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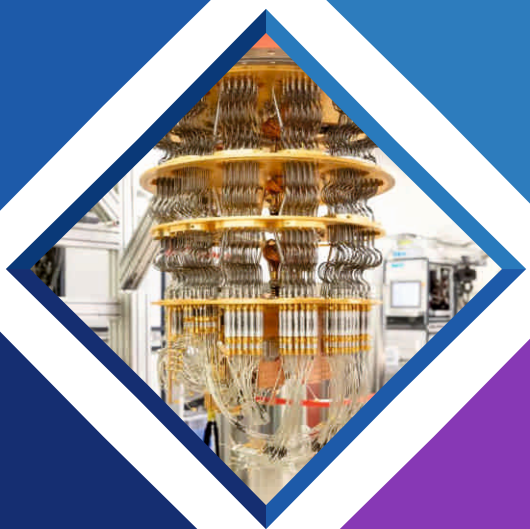

Federal Institute of Science And Technology (FISAT)®

EDITOR'S MESSAGE

Raman K P
Student Chief Editor

Welcome to the latest edition of TechToday, the labor of love from FISAT's computer science department. We are proud to announce that we are ready with all new hopes and hues to bring out this issue, which is surely going to unravel the brave new world of upcoming technologies in computer science.

It gives me immense pleasure to ensure that this magazine has successfully accomplished its objective. This magazine is before you due to the combined efforts of the entire editorial board. I take this opportunity to thank all the contributors as their contribution is the reason this magazine is so endearing with our readers.

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High Performance Computing System

High-Performance Computing is the word that conveys much higher performance than one may get out of a normal desktop computer or workstation in order to solve huge issues in science, engineering, or business. High-performance computing (HPC) is the use of super computers and parallel processing techniques for solving complex computational problems. HPC innovation focuses on creating parallel preparing calculations and frameworks by joining both administrative and parallel computational methods. The terms high-performance computing and supercomputing are sometimes used interchangeably though diffrence exists between them.

In wise GEEK, a supercomputer is defined as follows: A supercomputer is a computer which performs at a rate of speed which is far above that of other computers. Given the constantly changing world of computing, it should come as no surprise to learn that most supercomputers bear their superlative titles for a few years, at best. Computer programmers are fond of saying that today's supercomputer will become tomorrow's workstation.

To provide an illustration: In 1986, the foremost capable supercomputer within the world was the popular Cray2, accessible for generally US$ 22 million at that time. Last year, Apple discharged their iPad2 tablet computer, the execution of which is two-thirds of the Cray2's, but the cost of which is as it were US$ 500. This implies that, in 25 a long time, the cost has gone down by a figure of 44,000, so today's supercomputer is tomorrow's (tablet) computer.

Since November 2017, all of the world's quickest 500 supercomputers run Linux-based working systems investigate is being conducted to construct indeed speedier, more capable and more mechanically prevalent large scale supercomputers.

System Structure of HPC at a glance: High-performance computing (HPC) advanced due to meet increasing demands for preparing speed. HPC brings together several advances such as computer architecture, algorithms, programs and electronics, and system program under a single canopy to solve advanced issues successfully and rapidly. An exceedingly productive HPC framework requires a high-bandwidth, low-latency network to connect numerous nodes and clusters.

High-performance computing tools: The parallel models of supercomputers frequently direct the utilize of special programming procedures to exploit their speed. Computer program tools for distributed handling include standard APIs such as MPI and PVM, VTL, and open source-based software solutions such as Beowulf. Within the most common situation, situations such as PVM and MPI for freely associated clusters and OpenMP for tightly coordinated shared memory machines are used. Effort is required to optimize an algorithm for the interconnect characteristics of the machine run on; the point is to prevent any of the CPUs from sitting around idly holding information from other nodes. GPGPUs have hundreds of processor cores and are programmed utilizing programming models such as CUDA or OpenCL. In addition, it is very troublesome to investigate and test parallel programs. Special procedures got to be utilized for testing and investigating such applications.

