

# THE ARTHA MAGAZINE

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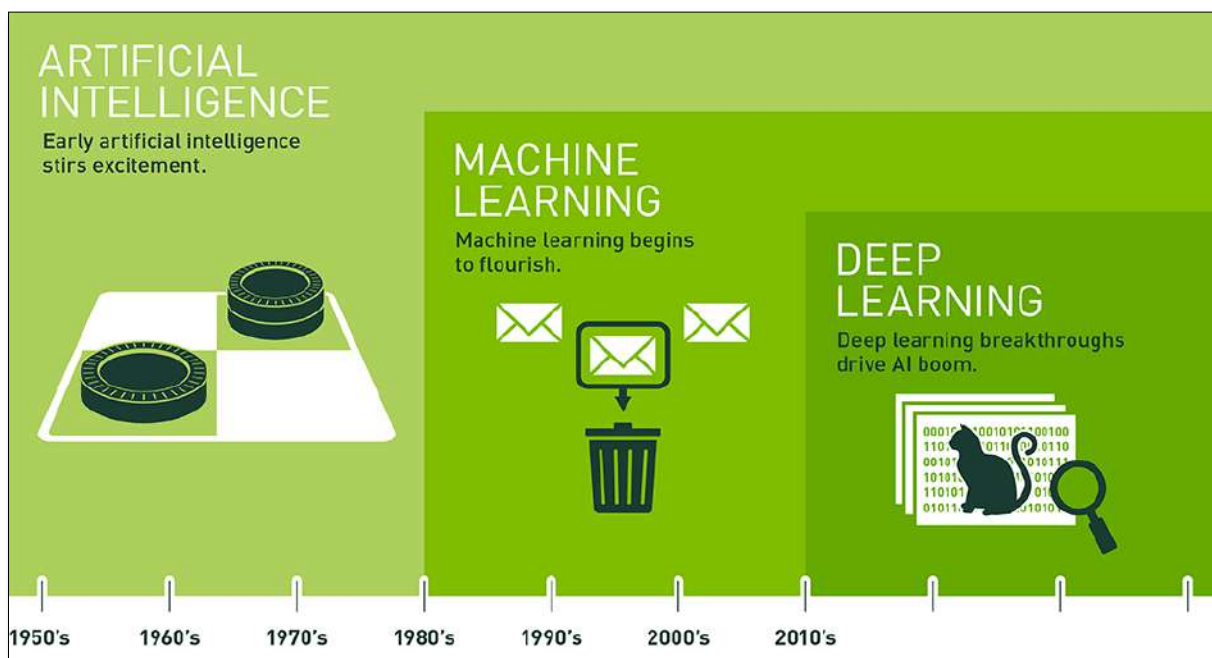


RWITAM BANDYOPADHYAYA

## DEBUNKING ARTIFICIAL INTELLIGENCE

You've all heard terms like Artificial Intelligence, Machine Learning, Deep Learning and what not! Confusing? Well yeah, because these are all intertwined concepts, which most people do not put an effort breaking down for you! Fear no more. By the end of this article, you should have a pretty decent idea of what's what in this world where cars are self-driving, and Google Assistant calls up people to fix appointments for you.

Let's see a picture first shall we?



Machine Learning, Deep Learning Subsets of AI

This basically gives you a picture of what falls where in the huge spectrum of terms that are thrown at you. Let's look at what each of this means in a bit more detail now.

**Artificial Intelligence:** Any machine which exhibits some smart, almost-something-a-human-would-do kind of behavior in its operation can be said to have "Artificial Intelligence". Well, intelligence cause it's smart and artificial cause well, duh! This can be further broken down into 2 broad categories :

1. **Narrow AI:** This is the most common form of AI that we encounter in our day to day life. These machines are specialized in a narrow set of tasks or even a single task for most practical purposes. Examples of such AI would be our mobile phone assistants, product recommendations on e-commerce websites, and even Google's AlphaGo! These machines are designed for a particular task, and they rock at it!



2. General Purpose AI: This is what most people envision when they hear the term AI. Heck even the pioneers of AI, back in the 50s and 60s had dreamt of it back then! So what is general purpose AI you ask? It's a machine that can do a variety of tasks across a broad spectrum. Think of it as close as possible to an actual human being. These machines can ideally learn from everything that happens around them and gathers enough intelligence to replicate those actions on their own!

