

# Episode 40

## Aanay Vala Kal

### Article of Faith

Script and Research: Dr Anurag Sharma

Translator: Dr. Sukanya Datta

Concept and Coordination : Dr. B.K. Tyagi

#### Introduction:

**Anchor:** There is a lot of speculation floating around about Artificial Intelligence or A.I. This is particularly true about its relevance and usefulness to India. However, as mentioned these are simply speculations. A.I is of tremendous use in the country and that is why investment...both by the government and the private players is on the upswing. The market for A.I in India stands at around Rupees 50 thousand crores and the value is increasing rapidly. Some feel that the role of A.I in India will be limited to mobiles, TV, and marketing etc. Others think that it will herald an increasing dependency on technology...and this is the crux of the matter because the ascendancy of A.I is now visible in all spheres of life. This Radio serial aims to cut through the layers of misunderstandings and mistrust and to present the facts and figures in a simplified manner to facilitate the understanding and appreciation of A.I. So here we have the Radio Serial Aanay Vala Kal and the next episode.....Article of Faith....

#### Characters

**Umesh:** 55. Journalist. Activist.

**Arul:** 25. Engineer. Start-up entrepreneur.

**Vineet:** 50. Arul's father. Engineer in the army.

**Sarika:** 48. Arul's mother.

**Om:** Son of Umesh. Potential business partner for Arul.

#### Scene 1

**(Door bell rings. Sound of door opening)**

**Vineet:** Welcome, welcome Umesh ji! Come in. How come you are here so early on a Sunday morning...looks like there is not much pressure at work.

#### Laughter

**Umesh:** I wish it were so...but that is not the case. It is just that I wanted to Om to meet Arul. Kids these days...I tell you they don't work as much as they think...to tell you the truth, I think they simply dream a lot!

**Vineet:** Welcome, Om. Umesh ji, don't you think we need to dream it before we can achieve it...of course, we will have to strive too...but how can we fly without uplifting dreams first? Come...sit please.

**Sounds of chairs being moved. People settling in.**

**Sarika:** Namaste Umesh ji..and how nice to see you Om. How are you dear..and how is your mummy?

**Om:** I am fine, Sarika aunty. Mummy is OK too..she wanted to come today but Tinni has her exams tomorrow so mummy decided to stay back and supervise.

**Sarika:** Yes, Sashi did mention it....I think Tinni's exams will be held online, won't they? We are having cholay-kachauri today and I have got some packed for Tinni and Shashi too...don't forget to take it for them.

**Umesh:** **(laughing)** Yes! The entire residential colony is awash in the aroma of cholay-kachauri that is emanating from your kitchen...actually it tempted me to pay you a visit right away!

**Loud laughter**

**Vineet:** Correct decision. Arul has stepped out to buy yoghurt. He should be back soon. Manisha is making the kachauris...everyone in our colony praises her cooking so we have hired her as the cook from this month onwards.

**Om:** Ah! Mnaisha aunty is a really good cook. She cooks for Tysha too and Tysha says she makes good pasta too.

**Sarika:** Well, that's final then...that the next time you come we will have pasta. You can bring Tinni and Tysha too. But tell me, how is your new job coming along?

**Umesh:** That is a valid question that you have asked, Sarika.It hasn't even been one complete month after joining at the new job and he wants to go ahead with his start-up idea...that is why I brought him over to meet Arul.

**Vineet:** Oh Wow...that's a grand plan. What idea do you have about your start up?

**Umesh** **(slightly irritated):** Come on...can't you see this is what is wrong, Vineet? He has a wonderful job which he wants to chuck in order to float his own start-up...what if it fails? Then he won't even have a job in hand and the snide comments from relatives will be extra burden to bear.

**Om:** But Papa, you need to take risks if you are to succeed...didn't you do something similar? You went to the town to be a teacher but did not get permanent position. So you went into journalism and success was yours at every step. You too took a risk...didn't you?

**Umesh:** Those days were different. There were multiple options in those days. Tell me does anyone resign from a wonderful job these days?

**Sarika:** Yes they do Umesh ji. My Arul did. And now he has been able to get funding for his start-up too.

**Om:** Yes Aunty, The Venture capitalist who has invested in Arul's start-up has evaluated my idea too. He likes it and has suggested that Arul and I work together instead of separately.