Applications: The practical impact of weather, climate and sea forecast on the world's population and economy drives the utilization of computing (HPC) for earth system modeling. As energy exploration gets to be progressively challenging, oil and gas firms deploy ever more effective computing and capacity arrangements to remain ahead. The Common Component Architecture (CCA) gives a implies for software designers to oversee the complexity of large-scale scientific simulations and to move toward a plug-and-play environment for high-performance computing. Life Sciences with HPC Frameworks give significant progressions with drug plan and related areas of Bo-Informatics. Utilizing high-performance parallel storage arrangements, geologists and analysts can presently consolidate bigger information sets and execute more seismic and reservoir simulations speedier than ever before. Deep learning is a method of creating artificial intelligence systems that combine computer-based multi-layer neural networks with intensive training techniques and large data sets to enable analysis and predictive decision making. HPC explores the technologies, components and software required for creating successful deep learning environments.

High Performance Computing Facilities @FISAT campus:

Five types of High Performance Computing systems facilities are available in FISAT Campus for academic/project/research purposes.

- **Dhakshina Cluster Series I & II** (Based on Beaulf Cluster Architecture available from 2007 onwards)
- **Tesla Architecture:** Third High Performance Computing system with the financial support of AICTE has installed, which is based on Tesla. Many academic projects are offered in this system for students of different universities from 2012 onwards.
- **PARAM Shavak :** KTU is providing computational resource (Capacity building) with advanced technologies to perform high-end computations for scientific, engineering and academic programs to address and catalyze the research using modelling, simulation and data analysis. FISAT has the permission to access this super computer facility from 2016 onwards.
- Titan Xp GPU Platform Workstation: As part of NVIDIA GPU Grant Program, Industry Leader of GPUs, NVIDIA is planning to sponsor Titan Xp for maximum use of FISAT computing research and to enjoy the power of GPU computing from 2019 onwards.

5 Most Bizarre Programming Languages Ever Created

1. OOK

If you've ever felt like a monkey just banging away at a keyboard, then Ook! will make you feel right at home. It's a language designed primarily for primates, specifically the orangutan. With Ook! you only use three syntax elements: Ook , Ook? and Ook!

A hello world program in OOK -

Ook. Ook? Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook! Ook? Ook? Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook? Ook! Ook! Ook? Ook! Ook? Ook. Ook! Ook. Ook. Ook? Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook! Ook? Ook? Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook? Ook! Ook! Ook? Ook! Ook? Ook. Ook. Ook. Ook! Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook! Ook. Ook! Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook! Ook. Ook. Ook? Ook. Ook? Ook. Ook? Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook! Ook? Ook? Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook? Ook! Ook! Ook? Ook! Ook? Ook. Ook! Ook. Ook. Ook? Ook. Ook? Ook. Ook? Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook! Ook? Ook? Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook? Ook! Ook! Ook? Ook! Ook? Ook. Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook. Ook? Ook. Ook? Ook. Ook? Ook. Ook? Ook. Ook! Ook. Ook. Ook. Ook. Ook. Ook. Ook. Ook! Ook. Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook. Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook! Ook. Ook. Ook? Ook. Ook? Ook. Ook. Ook! Ook.

2. Whitespace

Unfortunately, the name for this programming language is exactly what it does: Whitespace creates programs based off of... white space. The Whitespace website has a great description of how the language works.

"Most modern programming languages do not consider white space characters (spaces, tabs and newlines) syntax, ignoring them, as if they weren't there. We consider this to be a gross injustice to these perfectly friendly members of the character set. Should they be ignored, just because they are invisible? Whitespace is a language that seeks to redress the balance. Any non whitespace characters are ignored; only spaces, tabs and newlines are considered syntax."

3. Shakespeare

Shakespeare is a programming language based on the writings of the great playwright. Each program contains a title, acts, scenes and characters to make brilliant source code that's actually fun to read.

