to everybody, has its boon and curse as knowledge of different aspects are

Many tools for the research purposes are being created, cross checked by validation smart techniques and academy and industries are in race to get the patents for them so that they can create another mean for money making and business in scientific creations.

Many developers are working tirelessly to create the tools as per these company specifications.

No doubt the SF-36 score and related questionnaire form is much popular and so the organizations with the trust for Medical outcomes, Quality metric designing, lab for assessing the Health standards, incorporation of Optum, have prepared the similar policies for usage of SF36 data globally. These corporations provide the License agreements for individual scholars for commercial and research purposes and do evaluation of data, responses consistence and consistency internally and they also provide for ease the scoring and interpretations of data for the general users and researchers. The SF-36 score can also be published on internet to enlarged it's reach. The data collected can be analyzed with the help of Big Data by any organization.

Multimedia technology has shifted the approach we gaze at computers. The initial computers were considered as single-purpose machines that could only solve any complex mathematical problem. In 1960, Huge corporate database was managed by Main frame Computers.

It has been observed that the use of devices related to Multimedia increased at an exponential rate in all formats audio, visual or audio-visual). Billion-dollar market is set on the bottom of Electronic Gadgets.

For technocrats. The new challenge is to handle the huge generation of data, which is created per mill second. When Health related applications are considered, MMBD(MultiMedia Big Data) is more efficient than IoT as development activities are focused on scalar sensor data. Complexity and unique nature of MMBD increments the application of IOT by using Biofeedback sensors.
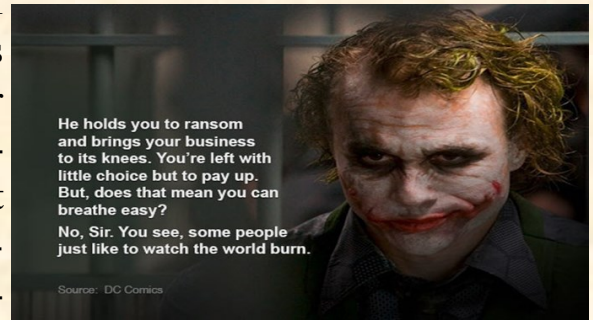
The Experimenters has to deal with data related to MMBD, like Reliability and scalability, accessibility, heterogeneity, and Quality of Services for mental health.

At ABESEC, we are making an Interdepartmental effort with Academicians of DEI Agra, IITD and IITR, Psychology cell of DSVV Haridwar and Patanjali Yog Peeth to scientifically analyze the two popular biofeedback therapies-EMG and GSR on audio and visual modes both in a clinical experimental environment for the treatment of TTH in the experiment period of 12 months. The Physical, mental and total scores of subjects have been analyzed on Audio, Visual and Audio-Visual modes for both the therapies.

We are also trying best to verify the hypothesis and establish the fact that is which kind of therapy is more useful through comparison between both therapies in audio, visual and audio-visual modes as well as comparison among EMGa, EMGv and EMGav modes.

By
Rohit Rastogi
Associate Professor(CSE, ABESEC)
Research Scholar, DEI Agra

Ransomware-as-a-Service (RaaS) is a perfect example to demonstrate how organized cyber criminals have become. Instead of spreading the ransomware directly, RaaS enables bad guys all over the world to infect users in their demographic and ask for money .Many digitally-signed malware makes RaaS files difficult to get detected by a traditional security vendor. Moreover, recovering the system will not remove infection as the bug tampers recovery settings.

He holds you to ransom and brings your business to its knees. You're left with little choice but to pay up. But, does that mean you can breathe easy?
No, Sir. You see, some people just like to watch the world burn.

Source: DC Comics

A Distributed Denial of Service (DDoS) attack is essentially a malicious attempt to make a server or a network resource unavailable to users. Its USP is the ability to target a wide variety of important resources, from banks to news websites, and present a massive challenge to people trying to access the net. The difficulty in detecting a DDoS and eliminating it makes it a force to reckon with .