**Umesh:** Oh ho...look, these guys have to protect their investment but you have to take care of your families. It isn't a n easy task you know, to set up your own business. Arul and you are both engineers and you must be aware of what engineers are facing these days. It is my suggestion that you stick to your job and Arul quickly finds another! If not, I can see him drifting in two years time.

### **Sound of door opening**

**Arul:** Namaste Uncle. Om...how are you? **Laughing.** Umesh Uncle...who did you see drifting in two years time?

**Sarika:** You. Who else? Have you got the yoghurt?

**Arul:** I got the yoghurt, Mummy but Tyasha saw me with it and asked if we were having paranthas...I told her we were having kachuris....and well, long and short of the story is that she will be dropping in too to taste them. (**Addresses Umesh**) And Umesh Uncle life was made to drift along, wasn't it?

**Umesh:** Which guru has given this counsel?

**Arul:** Baba Arulanandji!

### **Loud laughter**

**Arul:** Even if you drift or take wrong turns...the search for the truth will eventually guide your feet to the correct destination.

**Om:** (**Shouts**): Hail Baba Arulanandji

**Arul:** Bless you my son, Om.

### **Loud laughter**

**Umesh:** This is not a trivial matter. This pertains to life. Take for example this ...this...Artificial Intelligence thing that you want to work on. Well, this has the word artificial as a prefix...how can it be the future of a country or the next generation...after all, it is artificial.

**Vineet** (**laughingly**): Looks like you are swimming against the tide, Umesh ji. I believe that the pace at which A.I is consolidating its hold in different sectors, it will soon reign supreme in all aspects of the human civilization. I think the key to development is hidden in the use of A.I.

**Om:** Rightly said, Vineet Uncle. A.I has so much potential that...that

**Umesh:** So much potential that....what? Go on...tell us.

**Om:** The potential is not just enormous. It is limitless.

**Vineet:** I agree with Om.

**Umesh:** All this is nothing but foreign propaganda. All this potential exits abroad. Look, at the end of the day all we need are two slices of bread...two rotis. Can your A.I contribute towards this?

**Sarika:** Arrey Umesh ji...you have actually asked Arul about his start-up!

**Umesh:** Eh what? Arul's start-up makes rotis...has he opened a dhaba? Come on Om...we are going home. No start-ups for you! Get up!

### **Laughter**

**Vineet** **(laughs):** Come on Umesh ji. Give Arul a chance to explain. Hear him out and you will understand the connection between his start up, A.I and rotis.

**Arul:** My work hinges around the use of A.I in agriculture.

**Umesh:** AI in agriculture? Will it farm the land...then, what will the farmers do?

**Arul:** Uncle, we can use AI to analyze the seasonality, variety or the species being grown, use of fertilizers etc to predict the production patterns so that the government can formulate the procurement policies well in time. It can decide on the number of procurement centres to be set up as also decide on where to set these up. It can even fine tune logistics to the extent of calculating the number of sacks that can be stored in each granary. A.I can help at every step.

**Om:** This is amazing indeed. Oftentimes because of a discrepancy in calculations sacks of produce have to be stored in the open. So, A.I helps in collecting and analyzing data to assist policy-making...what else can it do in the field of agriculture? I mean what else is being done?

**Arul:** Oh! A lot is being done, Om. Machine-learning and A.I are being used widely in the field of agriculture...especially during sowing of crops. These are applied in all aspects of agriculture ranging from irrigation to application of fertilizers and even during reaping. Best of all, A.I has been a true ally of the farmers in these times when climate change is causing global warming.

**Umesh:** How can that be, Arul? We have not yet triumphed over climate change.

**Arul:** I will have to explain in detail. Basically, from a farmer's perspective there are seven steps that are involved in farming. Roughly speaking, these are:

preparation of the soil for sowing seeds, sowing of seeds, manuring or adding fertilizers, irrigation, protection against pests, reaping and storage.

**Om:** AI is helpful at each of these steps. It provides solutions to issues with respect to the step under consideration. For example, analysis of the soil will tell the farmer about the fertility status of the soil and give suggestions about the fertilizers to be added and the amounts to be used. This means very little is wasted as only appropriate nutrients are added in adequate amounts. This translates into financial benefits for the farmers.

**Vineet:** Absolutely correct, Om. Looks like you have done your homework.

**Umesh:** Hmm, I am noticing it too. This guy is an engineer ...how did he suddenly become so proficient in agriculture/ I think Om and Arul have formed a nexus of some kind.