Here's Act I, Scene I of "Hello World":

```
The Infamous Hello World Program.

Romeo, a young man with a remarkable patience.
Juliet, a likewise young woman of remarkable grace.
Ophelia, a remarkable woman much in dispute with Hamlet.
Hamlet, the flatterer of Andersen Insulting A/S.

Act I: Hamlet's insults and flattery.

Scene I: The insulting of Romeo.

[Enter Hamlet and Romeo]

Hamlet:
You lying stupid fatherless big smelly half-witted coward!
You are as stupid as the difference between a handsome rich brave
hero and thyself! Speak your mind!

You are as brave as the sum of your fat little stuffed misused dusty
old rotten codpiece and a beautiful fair warm peaceful sunny summer's
day. You are as healthy as the difference between the sum of the
sweetest reddest rose and my father and yourself! Speak your mind!

You are as cowardly as the sum of yourself and the difference
between a big mighty proud kingdom and a horse. Speak your mind.

Speak your mind!

[Exit Romeo]
```

4. Brainfk**

As it sounds offensive, it is also written as brainf***, brainf*ck, brainfsck, b****fuck or BF. The language uses a combination of eight commands – > < + – . , [ ] The smallest program is very difficult to use as like most esoteric languages it has no variables, no functions, no conditionals…which are part and parcel of common programming languages.

A hello world script in Brainf**k -

```
++++++++++[>+++++++>++++++++++>+++>+<<
```

```
<<-]
>++.>+.+++++++..+++.>++.<<+++++++++++++++
. >.+++.------.--------.>+.>.
```

5. Arnold C

A Programming language named after Arnold Schwarzenegger - "Arnold C". The language is quoted as - "an imperative programming language where the basic keywords are replaced with quotes from different Schwarzenegger movies." Yes, really.

A program to print 1 to 10 -

```
IT'S SHOWTIME
HEY CHRISTMAS TREE isLessThan10
YOU SET US UP @NO PROBLEMO
HEY CHRISTMAS TREE n
YOU SET US UP 0
STICK AROUND isLessThan10
GET TO THE CHOPPER n
HERE IS MY INVITATION n
GET UP 1
ENOUGH TALK
TALK TO THE HAND n
GET TO THE CHOPPER isLessThan10
HERE IS MY INVITATION 10
LET OFF SOME STEAM BENNET n
ENOUGH TALK CHILL
YOU HAVE BEEN TERMINATED
```

Sandeep Remesh
S7 CS B

A brief history of artificial intelligence

The idea of artificial beings has rooted itself in the minds of humans for millennia in the form of golems and robots wrought of metal and fire. AI as we know it today, however, has had to travel a long way to get to what we think of it today.

The idea of artificial intelligence is based on the notion that all human thought can be formalized. Such a notion was developed by the pioneers of philosophy such as Aristotle who crafted a formal analysis of syllogism. This was further expanded upon by George Boole in his book "The Laws of Thought" published in 1854 which gave Aristotelean logic a foundation and vastly extended its range of applicability giving rise to the Boolean logic we use everywhere today.

The key insight of the beginning of the 19th century was the Turing machine. It was an incredibly simple theoretical construct that captured the essence of abstract symbol manipulation. But this invention would inspire quite a few thinkers to discuss the possibility of thinking machines.

If one had to point out the birth of the modern idea of AI, it would have to be the Dartmouth conference of 1956. At the conference, it was asserted that "every aspect of learning or any other feature of intelligence can be so precisely described that a machine can be made to simulate it". This was the moment that AI gained its name, its mission, its first success, and major players.

The first generation of AIs was more akin to handmade rule-based systems than the synthetic minds we think of today. These AIs include "ELIZA" the world's first chatterbot and "Ferranti Mark 1" which was a bot that mastered checkers.