Remember "The Terminator"? That guy was a robot equipped with a state of the art General Purpose AI!



**Machine Learning:** I'll give this one to you in a single sentence!

Machine Learning = (Mathematical Procedures + Statistical Models) applied to a large number of data-sets to obtain AI!

Easy? Yeah, it really is.

Now let's get into a little bit more detail on the above "ML Equation". What the digital era has done to facilitate ML is to generate huge amounts of data! Now, these huge chunks of data are cleaned up and processed to bring into a standard format that fits some kind of mathematical model for analysis. Then, using techniques such as regression, decision-trees, Bayesian Models etc, these data can be used to train a machine! Using this obtained knowledge from what is known as the "training data-set", the machines are tested on the "testing data-set", to verify its accuracy. Remember the huge chunk of data we had in the first place? The training and testing data-sets are usually obtained from that in some ratio as per the situation. For example, 70% of the data might be taken as the training set, and 30% can be left as the testing set. Common usage of ML is for classification, or for prediction.



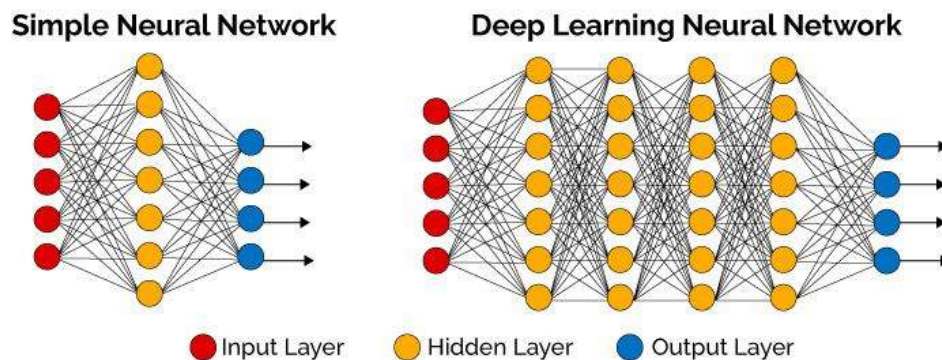
Ever used those cool camera apps which can detect what object you're pointing your camera at? That basically has an ML model underneath which is trained for a classification problem, i.e classify what object is currently in the frame. Facebook's face recognition? Classification based ML!

Prediction models can determine the output (a technically correct term would be "guessing"), given a set of input parameters. The most common example we all would have seen is Amazon's product recommendations. Based on your previous browsing history, it predicts what products you might be interested in the future! Pure magic isn't it!

**Neural Networks & Deep Learning:** This now is the subset of AI which has recently exploded with activity given the hardware advancements of computing! Neural Networks basically model how the human minds work. They have layers of nodes, called Neurons, which are all interconnected. Each neuron has some kind of processing it performs and feeds the data to the next set of neurons. This is ultimately mapped to a single neuron, which gives us a probability of the result.

This is not a recent thing though, as neural nets have been around since the 70s for that matter. The only limiting factor was hardware. These models require some heavy lifting in terms of mathematical operations (mainly matrix operations). In earlier machines, this was not feasible at all. But thanks to modern CPUs and more importantly GPUs, which specialize in this kind of fast, parallel processed matrix operations, neural nets are booming right now!

So this is about Neural Networks, but what the hell is deep-learning then?



Good question.

## Neural Networks vs. Deep Learning Networks

Deep-learning is nothing but more complicated neural nets. The word “deep” just signifies the huge number of hidden layers that these models have inside them. Each layer does a specialized task. The ability to add a huge number of layers basically gives a large amount of control that we have on the processing capability of the entire network. This is why we see deep learning networks most commonly used in image recognition. The initial layers of neurons detect smaller features such as corners, lines, and the deeper layers go on to detect larger features like texture, objects etc.

So that was a very high-level description of a few AI jargons that are thrown around. Hopefully, you are more equipped after reading this crash course on AI/ML terminologies. Keep learning, keep inventing! See you all soon!