A DDoS attack 'Hulk-smashes' its way through your defenses – crippling businesses, power grids, or military systems. A mighty, heavy-duty, tough-as-nails super-jock you'll have a hard time fighting.

Source: Marvel

Malware is one wily deceptive virus that can wreak havoc on your system. It packs viruses, worms, trojan horses, scareware, and a whole lot of other malicious programs in its arsenal. In July 2012, a malware worm targeting Iranian nuclear facilities infected PCs at night, blasting AC/DC's classic hit "Thunderstruck." What makes it all the more dangerous is the fact that it can be real hard to detect and isolate.

Moriarty, the 'Napoleon of Crime'; The only man smart enough to match Sherlock's sheer genius.

Source: BBC One

Technical News

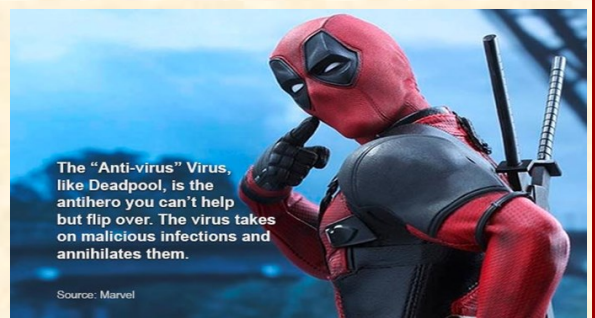### Viruses and their analogous super-villains

Computer viruses and super-villains have more in common than you thought. An analogy between the two seemingly-disconnected entities proves why. Cyber bugs have come a long way since their inception in a quaint little town near Lahore, Pakistan. They've brought down businesses, crippled grids, and compromised military secrets.

Here's an attempt to draw a parallel between the most feared cyber bugs and the most notorious fictional baddies revealed the similarities between the two.

Adware/Malware: These mostly crop up from a little corner of your screen with eye-catching images or texts to lure you into clicking them. The instant you do, you open up your computer to a host of nasty bugs on the dark side of the net.

She knows how to lure you and intrigue you. You know she's viperous. And yet, she deceives you into clicking that infected link.

Source: Marvel

Viruses needn't always be bad. There are a whole lot of examples like the 'File Compressor' virus – one of the oldest known "good" viruses; the 'Disk Encryptor' – which writes a boot sector virus, encrypting the disks it infects with a strong encryption algorithm ; and the 'Maintenance Virus' – which consists of a self-contained program, spawning copies of itself across the different machines in a network

The "Anti-virus" Virus, like Deadpool, is the antihero you can't help but flip over. The virus takes on malicious infections and annihilates them.

Source: Marvel

Top-Ten Apps

BlackBerry Hub+ Services [Price: Free/ $0.99]

BlackBerry Hub+ Services is the basic framework for BlackBerry's security services. It's also the software that's been featured on the Priv and the DTEK50. There isn't much to the app when you first open it because most of what it does is kind of in the background. You'll also find links there to download the rest of the BlackBerry apps which all work with Hub+. Along with its primary security features, it also features Android for Work compatibility and a news link to show you what's new in the world of BlackBerry. It's free to try out if you're interested.