The first generation of AI researchers was extremely optimistic about the first fully intelligent machine being built in under 20 years. Perhaps it was this misplaced optimism that eventually led to an "AI winter" during the 70s and 80s once they realized the true scale of their undertaking. Funding was all but killed once the major investors like DARPA realized the innate limitations of such rule-based systems.

It was the firm grasp of Moore's law that truly reanimated the field of AI during the 90s. The revolution came into the public limelight when IBM's Deep Blue became the first computer to beat a reigning world chess champion, Garry Kasparov in 1997. The field of AI has been marching forward at a steady pace ever since.

` Exponential gains in computer processing power and storage ability at the beginning of the 21st century allowed companies to store and crunch massive amounts of data commonly known as "Big Data".

In the past 15 years, the major tech giants like Amazon, Google, and Baidu have leveraged these advances in machine learning to their huge commercial advantage. Other than processing user data to understand consumer behavior, these companies have also continued to work on computer vision, natural language processing, and a whole host of other AI applications such as Autoencoders used to compress the images on server banks or machine translation products like Google Translate.

The applications of big data are now beginning to reach other fields as well, such as ecological models, drug discovery, bioinformatics, rendering and various applications in economics.

By 2016, the market for AI-related products, hardware, and software reached more than 8 billion dollars with Nations like China investing heavily in AI ever since AlphaGo's victory against Lee Seedol in 2016. The widely publicized event is now called the "Sputnik moment" of the Sino-American battle for AI supremacy. Chinese investors now make up 48% of all AI venture funding globally which is mildly concerning considering the Chinese track record for human rights violations.

Nevertheless, machine learning has now embedded itself into nearly every service we use, and its reach is only bound to widen into every aspect of our lives. The question of whether such a world is to be considered a utopia or a dystopia would depend on whom you ask. However, I remain doggedly optimistic about the new age of AI that is primed to emerge in the coming years and will wait patiently for the wonders we have yet to see.

Bryan Davis
S7 CS A

An Introduction to Quantum Computing

Almost all of us might be aware of the news that the tech giant, Google, has attained something known as quantum supremacy, by solving a complex calculation in just 200 seconds using their quantum computer Sycamore, that would have taken more than 10,000 years of computation for the most powerful supercomputers in the world. But a majority of us may not have shown an interest to understand what a quantum computer is or how it was able to solve the so-called "impossible". Although quantum computers work on the concepts of quantum physics, which is quite hard to grasp, it is good to have a small idea on how quantum computers work and how they differ from the classical computers that we have at the tip of our fingers.

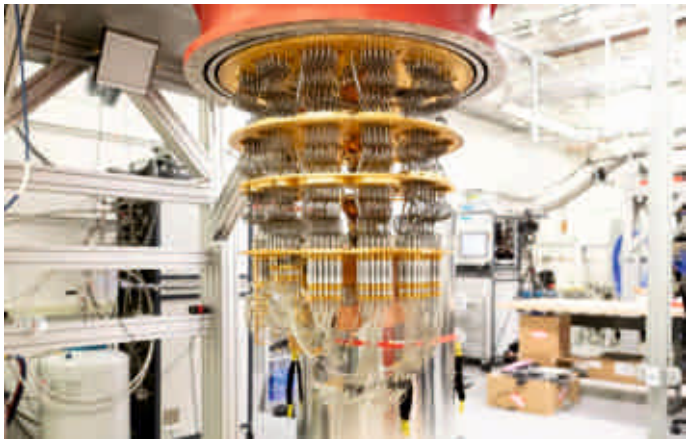


Figure: One of five Google quantum computers at a lab near Santa Barbara, California. (image from CNET)

As we are aware, the smallest component in our classical computers is a transistor, which is basically a switch to allow and prevent the flow of particles. These transistors are combined to form the logic gates and these logic gates are further combined to form the basic circuitry modules for addition, multiplication, etc. Each transistor has only two states - either an ON or an OFF. They are represented by bits 1 and 0 respectively. Therefore, the output of any calculation in our classical computers will be fixed depending on the inputs and the logic gates that it has to pass through in order to perform the desired calculations. As per Moore's Law, the number of transistors that can fit per square inch of a chip has grown enormous in the past sixty years to such an extent that each transistor has become the size of a few atoms making it almost impossible to shrink them even smaller. Thus the number of transistors that your computer chip can hold will limit the ability of your classical computer to do complex calculations to a great extent.