VEENA KANNAN

## A PINCH OF UNCERTAINTY

*For those of you all who don't know what Bermuda Triangle is, Bermuda Triangle (also known as the Devil's Triangle) is an area bounded by geographical points in Bermuda, Florida and Puerto Rico where ships and planes are said to mysteriously vanish into thin air — or deep water. Over the years, many theories have been offered to explain the mystery.*

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Some writers have expanded upon Berlitz's ideas about Atlantis, suggesting that the mythical city may lie at the bottom of the sea and be using its reputed "crystal energies" to sink ships and planes.



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A drowned spaceship lurking deep underwater, its dangerous alien mechanics interfering with our own technology? Perhaps. Or perhaps the Bermuda Triangle, along with another similarly rumored triangle in the Pacific off the coast of Japan, serves as a portal of interplanetary, inter-dimensional creatures.

This particular myth holds that human ships and planes, when caught in the portal at the wrong time end up trapped in between dimensions.

Would you fly straight into a spinning, tunnel-shaped cloud? Gernon did. He flew into that rotating vortex, he says, only to emerge in a thick "electronic fog" with a white haze surrounding the plane. His compass spun wildly and electrical sparks surrounded him.

When the fog finally broke up, Gernon says he found himself miles away from where he expected to be - and much farther than he could have traveled in that time, leading him to believe he had passed through a time travel tunnel.

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The tropical skies over the Bermuda Triangle are prone to intense, severe storms as warm and cold air masses collide over the ocean. Seriously, it is kind of smack in the middle of the hurricane alley. Add to that the swift-moving Gulf Stream that cuts right through the Triangle, and you've got some very difficult territory for both ships and planes. To add another level of mystery to the legend, just take the underwater terrain: it's rugged and deep, and is home to the Puerto Rico trench, the deepest point in the Atlantic Ocean.

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IRSHAD ZEYA

## THOSE WERE THE DAYS!

### It's June.

And June reminds me of those long school summer holidays, long gone.

Family reunions. You were destined to meet every relative, far and far off ones during these days of the year.

Power cuts. Frequent ones. Or even continuous ones. So continuous that you are forced to sleep above the roof, instead of having a roof above.

And then getting so frightened while getting awake suddenly that you start seeing genies in front.

So, my house was surrounded by graveyards on two sides, this of course made things all the more frightening.

There were some plus points too of having the graveyards so close. Every relative were destined to be given a visit to the place. I gave one of them even the luxury to perform the final rites of a crow.

Gully cricket used to be the talk of town. As I was a little shy, roof cricket came as a savior.

The rules were delighting. If the ball gets outside the boundary, it's an OUT. And what is besides the boundary: the vast network of graves. Believe me, it was a tough time, taking the ball out of the deep graves. But we did. Ball Poem isn't a lie.

The games used to be fun, until some experts came in. And our entire cricket team will fail to ball them out. And they have the entire innings by their names.

What parameters makes one rich?

Money. A strict No!

WWE cards, stickers, ghost colors, orange book covers, balls & bats, badmintons, business notes and friends.

Electricity was a luxury though it didn't matter much. No we didn't have smartphones to charge and neither lap-tops to watch movies.

We used to have month long power cut in the burning summers and it didn't matter at all.

We used to have lamps and good old lanterns ready before sunset. Others time lime.

Breaking of those delicate lamp glasses was a usual phenomenon. And then the elders gyan that breaking of glass is a good omen, it splashes away whatever bad was bound to happen.

Fun didn't end upon re-opening of schools too. Mom would be always ready with a mug (certainly not a glass) of 'sharbat'. Sometimes raw mango ones. Other times lime will do.

With all this fun, there were challenges; privacy was a good joke.

To watch a movie after midnight, we used to lower the volume almost to zero, close the doors (not lock, as it will increase the chances of getting caught!), and both our eyes and ears fixed lesser than 15 centimeters from the TV screen.

Even a slight sound would be frightening to the ears.

Final examinations of every class were more enjoyable. We used to throw the old notebooks out as the exams go by. And then the wait for the new books for the new class.

And then the wait for the new books to arrive for the new class.

First few days would go only in finding out the orange covers and best stickers to paste above these orange papers.

Saturdays and Sundays were not a gift from God at all. They were mostly boring to pass. And the heart and mind would eagerly wait for the Mondays to come

I wonder how everything that used to be enjoyable has become things to dread about. Mondays.

