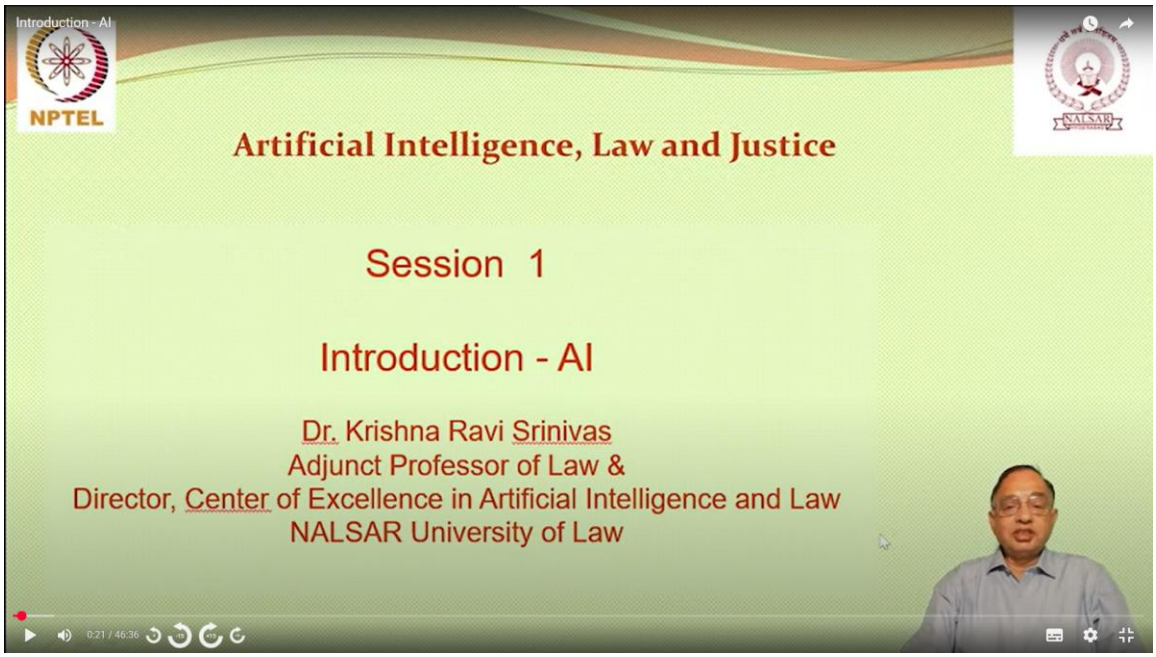
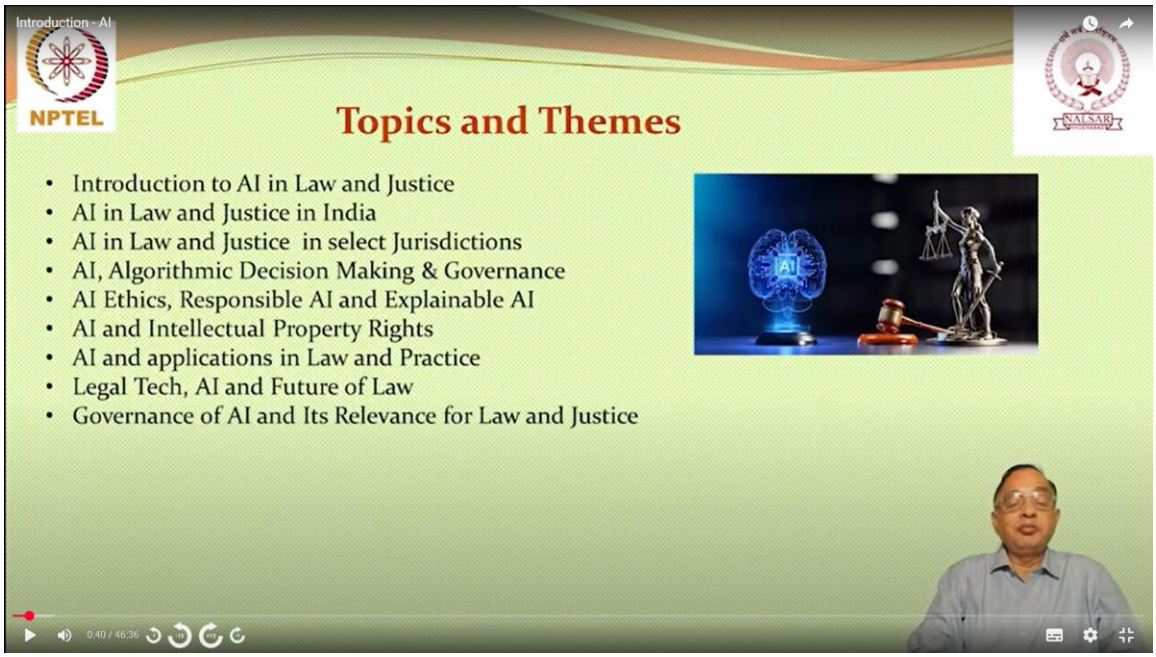
Course Name – Artificial Intelligence, Law and Justice
Professor Name – Dr. Krishna Ravi Srinivas
Department Name – Center of Excellence in Artificial Intelligence and Law
Institute Name – NALSAR University of Law
Week – 01
Lecture – 01