The chips used in quantum computers are made out of superconductors that are capable of producing and manipulating particles that show quantum behavior. The chip is cooled to extremely low temperatures in order to make them produce particles with quantum behavior. Each of these particles is called a qubit (or a quantum bit) where each qubit can be both a 0 and a 1 at the same time. This ability of a qubit to be in multiple states is termed as superposition. This might seem confusing, so let us take an example of a coin to understand it better. A standard unbiased coin will have two sides - a head and a tail. In a classical computer, each bit is either a head (a one) or a tail (a zero). But in a quantum computer, a qubit can be represented as a coin in the spin state (i.e., we can't tell whether the coin is showing a head or a tail as the coin is continuously rotating). The proportion in which a qubit is both 0 and 1 is unknown or uncertain to us when the particle is in motion. When a qubit is taken for measurement, the qubit will either be 0 or 1, just like how a coin will show either a head or a tail when we stop a spinning coin.

The concept of superposition is the core of quantum computing. We already saw that one qubit can be 0 and 1 at the same time. Now consider two qubits. The two qubits when combined, can represent four states at the same time (00, 01, 10 and 11). Three qubits when combined can represent eight states at the same time. This number grows exponentially on the addition of each qubit. A combination of just twenty qubits can be more than a million states at the same time! In the case of a classical computer, no matter how many bits we combine, the combination will still represent a single value. This is how a quantum computer's computational power is significantly high compared to a classical computer. Complex computations in quantum computers can be performed using a concept called quantum entanglement, where the state of a qubit is related to the state of another qubit. The outputs of such complex calculations can be fed to some specially designed algorithms that can decipher the output of the complex calculations that may not even be possible in our classical computers.

The applications of a quantum computer are enormous and may sometimes be limited to our imagination. They can be used to understand and predict chemical reactions even better, conduct simulations, train complex machine learning models, weather forecasting, cryptography, etc. The list can go on and on. Although the current quantum computers have very low fault tolerance and are highly expensive, they are sure to be a huge part of educational and research institutions, organizations and governments in the decades to come and they are sure to bring about breathtaking discoveries and innovations in the near future.

Job Jacob
S7 CSE-B

Manifold: Uber's Framework for Machine Learning Debugging and Interpretation

Machine learning has become a part of our daily lives, from medical diagnosis to product recommendation it has become a major influence in our decision making. Machine learning practitioners report that only 20% of the time is spent on construction of initial working models and the remaining 80% is used for debugging and performance improvement.

Traditionally, the performance of a model is evaluated using metrics like area under the curve(AUC), log loss and mean absolute error (MAE), etc. However, these metrics might give us an insight into the model performs but do not tell us why a model underperforms or how to improve its performance. Most machine learning debugging tools are constrained to specific model architecture and are difficult to generalise. This leads to model builders needing to largely rely upon old-fashioned trial and error when exploring ways to improve their models.

To overcome these problems UBER has developed Manifold. It was developed to solve these issues and make the model iteration process "more informed and actionable".

Manifold

Manifold is a model-agnostic visual debugging tool for machine learning developed by UBER. It allows ML practitioners to look beyond overall summary metrics to detect which subset of data a model is inaccurately predicting. It helps explains the potential cause of poor model performance by surfacing the feature distribution difference between better and worse-performing subsets of data.

Manifold segments the machine learning analysis process into three main phases: Inspection, Explanation and Refinement.