How the things that were scarcely available, and considered luxury are plenty, and considered a necessity. Money, and all the things that came with money.

How the things that were available in plenty are not at all present today. Time. And time with loved ones. Mom's cooked food.

### Dear Readers,

Memories, no matter how old, tend to stick with us as we grow up. Those days don't comeback and we wish we go back to those days once again!

When it comes to childhood we have a lot to share and connect with. This is why Artha is starting a series on childhood stories.

It's time to remember some good memories.

Share your story at [trisha.gupta@oracle.com](mailto:trisha.gupta@oracle.com).

-Team ARTHA



SANTANU MUKHOPADHYAY

## Stan Lee's Marvel Universe

### Lee as we know:

*Comic book legend Stan Lee's life has always been an open book. The co-creator of some of the greatest superheroes and most beloved stories of all time has become just as mythical and larger-than-life as the characters in the panels. In 2015, around the time of Marvel's 75th anniversary, Lee had the idea to reflect on his own life, as he said, "in the one form it has never been depicted, as a comic book ... or if you prefer, a graphic memoir."*

### Some facts about our favorite superheroes

The journey started with Captain America. A week into his job at Timely Comics, Lee got the opportunity to write a two-page Captain America comic. He wrote it under the pen name Stan Lee (now his legal name) and titled it "Captain America Foils the Traitor's Revenge" It became an instant success and there was no looking back.

Well , the story of Hulk is a bit different. As some of the Marvel fans out here might know that there is Gray Hulk as well in our Marvel Universe. Surprisingly our favorite Hulk got its color from a printer malfunctioning!! Lee writes that the printer had a hard time keeping the color consistent. "So as of issue #2," Lee writes, "with no explanation, he turned green."

It needs no mention that "with great power comes great responsibility" is a quote from Spiderman which we all know. The thing which we don't know is that Lee put up a Spidey story with an anti-drug message as well! It came as a letter of request from the Department of Health,

Education, and Welfare asking him to put an anti-drug message in one of his stories.

As I am already into discussions about Spidey, any guess where Spidey's arch villain Venom came from? It was neither Stan Lee nor Jack Kirby's creation ,but a

fan-based concept which Marvel bought for \$220. The most surprising fact is yet to come. Michael Jackson tried to buy Marvel comics in the early 1990s' so that he could play the role of Spidey in his own production house!!!

We can end our Spidey facts by drawing attention towards the spider who bit Tobey Maguire in 'Spider-Man' which was chosen after a "Spider Olympics," and was then painted with body paint when time didn't allow for a spider costume to be created . The Marvel Universe is huge and surely cannot be covered in a single edition ,so please stay tuned for our next editions where Black panther, Ironman and others will be in the limelight.







TRISHA GUPTA

## Perseverance

Everyone has demons and troubles haunting them  
Just like you and me, we have our highs and our lows  
Find strength in the simplest bounties of nature  
Hold on tightly to each other, never let go

It's hard but it isn't impossible  
To live life to your best  
Focus on the positive, the wonders in your life  
Just hold on, all will be right in the end

Every new day is a new chance  
Don't let it go to waste, do what you can  
Have faith and trust yourself  
All good things come to those who wait.

-Trisha Gupta

## Mandala Coloring

-Trisha Gupta





MAYUR KULKAARNI

## 11<sup>TH</sup> MAY 1998 - THE NUCLEAR TEST OF “SHAKTI”

The day was 11<sup>th</sup> May 1998. It was a hot and tiring afternoon. Everything seemed to be all right and mundane. But little did the common man know that a small village in Pokhran was cooking the historical event on its stove-like arid soil, which was about to change the entire world’s perspective about India.