**Arul** **(laughing):** Oh ho Uncle...you can investigate our nexus later...now please pay attention to the nexus between A.I and agriculture. Like Om says A.I helps us to identify the nutritive elements that are lacking in the soil...and that clues us in about what we must use and in the quantities desirable. Above all, farmers are facing new challenges arising out of the pollution and also climate change ushered in by global warming. Such changes are making it difficult for farmers to correctly identify the best time for sowing the seeds. This is where A.I can correctly forecast the seasonal changes and predict the optimal period for sowing seeds.

**Sarika:** Arul, you mentioned once that A.I has revolutionized irrigation practices.

**Om:** Yes aunty. I'll tell you. This is the era of precision-farming. This means that the crop being grown in the field is given the correct amount of water...no less; no more. The roots are irrigated by pipes that feed it water, drop by drop with the help of A.I. The water savings were 90% more than the conventional irrigation system. In aero-ponics, everything is controlled. This is because it is a closed- system with no exposure to climatic conditions; not even to day-night hours. A.I controls the nutritive elements to be added and the amounts required. It also controls the exposure to light. The entire system is automatically controlled, by A.I.

**Vineet:** These days drones are being pressed into service to spray pesticides.

**Arul:** Papa, using drones to spray pesticides is old news. Now the drones patrol the airspace over the fields and detect insect- infestations. A.I calculates if there is the need for insecticides or not.

**Umesh:** That's peculiar...I mean if there are insects you would need insecticides, wouldn't you?

**Om:** Papa, This is the beauty of A.I. Not all insects are harmful; some are actually beneficial for the crops. Besides we just have to keep the pests under control,

not annihilate them. The drones take all these factors into consideration before spraying...and then too in minimal amounts.

- Sarika:** Good work, Om. Your A.I-empowered drones are ecologically aware as well.
- Vineet:** And why not, Sarika? If humans have not been conscious ecologically, maybe it is time for machines to be. Arul, tell me...what is the role that A.I plays during the reaping of ripe crops?
- Arul:** Papa, we have AI empowered machines that can identify the correct time of reaping based on the time of ripening of the crops. If it is a large field, A.I can calculate the ploughing distances and trajectories so that the least amount of fuel is used with the maximal results. It can also suggest the specific instruments needed to reap the crops in question. It can also provide information about the availability of these instruments. The AI-app will soon provide our farmers with all this information; isn't that right, Om?
- Umesh (surprised):** What do you mean...isn't that right Om? What does Om know? Vineet, I think there is something amiss here!
- Om:** Papa, you always manage to sniff out something amiss everywhere!
- Umesh:** Why shouldn't I? Here you are...you two...both of you chucking up perfectly good jobs and becoming involved with strange new technology. Anyway, I am perplexed. If A.I is going to do everything then, what role will farmers play?
- Arul:** This is a valid question Umesh Uncle. But tell me...everyone we meet these days says that he or she does not have time...what will this person do if time is made available?
- Om:** Tell us, Papa.
- Umesh:** If they get time...Hmm....well, they will do something or the other, they will learn something new, mend broken relationships, fulfil unattained dreams...I mean they will do something or the other!
- Arul:** So will the farmers. They will find time to value-add to products. They will find new ways to maximize profits. They will seek out newer technologies that will lessen their burden yet increase their profits.
- Vineet:** So your start-up is providing solutions to technologies in the fields.
- Om:** We do that Vineet Uncle. But let us tell you how India is poised to exploit A.I.
- Vineet:** Wait! Wait! Wait! Om tell me first how you know so much about Arul's start-up and also so much about A.I's role in India.
- Arul:** Arrey Umesh Uncle, Om does data analysis too. So it is natural that he should know about technology updates. And anyway, Uncle AI is being used in so many fields...starting from health services to space travel and electric supply to use by the army.