DOWNLOAD NOW ON GOOGLE PLAY!
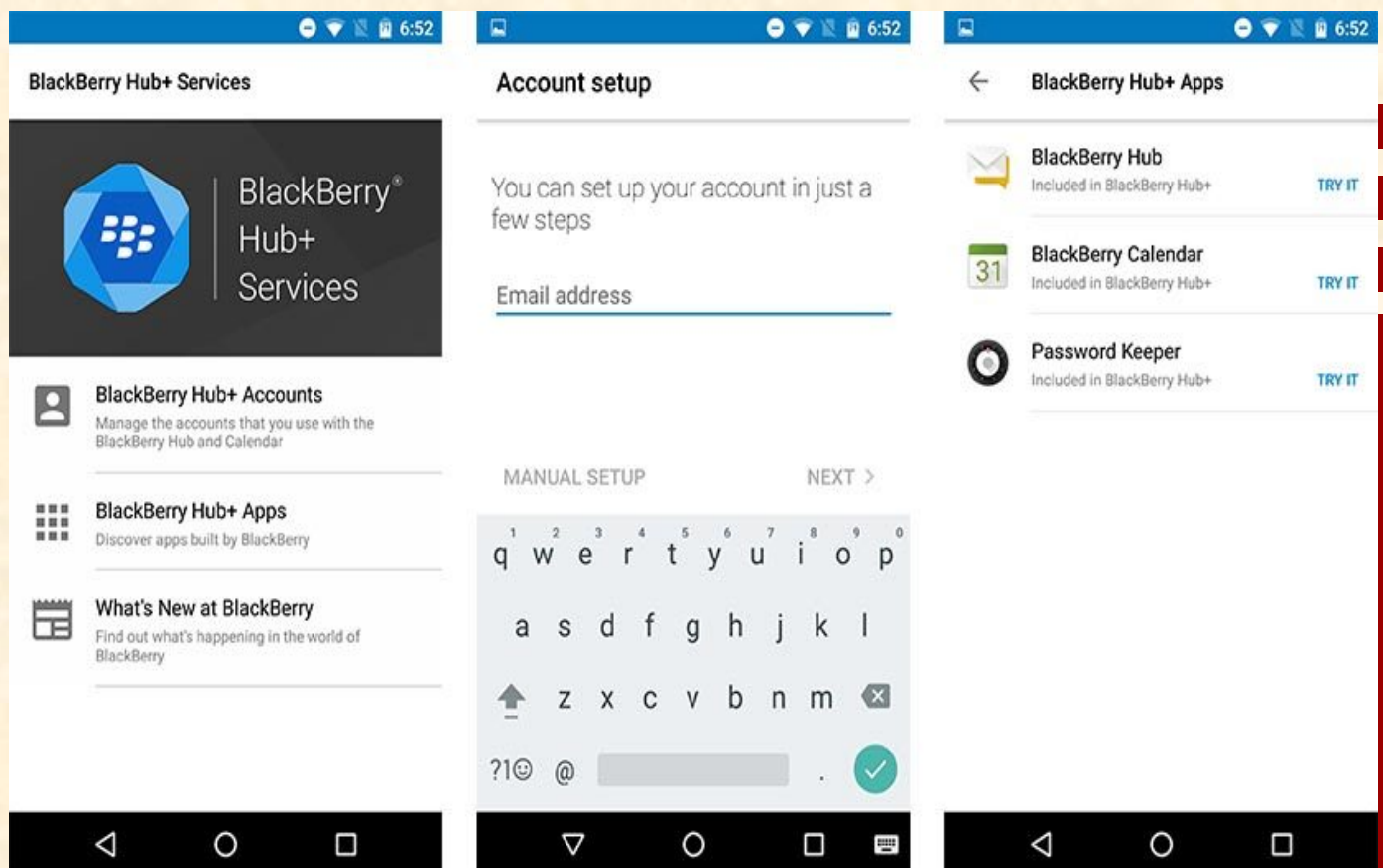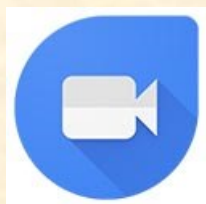
Google Duo [Price: Free]

Google Duo came out to mixed reactions but it's actually a pretty decent app. It allows you to make one-on-one video calls with other people. There is a feature called Knock Knock that allows you to see who's calling you and their video feed before you pick up which is kind of nice. Perhaps its best feature is how easy it is to use. You don't have to sign up for an account or anything. All you have to do is verify your phone number and you can immediately start making video calls with other people who use Duo. It's also completely free.