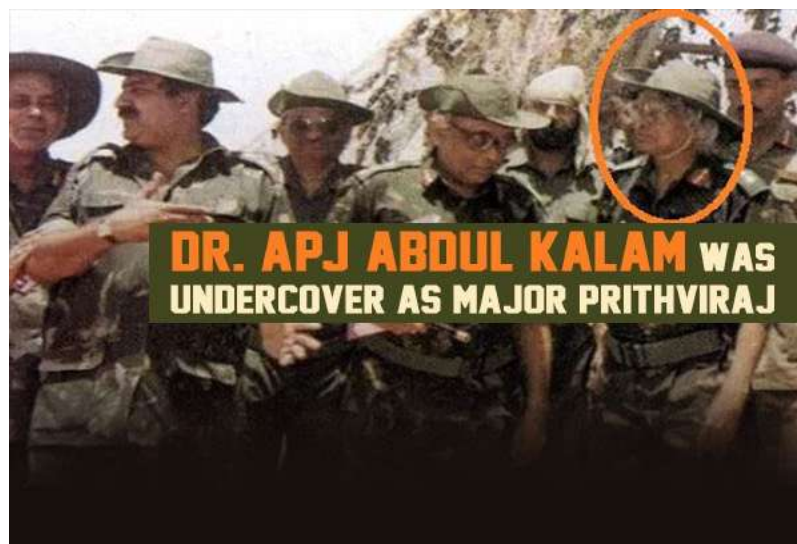
PM Vajpayee stood in front of the media. Nobody knew the purpose of the emergency press-conference. And then came the declaration - "Today, at 15.45 hours, India conducted three underground nuclear tests in the Pokhran range " - the words that shook the world.

India had become a Nuclear State. The day we celebrate today as National Technology Day.

### The story of Pokhran: "Operation Shakti"

In 1974, when India succeeded in its "Operation Smiling Buddha", we were already under severe criticism and threat of sanctions from US-allied powers. 1998 was the year when America, the Uncle Sam of the world, was an absolute superpower. India had hostile neighborhoods. China and Pakistan. On one hand, China was already a nuclear state. And on the other hand, Pakistan was being supported economically by China and US militarily to full extent. It was the need of the hour that India should conduct nuclear tests to use it as a deterrent against ever aggressive neighbors.

Then Indian Prime Minister Vajpayee was under tremendous international geopolitical pressure to not conduct any nuclear tests. US was keeping constant vigil on India. CIA agents were deployed on the field. Satellite surveillance was made stricter than ever. In this adverse scenario, Indian political leadership took a strong decision and gave a



green signal to the team of scientists to conduct the test.

After two secret meetings in South Block, scientists were given the go-ahead.

PM Vajpayee knew that the time window available to him was not much. Hence, an effective and planned implementation of the operation was required. The mission was codenamed as "Operation Shakti". DRDO (Defense Research and Development Organization) was spearheading the mission.

The whole operation was kept secret. Only a few of the Cabinet Ministers knew about it. The construction work on the fields of Pokhran was generally done at nights so as to avoid the lenses of American satellites. Scientists working on the project never travelled together. They would wear military clothes so as to disguise themselves against the field agents of CIA if in the vicinity. Scientists were given the codenames. Dr. APJ Abdul Kalam was codenamed "Major General Prithviraj". Dr. R Chidambaram was "Natraj". The Engineering Regiment of Indian Army was given the responsibility of constructions and support.



The date was once postponed because it was colliding with the wedding date of the daughter of Dr. R Chidambaram because if he would not have been there for the preparations of the wedding, it would have raised suspicions and somehow news could have spread.

There used to a minimum security rather than an elaborate convoy. The instruments were carried from BARC to Pokhran at night with minimal noise. The field was set to have a blast!

India conducted 3 nuclear tests on 11th May 1998.

### **Aftermath of Pokhran Tests:**

CIA, the most successful secret service agency of the world stated publically that it was their failure that Indian agencies were successful in conducting nuclear tests. As predicted by Indian policymakers - United States imposed sanctions on India, cutting off all aid except humanitarian assistance. The nuclear HAVEs started condemning HAVE NOTs, as usual.

Indian public, print & electronic media, civil societies vehemently supported the PM's decision. Even some of the

world leaders who were critical of India officially, called PM Vajpayee through the unofficial medium and congratulated him. India had more or less achieved the strategic goals for the nuclear test. India declared its "No First Use" policy and "No use" on non-nuclear states - this catapulted India high on moral grounds.

After a few years, nuclear powers like the United States, France signed nuclear deals with India, shredding off the sanctions.



### Long-term Effects:

Pokhran-II nuclear tests carried out 20 years ago established India's nuclear prowess in the world. India's test was not only successful, but in a way India had demonstrated its might in the field of science and technology. We can also say the date has been engraved in Indian history as a demonstration of its military power. The world started looking at India for its scientific achievements.