Artificial Intelligence, Law, and Justice - Welcome to this course, "Artificial Intelligence, Law, and Justice," offered by the NALSAR University of Law. I am Krishna Ravi Srinivas, an Adjunct Professor of Law at NALSAR University of Law and the Director of the Centre of Excellence in Artificial Intelligence and Law.



Basically, this course covers a wide variety of themes and topics that are very relevant today. For example, we begin with Artificial Intelligence (AI) and Law and Justice, then we spend some time understanding how AI is being used in India, particularly in law and justice, especially in courts, then we look at how the developments are in other jurisdictions, including the USA, the UK, and the Mexico, and finally, we move to the important topic of algorithmic decision-making and governance. Algorithmic decision-making is a key topic in law and justice, particularly regarding decision-making, the granting of bail, and other decisions. So, governing algorithmic decision-making in law is a controversial yet key topic.

So, we will discuss that in detail with case studies and examples. Then, AI ethics, on its own, has become an important topic, and it is all the more important when it comes to law and justice. So we go into detail on what ethics in AI is when it comes to law and justice, and how responsible AI and explainable AI are key topics in law and justice, as well as how they are being interpreted, applied, and used in law and justice, particularly in different contexts, such as what responsible AI means in decision-making, what responsible AI means in applying law, and what responsible AI means when law is extensively used in other domains. Then, intellectual property rights are a very important and controversial topic in artificial intelligence, partially because there have been claims that artificial intelligence itself is an author, can invent new things, is an inventor, and should be given patent rights.

So, we delve into depth on the key issues in artificial intelligence and intellectual property rights, particularly in copyright and patents, and we also go into detail on some of the recent cases as well as the understanding of the fundamental issues here and why intellectual property rights is a hot area for the application of artificial intelligence and also how intellectual property rights in AI itself is a big issue. So, we cover both the application of AI for intellectual property rights as well as whether AI itself can be given intellectual property rights. The application of AI in different branches of law and practice is important; for example, employment law and environmental law. Also, different practices are evolving, and AI-based applications are extensively used in legal practice, as well as in courts and in other domains of law. So, we look at these things in great detail.

Then, legal tech, or legal technology, is a key topic now because, in addition to artificial intelligence, there are other applications in legal tech, and these are expected to make a significant change in the way law is understood, interpreted, and applied in the future. So, we look at them together as to what the role of artificial intelligence is in legal tech and legal technology, how legal technology itself is being transformed by AI and vice versa, and what the new demands and issues are, and how these will impact the future of law. When we say the future of law, we take a very broad view, stating that not just law but also justice, how law will be implemented, how law will be interpreted, and how it will be made. Whether technology will have a major role in making the law in the future is a key question that we will address. Then finally, the governance of artificial intelligence itself is an important topic, and it has huge implications for law and justice for the simple reason that the governance of artificial intelligence (AI) is not confined to one country; it

is a global issue, and it has ramifications at both national and global levels, so some of these points are very relevant for law and justice.

And then, while we talk of law and justice, we cannot talk of mere abstract principles; we cannot talk of mere statutes, acts, judgments, or case law. We need to look into the human factor, the human element, and where exactly AI fits in law and justice. Can we give AI an override or full power in AI and justice, and how AI should be governed in law and justice for different purposes? So, these are the broad themes and topics that we will cover in this course. Of course, this is an interactive course. An advanced course in each of these topics is possible, but as a preliminary course, we will touch upon the key topics, key themes, and introduce you to the major cases, controversies, and issues that are hotly debated in this country and elsewhere.