DOWNLOAD NOW ON GOOGLE PLAY!

Isotope [Price: Free / $0.99]

Isotope is an educational app that shows you the periodic table of elements. It features 118 elements in total and most of them have corresponding images so you can see what the element looks like. Isotope is draped in Material Design which makes it look gorgeous and also makes it easier to use. You can pick up the app for free and pay for the pro version as an in-app purchase. The pro version comes with additional information about each element along with some extra themes.

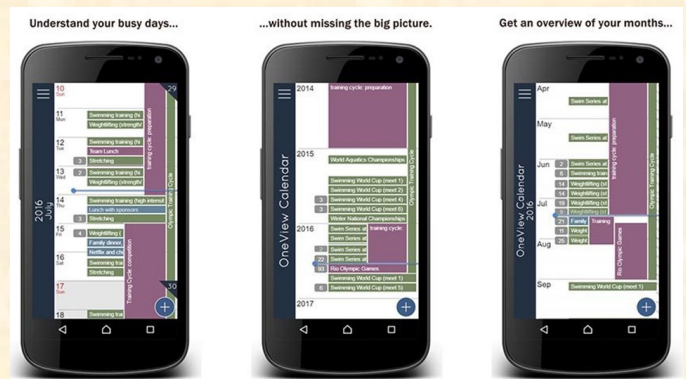**DOWNLOAD NOW ON GOOGLE PLAY!**

Microsoft Flow [Price: Free]

Microsoft Flow is a new app that aims to compete with the likes of IFTTT. For those who don't know, IFTTT and app like it allow you to schedule tasks on your devices that are carried out automatically. For instance, you can have your phone upload a photo to Dropbox automatically after you share it on Instagram. Flow is currently in public beta which means you can try it out right now if you want to. Just beware that there are bugs and other issues that haven't been worked out yet. IFTTT is still better, but a little competition never hurt anyone.

OneView Calendar [Price: Free]

OneView Calendar is a calendar app that does things a little bit differently. Instead of giving you a variety of ways to view your information, OneView, as the name implies, has only one view. It's in chronological order and you open up the app to the current day. You can zoom in and out to get more details if you need it and scroll up and down to navigate. It comes with some gesture controls and drag-and-drop functionality to create new events

on your calendar. It's surprisingly fun to use and it's completely free with no in-app purchases.
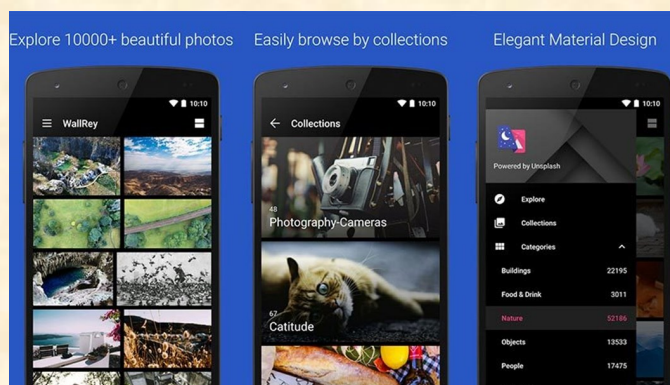
DOWNLOAD NOW ON GOOGLE PLAY!

Opera Free VPN [Price: Free]