With its diplomacy and political engagements, India is considered to be a major player in nuclear doctrine. India is officially a member of all the Nuclear Technology Control frameworks - Australia Group, MTCR (Missile Technology Control Regime), Wassenaar Arrangement (except NSG). India was put onto the tables of decision-makers at the global levels. It was one of the steps on the path to India's superpower walk.

But eventually, it's not about - will India become a superpower or not, it is about what kind of superpower does India want to become?



VISHAL PATTANASHETTY

## ಅವಳು ನೀನೆ..!

ನೆಲೆಯ ಪದಗಳನು ಪೋಣಿಸಿ ತರಲೇನು ಗೆಳತಿ

ನಿನ್ನ ಪ್ರೇಮ ಪೂಜೆಗೆ ಪ್ರೀತಿ ಆರಾಧನೆಗೆ ||

ಕಲ್ಲಿನ ಹೃದಯದಲಿ ಕಲ್ಪನೆಗಳ ಮನೆಮಾಡಿ

ಕಾಯುತಿರುವೆ ನಿನ್ನೆಡೆಯ ಕಾಮನೆಗಳನು ಮರೆಮಾಡಿ

ಎರುತಿದೆ ನನ್ನೊಳಗೆ ಬಿಸಿಯುಸಿರಿನ ತಾಪಮಾನ

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ನಿನ್ನ ಕುರಿತು ಬರೆದ ಪದಗಳು ನಲಿದಿವೆ ನಾಚಿ ನೀರಾಗಿ

ರೆಕ್ಕೆ ಬಿಚ್ಚಿ ಹಾರುತಿವೆ ಬಾನಾಚೆ ಹಾಯಾಗಿ

ನಿನ್ನ ಕಂಗಳ ನೋಟ ಕದಿಯಲು ಕಟ್ಟುವೆ ನಾ ಜುಲ್ಮಾನೆ

ಬರುವ ದಾರಿಗೆ ಬೆಳದಿಂಗಳ ಬಾಡಿಗೆ ನೀಡುವ ಅವಳು ನೀನೆ |

ನೆಲೆಯ ಪದಗಳನು ಪೋಣಿಸಿ ತರಲೇನು ಗೆಳತಿ

ನಿನ್ನ ಪ್ರೇಮ ಪೂಜೆಗೆ ಪ್ರೀತಿ ಆರಾಧನೆಗೆ ||





TRISHA GUPTA

## SHOW : The OA



*"The biggest mistake I made was believing that if I cast a beautiful net I'd catch only beautiful things"*

The OA is a Netflix original show co-created by Zal Batmanglij and Brit Marling, who also stars as the protagonist in this mystery drama infused with supernatural, sci fi and thriller elements. The show is directed by Zal Batmanglij.

A young woman who had disappeared seven years previously is found on a roadside and taken to hospital. Her mother rushes to her side whilst her father explains to the nurse that their daughter, Prairie Johnson, has never seen them until today. She had left home blind. Now she can see. When Prairie returns it is clear that whatever ordeal she has been through is far from over. When her high school neighbor Steve provides her with a Wi-Fi router in exchange for a favor, she asks him to rally a group of five people to meet her at a local abandoned house. As night falls, an unlikely group of four school boys and their middle-aged female teacher gather around Prairie as she begins to tell them her story; where she has come back from, why she needs their help, what the strange scars on her back mean and why she refers to herself as 'The OA'.