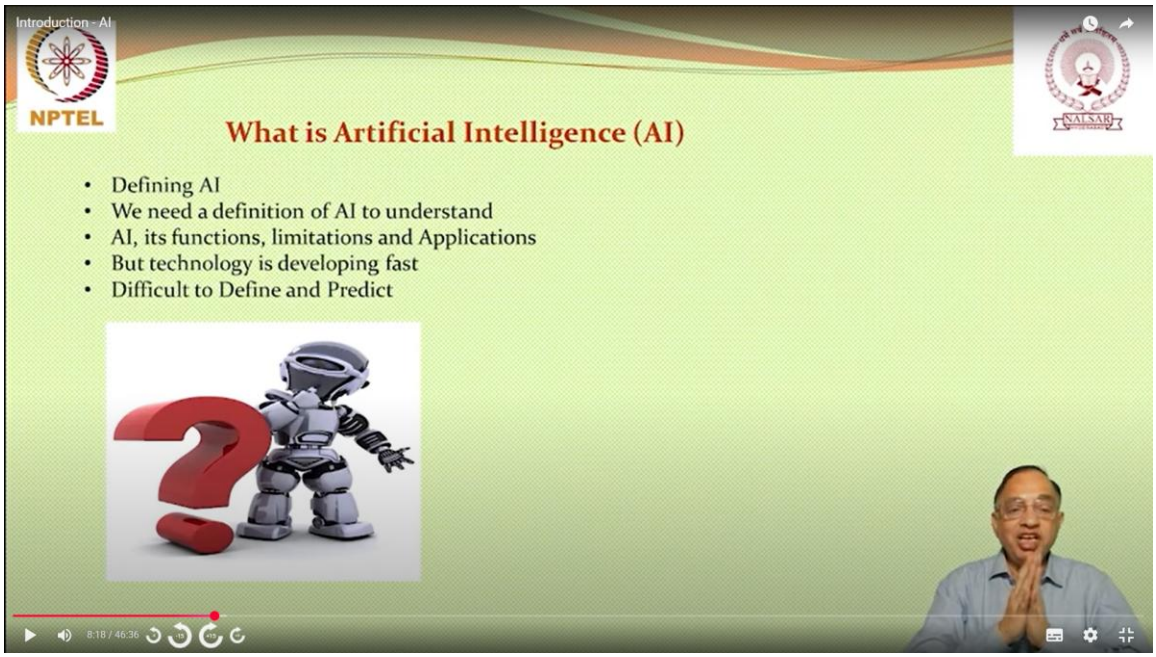
Now we need to know why we are talking about AI because most of us are using AI in one way or another in our lives. For example, our emails, whether you are using Gmail or any other email service provider, are being sorted as spam and non-spam by using artificial intelligence. So, without us going through hundreds of emails on a day-to-day basis, the artificial intelligence-based algorithmic decision-making sorts the emails into spam and non-spam. Again, the non-spam emails are categorized into different categories depending on the service provider, and then we are asked to look into the different inbox folders to assess what we want to do with them. Then, day in and day out, most of us deal with online queries, whether it is for reserving railway tickets, buying something, booking an appointment, or purchasing something online.

So, these online queries are run by chatbots or through online queries where the front end is what you type into, and at the other end, it is AI or an AI-enabled system that answers most of these queries. That is why sometimes, if your answer exceeds something that is not there or if some of the options are not available, you still get a display that says, 'this is not applicable' or 'I am not able to answer it'. So, the online queries are a major application of AI, prevalent in many services, including health, insurance, banking, and

education, everywhere. Then chatbots – we all know what they are, and we are all very familiar with them. Chatbots themselves are, in fact, AI applications, and they are becoming more and more sophisticated in the sense that chatbots can decide whether you want to book a hotel, book an appointment, buy something, or simply know information.

And then comes Alexa. Alexa – Many people are using it, whether it's 'Alexa, play the song I want' or 'Alexa, tell me what the time is now' or 'Alexa, give me the recipe for making this.' So, Alexa is a voice-enabled tool. Again, Alexa runs on AI. So, the use of AI in our lives comes in different categories.

I have highlighted only three or four, but there are many other applications. For example, when you drive, Google Maps tells you this is the least time-consuming travel or this is how much time it takes, so when it gives you three or four options, these are based on algorithms that map the real situation and then tell you approximately how much time it will take you. So, all the cab service providers, like Ola, use artificial intelligence to map the traffic and then weigh which is the least traffic-oriented way to go and where the maximum time will be taken, so that the drivers or the passengers get to know about this using AI. But AI is being applied in many fields; we can only scratch the surface.