Inspection: During this phase, the user designs a model and investigates its capabilities by comparing the model performance with other existing models. Performance metrics, such as accuracy, precision/recall, and receiver operating characteristic curve (ROC) is used to find out if the new model outperforms the existing one. Then the user focuses on a specific instance subset of interest in order to narrow down her analysis space.

Once the user finalizes the selection, she can make hypotheses of potential issues within the model that may lead to the erroneous result and proceed to the explanation phase.

Explanation: In this phase, the user attempts to explain the different hypotheses formulated in the previous phase. Comparative analysis is used to explain some of the symptoms of the specific models.

Refinement: In this phase, the user attempts to verify the explanations generated from the previous phase by encoding the knowledge extracted from the explanation into the model and testing the performance. Based on the model the user can apply feature engineering strategies or adjust the internal architecture of the model. This requires another training and testing session which is time-consuming.

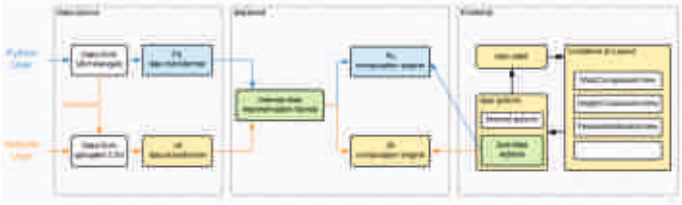
THE MANIFOLD FRAMEWORK

The three steps of the machine learning analysis process materialize on a simple user interface that streamlines the debugging of machine learning models. The Manifold user interface consists of two main dialogues:

♦ Performance Comparison View: Provides a visual comparison between model pairs. Manifold uses a clustering algorithm (k-Means) to break prediction data into N segments based on performance similarity. The input of the k-Means is per-instance performance scores. By default, that is log-loss value for classification models and squared-error value for regression models

♦ Feature Attribution View: It provides a feature-wise comparison between user-defined subsets and similarity measure of feature distributions. After you slice the data to create segment groups, feature distribution histograms/heatmaps from the two-segment groups are shown in this view. Depending on the feature type, features can be shown as heatmaps on map for geo features, distribution curve for numerical features, or distribution bar chart for categorical features.

Architecture of Manifold



Users can leverage Manifold using two ways: via a Python package or an npm package. Manifold handle computation needed in the visual analytics system separately from those needed for training models, and therefore enabling faster iteration and a cleaner data interface. This makes it easy for manifold to be easily be integrated with enterprise ML systems like Uber's core machine learning platform: Michelangelo.

Paul Antony
S7 CS B

Perils of Progress

While reading the news recently, I came across an interesting article about how an app TikTok was fined by the US courts for illegally collecting children's data. Suffice to say, this article aroused my curiosity. As I read further, I discovered that every video made using this app belongs to TikTok who is now free to use this data for their own purposes. For example, a popular YouTuber had made a few videos using TikTok but hadn't got around to publishing them online. But TikTok sold his videos to advertise products on Facebook. Coming to the nitty-gritty of this, it would seem that the 'Terms and Conditions' of TikTok that you so easily agreed to without so much as a glance contained a clause stating that every video that you make using TikTok belong to them and can be used by them for whatever purpose they wish to.

So this got me thinking, this is merely the case of one of the apps that got caught red handed. How many other apps like this have already hoarded up our data? What do they do with it? And of course, the million dollar question: is our data really private?

But first, what is privacy? According to the Oxford dictionary, "Privacy" is defined as a state in which one is not observed or disturbed by other people. And when it comes to the case of our data, it quite evidently shouldn't be observed by other people. But do you really think that is the case?

Do you have any idea of how much of our data mega-corporations like Google and Facebook have? If you happen to think it's insignificant, you'd be quite wrong. Many of us have android phones and almost every one of us has synced it with Google because of its convenience. It allows you to change your phone without painstakingly having to save each number one at a time to your new phone any more. You can just sync it with Google contacts and voilà! you have all your contacts with you again. But then again, we don't just sync contacts now do we? Every single photo, video, the locations we've been to, the games we've played on our phone and so on. Almost every single scrap of data about our activities on a day to day basis is in their hands.