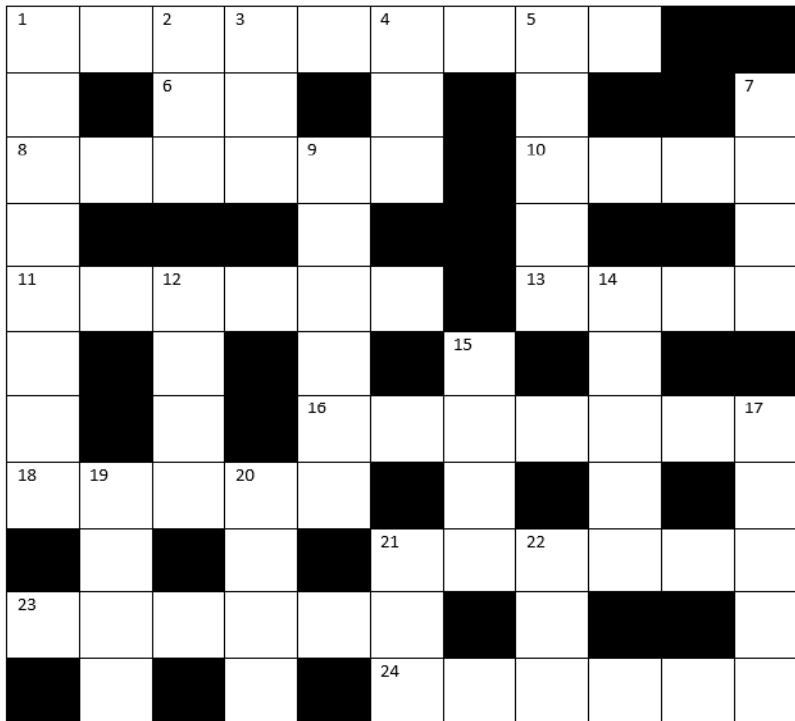
Part of what makes this series so special is its use of storytelling. The majority of the series takes the form of The OA telling the group about her experiences. Her story is one of love, loss, despair and discovery and is interrupted in places when the characters' present day lives must resume. We see the day to day life of The OA since her return, her broken and bewildered parents and the struggles of the four boys and their teacher Betty Broderick-Allen, or 'BBA' for short. The format ever increasingly smudges the line between the OA's story and present day and will bring some viewers to question whether this is a blurring of tall tale and reality; of fiction and truth.



This is expert scriptwriting from Brit Marling and Zal Batmanglij because not only are they making their audience feel part of the group of five whose lives are consumed by her tale but they are also highlighting the power of charisma and the spoken word. It is a series that cannot help but evoke a powerful reaction, be it love or disappointed exasperation. The OA's story is theatrical and sprinkled with magic, myth and peril.

The series appeals to the philosophical senses and also uses Rostam Batmanglij's otherworldly score within The OA's story to enchant and disturb. Sensory deprivation is a key concern of the plot, which stresses throughout the need to feel the touch of another person, to feel one's emotions and to feel freedom.

This is a story within a story about life, death, hope and what might be beyond. It is a love song to storytelling and both an encouragement of and a warning against listening; the very thing The OA had to rely on in the absence of her sight. It is a series that explores the limits of what a person can take and what drives people to fight on and a reassurance that isolation of any kind can be shattered with a few kind words from another living soul.



#### DOWN

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|----|--|----|--|
| 1  | Physical components of the computer                      | 12 | System defects   |
| 2  | Begin a download   | 14 | Connection points between computer and external/internal devices |
| 3  | Optical compact disc (acronym)                           | 15 | Screen pictogram   |
| 4  | Type of memory chip (acronym)                            | 17 | A brand of printer   |
| 5  | Program that replicates and spreads among computers      | 19 | Obsessed computer person (sl)                                    |
| 7  | Function used to make a window larger                    | 20 | Type of operating system   |
| 9  | Computer technology corporation founded by Larry Ellison | 21 | Standard cable connection (acronym)                              |
| 22 | Datum of integral data type (abbr)                       |    |  |

#### ACROSS

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|----|--|
| 1  | Data Storage Device (2 Words)                      |
| 6  | Radiation in Sunlight (abbr.)                      |
| 8  | __Access Memory                                    |
| 10 | Edit Option  |
| 11 | Video Equipment which feeds images to computer     |
| 13 | Unwanted Messages                                  |
| 16 | City in Switzerland                                |
| 18 | Come out of  |
| 21 | American Global IT company based in Blue Bell, PA. |
| 23 | Intelligence                                       |
| 24 | Mangled  |

A heartfelt thank you to the readers for their valuable feedback and participation in the crossword. Send your entries for this crossword to [trisha.gupta@oracle.com](mailto:trisha.gupta@oracle.com). You can also send creative entries for **Artha | Creativity** section at [trisha.gupta@oracle.com](mailto:trisha.gupta@oracle.com). Discussions on [Campus OFSS 2017-18](#).

#### Answers for May 2018 Puzzles

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