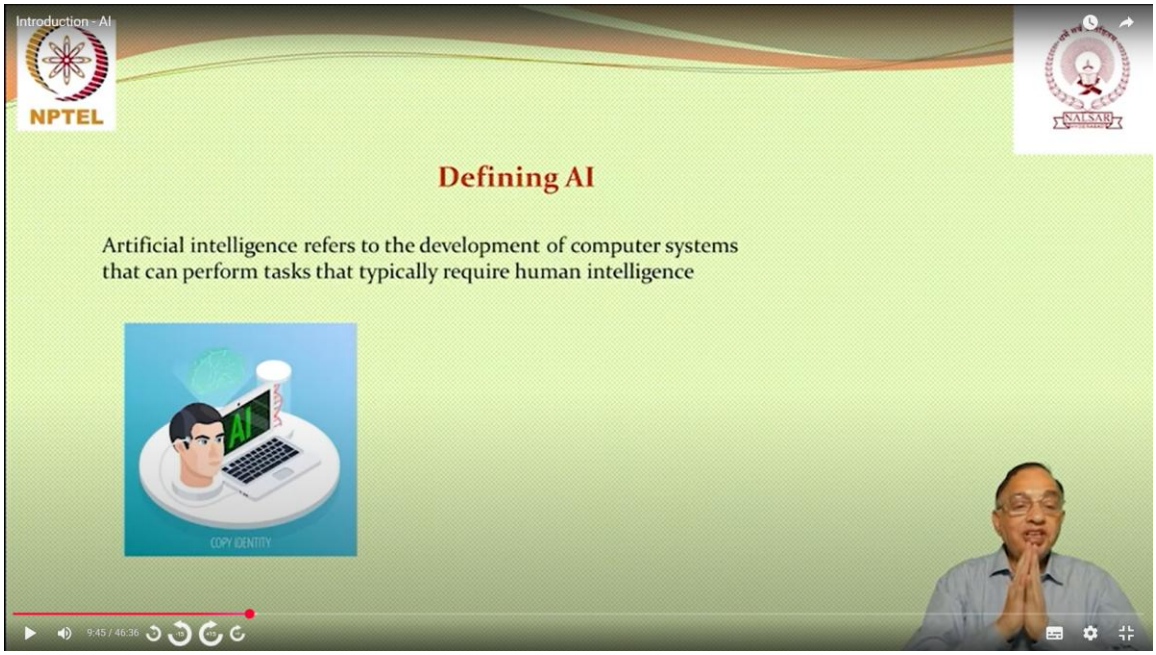


But what exactly is artificial intelligence? And then when we say artificial intelligence, what do we mean by that? Is it something artificial, or is it something intelligent that is artificial? Defining artificial intelligence is very important.

Why is it important? To understand any phenomenon, any innovation, or any topic, we need a definition. And then the definition will tell us what exactly it is, what the limitations are, what it can do, and what it cannot do so that we understand it better. So, a definition of AI should help us understand what AI does, how it functions, and its limitations as well. But you see, the problem here is that artificial intelligence is

developing very fast. ChatGPT is not even 4 or 5 years old, but it has the imagination of the wild.