So what do they do with this data? The Times recently published an article regarding an MNC that happened to catalog the location data of one single person. The location data was so extensive and detailed that the people from The Times were able to easily Identify whom the data belonged to and her daily schedule to the dot. Now imagine a stalker with ill-intentions getting their hands on this data. Do you still feel safe now?

Almost everyone has heard of the WikiLeaks scandal. The scandal broke in early June 2013 when the Guardian newspaper reported that the US National Security Agency (NSA) had been collecting the telephone records of tens of millions of Americans for years now. That report was followed by revelations that the NSA had tapped directly into the servers of nine internet firms, including Facebook, Google, Microsoft, and Yahoo to track online communication in a surveillance programme known as "Prism".

This begs the question of how much our data is worth. Most of us have a mindset that goes along the lines of "I'm not a famous persona and thus my data is probably quite worthless". I used to be of a similar mind set until I did my research on the topic. It was then that I understood how our data can be used to subtly manipulate our minds towards decisions we wouldn't otherwise take without us even being aware of it. While all this sounds like an episode straight out of "The Twilight Zone", events like this do happen often as evident with one of the more popular scandal in recent times : Cambridge Analytica alongside social media giant Facebook used personal information taken without authorization in early 2014 to build a system that could profile individual US voters in order to target them with personalized politicala dvertisements.

How did this happen? In 2014, an app called "thisisyourdigitallife" was created which paid hundreds of thousands of users to take a personality test which would then be used for study purposes. This app also collected the information of the test-takers' Facebook friends leading to a data pool of tens of millions strong. This data was shared with Cambridge Analytica who used this data to develop a psychographic profile of said targets and deliver tailor-made advertising to coerce each of them into voting for Trump.

This is how our collectively, each of put "insignificant" data collections was put to use for one man's gain.

Thses days most people post a lot of photo to social media site's like instagram, Facebook. This data is generally available to any one. One might think "what can be done with my pictures and video". Apparently a lot. With the improvements in Machine Learning techniques, it is trivial to make fake videos of anyone saying or doing things that never actually occurred which looks real. This technique called Deepfake, uses Generative Adversial Network(GAN) to superimpose existing images and video onto a source image or video. If you can get around 300 photos or videos of a person

you can make them say or do anything. This can be done by anyone with a decent GPU as the code for this is available freely online. This technique was first used to make fake pornography of actress like Daisy Ridley , Gal Gadot these were uploaded to reddit by the user 'deepfakes'. But fake porn is not the only issue. There have been deepfakes of politicians like Barack Obama done by Jordan Peele and Jonah Peretti as a public service announcment about deepfakes. One might think that this is done only to famous people. But there was a incident where a 17 year old girl's images were stolen from social media and was doctored into pornographic videos. Individuals like her, who are not celibrities, do not have the benifit of people knowing this must be fake. This can destory a persons future employabillity and online reputation.

What can be done

So now that you know what all can happen and what all is happening, you need to know what can be done to prevent or avoid these problems. The ideal solution would be to stop using these resources but that is obviously impractical. This is what Richard Mathew Stallman does. I recently attended a talk by him in which he stated that he didn't even use mobile phones, so as to preserve his privacy. So this is possible but not so practical in this pro-technological world of ours. So, what can be done?

One of the best solutions would be start using open-source resources. Since the details of open source resources can be seen by anyone and everyone, if there does exist a problem with the resource, it will be found by someone and will be fixed. So, your privacy is definitely preserved. Another thing that you can do to avoid problems would be to read what you are agreeing to. Whenever, we create an account or download an app, we just simply agree to it's terms and conditions without reading through it. You think this is just a formality, but this terms and conditions contain the details of what they can or cannot do with your data. Or when you download or update an app from the playstore, they say the app required the following permissions and we simply click on the accept button. But remember that you are giving it permission to your data. So, before you click on any accept or agree button, read what you are agreeing to.