Opera Free VPN is exactly what the name of the app suggests that it is. It's a free VPN service that's run by SurfEasy which is a subsidiary of Opera. Using the app is very simple. You essentially just open the app, turn it on, pick your region, and then go. It also includes a feature that blocks ad tracking which can be switched on independently. Opera's VPN isn't as full featured as some of the paid VPNs out there, but it's not a bad package considering that it's free to use.
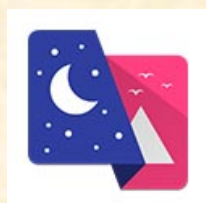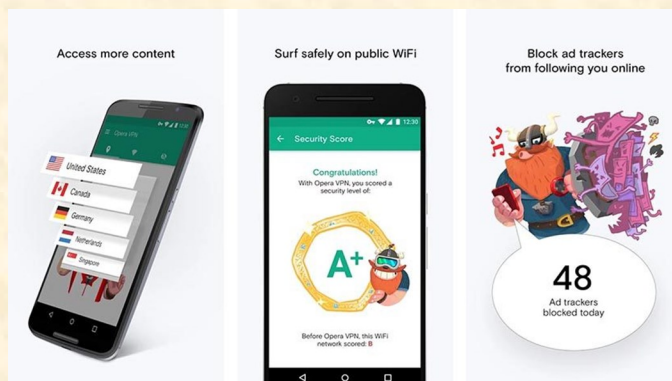

WallRey [Price: Free]

WallRey is a new wallpaper application that specializes in high resolution images. Unlike many, where you can find anything from 2K to 480p resolution, most of the images in WallRey are massive, crisp, and they look great. There are a variety of categories, including nature, people, food, objects, and technology. The only bummer is that there aren't any abstract style wallpapers which would've been great. Otherwise, it's free to download and check out or you can buy the pro version as an in-app purchase for $1.99.

DOWNLOAD NOW ON GOOGLE PLAY!
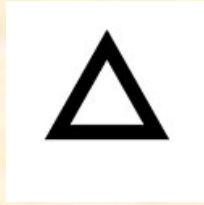
Prisma [Price: Free]

Prisma is a photo filter app that's fairly unique compared to other filter apps. It uses server-side neural networks to breakdown and rebuild a photograph from the ground up using whichever filter you want. There are well over a dozen filters that mimic a variety of styles which means you should be able to find one that you think looks pretty awesome. It's completely free and has already spawned a host of clones that boast similar features. This one is completely free and worth checking out.

DOWNLOAD NOW ON GOOGLE PLAY!

TraffickCam [Price: Free]

TraffickCam is a unique application that could help you catch sex traffickers. The idea for this one is that you use whenever you stay in a hotel. You'll pop open the app, take four images of the hotel room, and then upload them to the database. According to the app's developers, many criminals use hotel rooms for photo shoots and having a database can help authorities find out where these people are. It's a small thing, completely unobtrusive, and you really only need to take it with you when you're staying in a hotel. Keep it in mind and give it a shot! It is completely free to use.
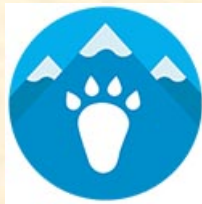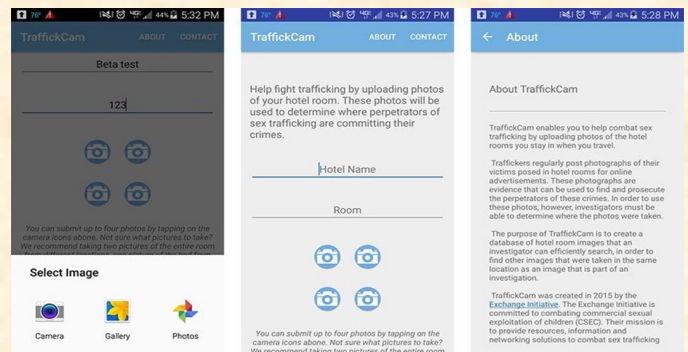
Verne: The Himalayas [Price: Free]

Verne: The Himalayas is a tour app that's designed to help you learn more about the Himalayan Mountains. It does this by placing you in control of Verne, who is a Yeti. As you traverse the terrain, select parts will pop up where you can hear about fun facts and various other trivia about the mountain. You can also slide, hang glide, fly, and move around in a variety of ways to get some excellent views of the mountains. We definitely hope that Google does more of these because they're pretty fun.

DOWNLOAD NOW ON GOOGLE PLAY!

Thank You.

Departmental Outing On 22 April 2017