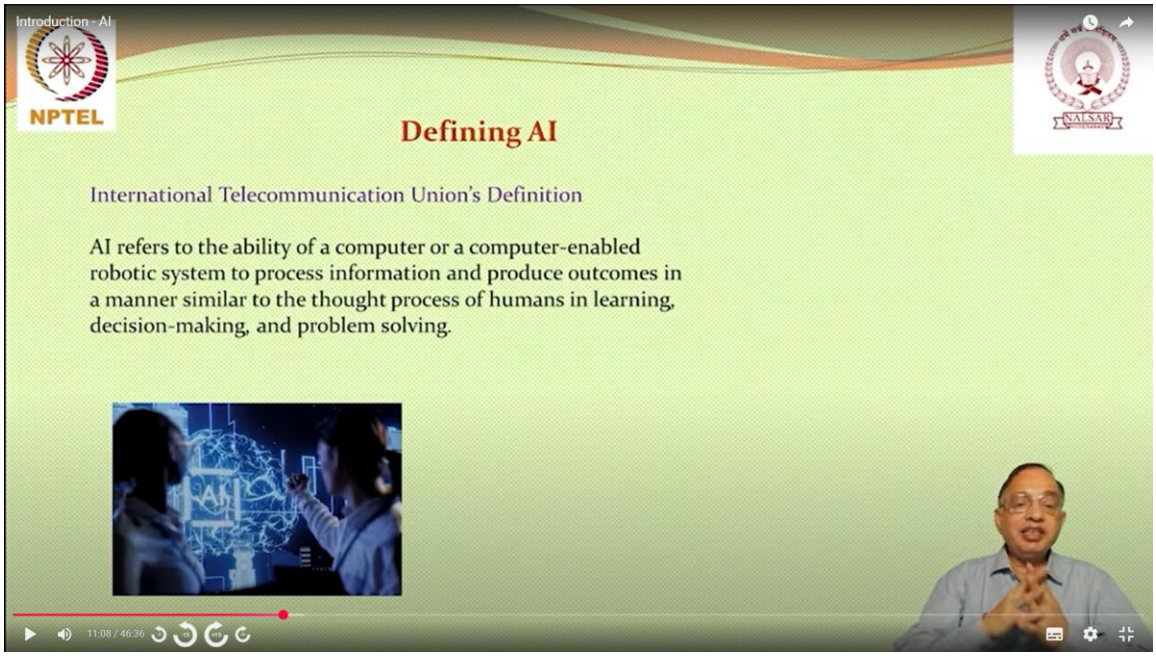
And then every day there are new applications and developments of artificial intelligence across various fields, whether it is health, education, or space. You name any domain; you name any discipline; AI is being applied there. So, the technology is developing so fast; when that is happening, it is very, very difficult to define precisely what artificial intelligence is, and it's all the more difficult to say where this technology will take us or to define its future trends and then predict it in terms of the current definition of artificial intelligence, but still, we need a working definition of artificial intelligence.



So, let us have a look at a working definition of artificial intelligence: defining AI. A simple definition of artificial intelligence refers to the development of computer systems that can perform tasks that typically require human intelligence.

So, the key word here is "human intelligence." And then another key point is that we need to develop computer systems that can perform tasks that require human intelligence. So, when we say "human intelligence," we differentiate ourselves from animal intelligence. For example, rats have intelligence, cats have intelligence, dogs have intelligence, but we are not defining artificial intelligence in terms of the intelligence of other species; we define it only in the context of human intelligence. So, technically, a computer system is a system that can perform tasks requiring human intelligence.

Now, human intelligence needs different types of skills, different types of aptitude, and different ways of doing things, and the tasks we do also need different categories of skills, different ways of looking at the world, and the application of different things. So, when we try to define artificial intelligence in terms of human intelligence, we are looking at ourselves as the model for AI to emulate; or when AI can fully emulate us, it will be merged with or be equivalent to human intelligence.



But still, we need a good definition, a technical definition. Why a technical definition? Because technical bodies are the ones that set the standards and are the ones that really tell us, in precise technical terms, what we need to understand. So, the International Telecommunication Union, or ITU as it is popularly called, is one of the UN agencies.