The problem happens when many of these open source resources do not have as many features as the proprietary ones. So, it may not be convenient for most of us to use these open-source resources. So you have to choose between convenience and privacy. Convenience and privacy do not go hand in hand at the moment. Because if you choose convenience, you have to sacrifice your privacy or if you choose privacy, you have to sacrifice your convenience. It is up to us to decide what we value - privacy or convenience. Or if you are a developer, you could develop an open source software that is convenient and private.

Nandini Menon
S7 CS B

PILL CAMERA

When we all, hear this topic, for the very first time, we can't imagine the size of the pill right?

This is why we say that, technology goes into the deepest, to discover the essence of science... Technology can never be limited, only to the field of computer science but, includes all the other fields of engineering too...

PILL CAMERAS are vitamin-pill sized cameras, that can travel all through the interior parts of a human body.

It was invented in 2000, by Gavriel Iddan based on the principle of nanotechnology, which deals with objects of a nanometer range. This device is also called as capsule endoscopy, which consists of: an led light, camera, and a build in antenna.

This capsule can be easily swallowed, as it is just a little bigger than the size of a pill. Once swallowed, it cannot be felt by the person and the device moves through the digestive system of the body ,due to the peristaltic movements.

As it travels down, the camera in the pill takes the images which is stored in the data recorder. The antenna in the pill, is to transmit the images of the internal parts of the person to the recording unit.

Then, finally the pill is flushed out of the body and the images from the reorder are transferred into the computer for further processing.

This pill helps the doctors to easily identify whether a patient needs surgeries or has internal bleeding, or other diseases, especially in the intestine, which cannot be diagnosed using other endoscopy techniques...

It is a portable device, small sized and effective, which is easier to be used for both the patients and the doctors too..

If there is any partial obstruction in the intestine, then the pill gets blocked.....therefore they are carefully used. Hence, technology is not a curse but it is a boom to the present generation. Inventions of others has to be our stepping stones and inspiration for us to develop.

"DEVELOPMENT ALWAYS LEADS THE ECONOMY, SO FRIENDS ITS YOUR DECIESION TO BRING DEVELOPMENT AND CHANGE THE WORLD AROUND YOU."

ROSE STOMBEL
CS -B

SWARM INTELLIGENCE

Swarm intelligence is the discipline that deals with natural and artificial systems composed of many individuals that coordinate using decentralised control and self-organization. In particular, the discipline focuses on the collective behaviours that result from the local interactions of the individuals with each other and with their environment. So, swarm intelligence can be seen as a mechanism which individuals can use to overcome some of their own cognitive limitations. Swarm intelligence claims the ability to manage complex systems of interacting individuals through minimal communication with only local neighbours to produce a global emergent behaviour. They typically do not follow commands from a leader, or some global plan. These special features make swarm intelligence play important roles in many engineering applications such as formation control of multi-robot system, massive distributed sensing using mobile sensor networks, combat using cooperative unmanned aerial vehicles, flocking, etc.

A variety of organisms have the ability to cooperatively forage for food while trying to avoid predators and other risks. This kind of motion can be called “swarm behaviour”. Naturalists and biologists have found that it provides many more chances for surviving than a single organism. So, they have been working on understanding and modelling of swarm behaviour for a long time. The swarm achieves its objectives via the interactions of the entire group. The organisms use simple local rules to govern their actions.

Swarm Intelligence is an emerging field of artificial intelligence. It focuses on million heads with one beautiful mind. It’s adaptive nature and randomness enables us to explore many alternatives and eventually to find the best one. In a nutshell, swarm intelligence is flexible, robust, scalable, decentralised, self organised, modular and parallel system.

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