- Om:** Don't forget the share market where trading uses AI. People use it to determine where to invest and how much to invest. On the health front, AI is a useful weapon in our fight against illnesses.
- Sarika:** I remember reading that AI-empowered Apps are increasingly being used in the fields of textiles....even, makeup.
- Arul:** Yes Mummy. It is now possible to keep track of the fabrics being preferred with respect to the changing seasons. ..even the colour preferences of an individual. AI can even suggest the appropriate furniture, for your room.
- Om:** Aunty, some companies have based the designs of costumes and furniture on AI-empowered Apps and tools. Automobile companies use AI to compute the fuel efficiency of their cars by studying the condition of the roads in a country along with the purchasing power of the citizens. AI has hastened the pace at which new models are being introduced.
- Vinit:** Is it true that AI-Apps help with the logistics of loading cargo in ships and planes?
- Arul:** Absolutely correct, Papa. Maintaining balance has always been of primary importance when loading ships and planes. Engineers are proficient at this task but with the advent of AI, the task of loading has become easier and swifter. The AI machines decide how the weight should be distributed and then conveyor belts or big cranes are used to move the cargo.
- Sarika:** Well, we all know that robots have been used in Industry for many years but what is the status of AI in India? Do the governmental policies favour AI?
- Om:** Definitely, Sarika aunty. In June 2018, the Indian Government formulated a national policy on AI. The government released a document entitled National Strategy for Artificial Intelligence- AI for all.
- Arul:** Right, Om. This paper put forward by Niti Ayog deals with five main heads including how to accelerate the rate of growth and to bring more and more citizens under its ambit.
- Umesh:** What are those five main heads? These heads are important indicators about whether AI can really be used to benefit the common citizens or whether it is all hot air.
- Om:** No, Papa all the hot air usually emanated from news on television.

**All laugh.**

- Om:** Anyway, the five heads are: Healthcare, Agriculture, Education, Urban and smart city infrastructure and Transport and mobility.

**Umesh:** Hmm... the direction seems to be alright. But how does it align with your start-up? I mean how does it fit in with Arul's start-up?

**Arul:** The government has laid out the basic principle to extend all types of help now it is up to us to decide what we want to do...how we are going to use AI to provide solutions...I mean we...young people like Arul and me have to decide.

**Om:** Yes indeed Arul. We are the ones who have to use it. We have to study the problems and find solutions...and it is here that AI is turning out to be massively useful.

**Umesh:** Arul, you have chosen the agriculture sector...are you going to remain limited to it?

**Arul:** Uncle, does a technology ever remain limited or confined. When human beings learnt to tear up the atom didn't it lead both to the bomb as well as generate electricity...and now we have medical interventions. AI has tremendous potential. It is being developed to think and act like humans do. And in a few cases it has far exceeded human capabilities.

**Vineet:** Do you mean Arul, that human beings will be made redundant; that AI will replace us?

**Arul:** No Papa, nothing can replace humans. However, it can think like human beings and is able to take decisive and informed decisions. This is why almost all countries in the world have formulated their own policies and regulatory guidelines.

**Umesh:** Oh! But there is something I haven't been able to understand. How can a machine think like humans? Tell me Sarika, do you think this is possible.

**Sarika:** That is my question too, Umeshji. Is it possible?

**Om:** Arrey Sarika aunty. Why not? Think. Why is it that Papa is an engineer and Umesh Uncle, a journalist?

**Umesh:** Simple. This is because he was interested in science and I was more interested in literature and in politics.

**Vineet:** Umesh is correct. However, it was education that gave us the skills. We learnt.

**Arul:** You are correct, Papa. We are what we are courtesy our education; our learning. The learning may be what we were taught in school or at home...but all this is what we learnt in this life...on this Earth. Right?

**Sarika:** So what is special about this? This is standard isn't it? Routine? That is why they say you manifest signs of your learning.

**Umesh:** Learning is the foundation of character.



**Om:** So you agree that whatever we are...is a result of all that we have imbibed, or learned.

**Vineet:** Ok...Ok...but what is it that you two want to say exactly?

**Umesh:** Vineet, these two are implying that we have no brains...we are only a product of what we have learnt. As if experience counts for nothing. Now you kids listen to us...we are your parents! Whatever we have learnt formally is fine but I became a successful journalist only through vast experiences of life.

**Arul:** But then this is exactly what AI is...we stuff all sorts of information into it and it learns to reason like a human being.

**Sarika:** Really!

**Om:** To allow it to think like a human being we feed it data...the more the data, the better is the machine's ability to analyse and respond accordingly. This is almost like our learning process in childhood. Feeding the information into the machines is easy. But to create a machine that can respond like human beings needs feeding tonnes of data to it!

**Arul:** This is the reason why everyone is connected to social media. Connectivity between people is the best data stream for machine learning. Even television viewing reveals data. What are you watching? How long are you watching? Who is watching? What are these but potential data for machine learning! It is data and only data that can make a machine respond like a human being.