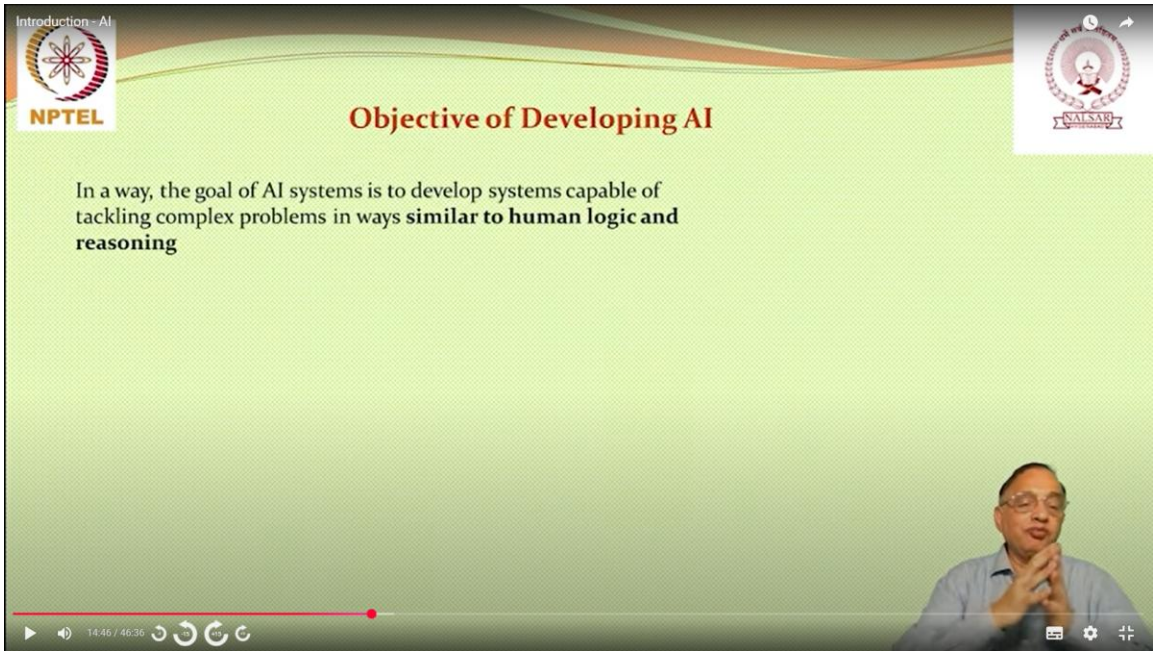
It is a telecommunication union that was established about a century ago or even earlier, and it does a lot of work in telecommunications, particularly wireless, setting standards and bringing countries together to agree upon certain key developments. So, it has come up with a definition of AI. And the International Telecommunication Union (ITU) is also very active in what is called AI for goods. So, its definition of AI is very simple: AI refers to the ability of a computer or a computer-enabled robotic system to process information and produce outcomes in a manner similar to the thought processes of humans in learning, decision-making, and problem-solving. So, this definition is broader than what we saw earlier.

Here we are talking about a computer first or a computer-enabled robotic system. So, it is now bifurcated: not just computers, but also robots have been added there. And for what? To process information. Information processing is very important; we all know it. We also do a lot of information processing, whether consciously or unconsciously.

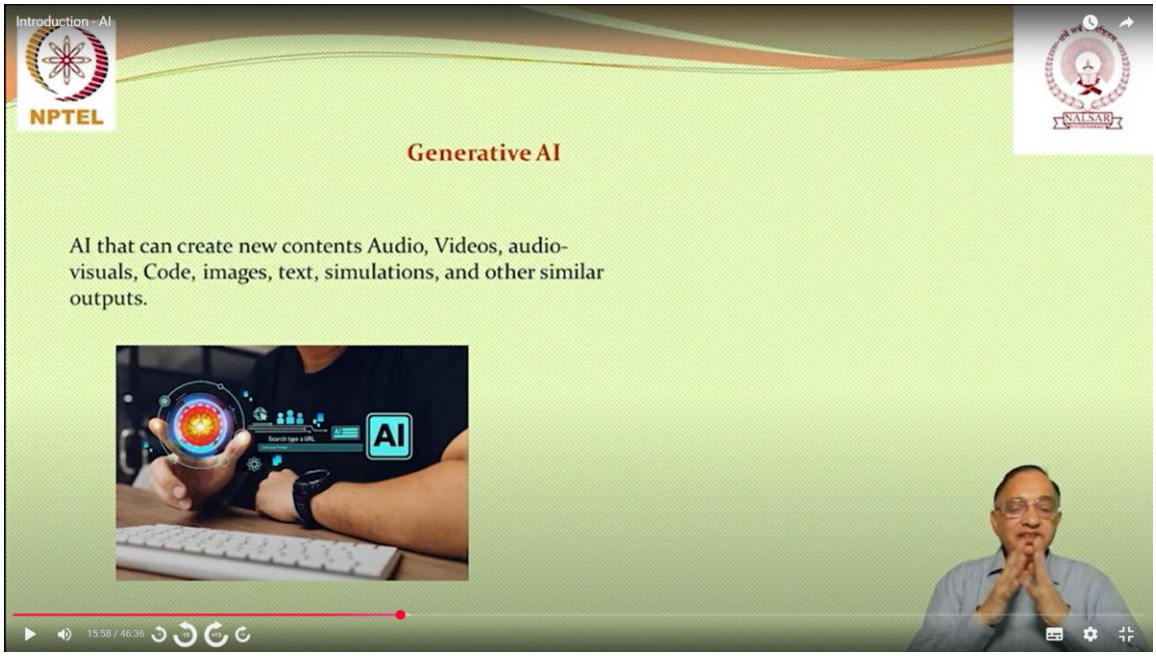
And produce outcomes because the idea of processing information is not just for the sake of processing; there should be an outcome, there should be an objective, and there should be a goal to do that. In a manner, this is very important, similar to the thought processes of humans. So, the thought process of humans is what AI will emulate or strive to reach. In what ways? Learning, decision-making, and problem-solving. So, learning, as we will see later, is a key talent, a key skill which AI will emulate based on our understanding, and when we say 'artificial intelligence', we expect that AI will be able to learn, as 'we' do, and then apply the learning in what? In decision-making and problem-solving, So,

learning results in and leads to decision-making, and decision-making is used for problem-solving; therefore, there is a continuum here.

You learn first, and then you apply that learning to decision-making, and through that decision-making, you solve problems. This is again a very simplified definition because we are talking only about a computer or a computer-enabled robotic system, but in practice and in reality, and in the days to come, AI will also not be confined to a simple computer or a computer-robotic system. It will be increasingly spread across computer systems that are networked together, across systems that span the globe, and also across systems that will be partially robotic, partially computer-enabled, and then encompassing processes in different units of a company, different units of a factory, or different units of an entity. So robotic systems integrated with computer systems can apply artificial intelligence for learning, decision-making, and problem-solving. So, when we know that we are talking about learning, decision-making, and problem-solving, we will understand why these three things are important, even to define AI.



So why do we need to develop AI? What is the need for an objective? In a way, the goal of AI systems is to develop systems capable of tackling complex problems in ways that are similar to human logic and reasoning. See, as humans, what differentiates us from other animals and beings is that we are very rational; we can apply human logic and reason in the sense that we can reason why we did it, why we did not do that, or what rationale and logic we used for it. So, logic, then rationale, then reasoning, and the rationale behind the reasoning are very important, and this will differentiate us from other animals. The development of AI needs to pay attention to and focus on developing the capacity and capability that can tackle complex problems, the way we address them, and the way we do things. So human logic and reasoning should be at the core competencies of AI. If AI can attain our level, then it will be something very different from what we are talking about now.

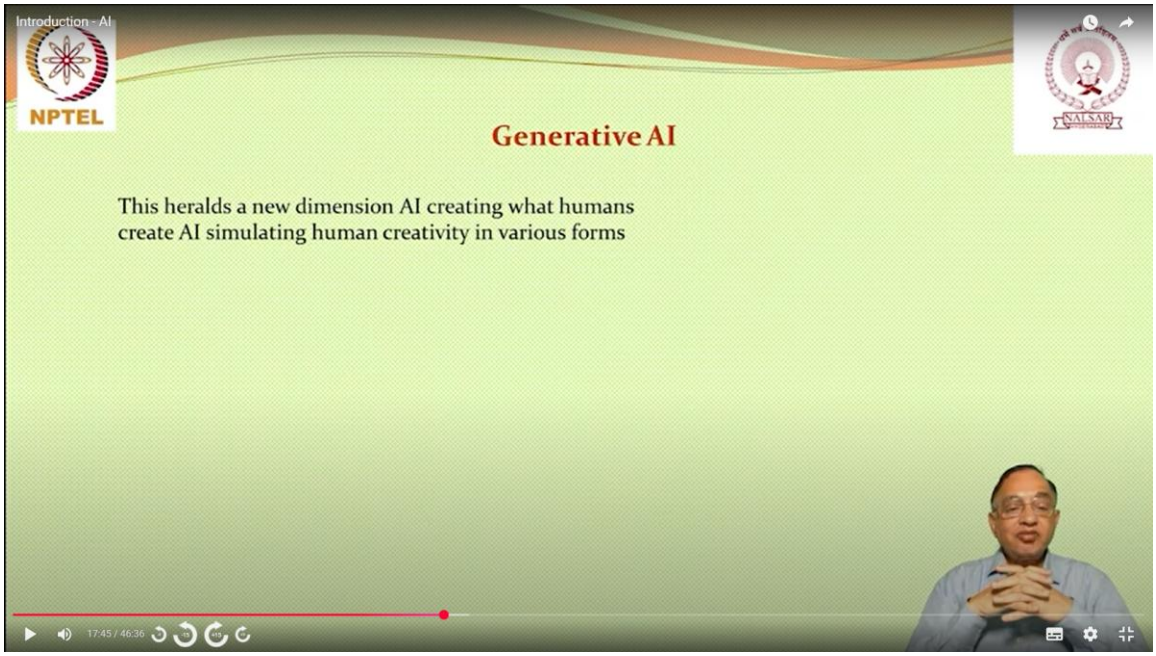


And then comes "Generative AI." What is generative AI? General AI and Generative AI are broadly two classifications. General AI is the AI that lacks creativity in the sense that it has very limited creativity; it still cannot emulate us and cannot create something totally new, whereas Generative AI is an artificial intelligence that can create totally new content in audio, videos, audio-visuals, code, images, text, simulations, and other similar outputs. For example, generative AI can create cartoons.