**Umesh:** So, all that we hear on TV or do on our mobiles are all data for machine learning?

**Om:** Not just TV or mobiles, Papa...what you hear on the FM channel of your car radio also serves as data.

**Arul:** However, it is true that data privacy...especially personal data privacy is protected by law and anyone who breaks these rules is liable for persecution.

**Vineet:** I understand that in some countries AI has taken over significant responsibilities...for example human resource hiring, traffic control and issuing of challans for rule breakers.

**Om:** Vineet Uncle, this is just the tip of the iceberg...do you know that news reading is another task that AI is performing these days?

**Umesh:** Don't talk so much...remember not only am I your father but I am also a journalist. News is read by a human being, not by AI! Hmmm.

**Arul:** Uncle, journalists are aware about everything and that is why you may recall that in 2018 the news on the Zinhua news channel of China was read out by an

AI-enhanced machine. It looked just like one of us and had it not confessed that it wasn't human, we would never have guessed.

**Umesh:** Yes...yes...Robot read the news...I remember hearing something about it...but it was an actual human being...a famous Chinese news anchor.

**Om:** Papa you are such an acclaimed journalist yet even you could not differentiate between a human being and a robot...

**Umesh** **(angrily):** He was reading the news in intonation identical to that of the famous news anchor Zeng Ziao...

**Om:** Absolutely correct, Papa.

**Umesh:** I am your father, after all.

### **Loud laughter**

**Vineet:** Wow Umesh ji you have hit a good length ball for a sixer...that should teach the young one's something! These kids have been treating us like infants.

**Umesh:** **(Laughing tone):** Vineet you are an engineer in the army...you understand new technology, AI etc. quite well. I was a student of Political science. Journalism taught me to be aware about what was happening around me. I would like to tell you all something.

**Om:** What new news, Papa?

**Umesh:** Well, you and Arul should have admitted that you have launched a start-up together.

**Vineet:** Eh! When did this happen. Arul why didn't you tell us anything?

**Sarika:** Yes, Arul... we did know that you were planning to launch your start up but you never mentioned that Om was your partner in this endeavour.

**Arul:** Mummy we wanted to give you all a surprise but Umesh Uncle took Om to task and we decided to postpone the announcement for a bit. (Surprised tone) But Umesh Uncle, how did you guess?

**Umesh:** Like I have told you many times

**Om** **(in Umesh's baritone):** We are the fathers...you are the sons!

### **Loud laughter**

**Umesh:** Om's behaviour gave me the first clue. Then, I overheard him on the phone and the picture became clear.I was simply testing the power of their conviction and commitment.

### **Laughter**

- Om:** So, Papa, you do not have any objection to us launching the start-up.
- Umesh:** Why should I object? You will promote new technology...you will learn...you will contribute to the amelioration of the country's problems. Why would I object to such a good motive and effort?
- Vineet:** Absolutely correct, Umesh ji. The world had labelled even Einstein as being mentally challenged...but today an intelligent person is compared to Einstein. You two have our blessings to launch your start- up to enhance the earnings of our farmers and speed the progress of our nation.
- Sarika:** Quite right Vineet...but come on now. The kachauris are ready. Tyra and Tinni must be on their way here
- Umesh:** AI is useful. There is no doubt about it. However, some people are critical about AI...but I look at it this way...if you believe then the waters of the Ganga are pure. Otherwise it is simply H-two O!!! Everything is an article of faith.
- Om:** Thank you, Papa for your faith in us.
- Umesh:** Om, do you know why we repose our faith, belief and trust on you...on Arul...on this generation?
- Om:** Why Papa.
- Umesh:** **(laughing very hard):** Because we are your fathers!

**Very loud combined laughter**

- Anchor:** We must have laid to rest many misconceptions about AI. After all, AI is the most significant technology of our times. Agreed that it is not the panacea for all ills, still AI is indubitably a revolutionary new step to help us step into the next phase of human development.

It is laudable that Umeshji has reposed faith in Om...isn't this the very basis of what is required? Faith! Faith in the younger generation. Faith in new technologies. ...and on our Radio series Aanay vala Kal. AI is the first link that consolidates our faith...so keep listening to further episodes of Aanay vala Kal. The next episode will bring you something novel no doubt. So do not forget to tune in. Till then, Namaskar.