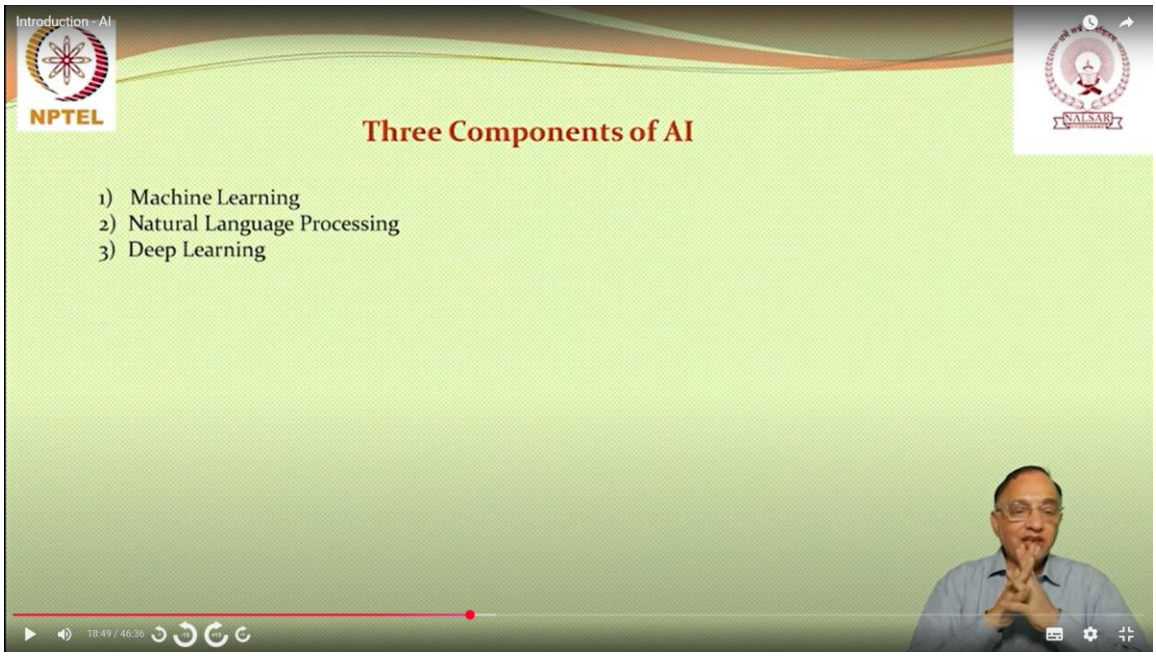
It can compose music. It can shoot videos. It can develop complex audiovisuals. It can write computer code. It can generate images based on photographs of paintings. It can combine photographs and paintings to create images. It can create text. It can write poetry. It can write philosophical texts. It can write dramas. It can write speeches.

It can write articles. And simulations – simulation is something that we do day in and day out. So, computer-generative AI will simulate various things. It will simulate what will happen now if the temperature on the moon goes to 5000 degrees centigrade. It will simulate various scenarios. For example, it will simulate how an AI-enabled train will fly; it will simulate something which we have never imagined.

And then generative AI will be able to create outputs that are totally new. Of course, it learns based on what is fed to it. But then the key element is its creativity: creating something that is entirely new on its own. So generative AI is the generation of AI that will match or try to match human intelligence and creativity.



But this heralds a new dimension in AI, creating what humans create: AI simulating human creativity in various forms. So, when we say that, we are not saying that AI has human creativity. Rather, what we say is that AI simulates our creativity, or AI tries to mimic our creativity. AI is trying to imitate our creativity in the sense of how we draw pictures, how we compose poems, how we speak, how we write code, and how we text different categories of text. So, all these things generative AI does by simulating our creativity in different forms, and then generative AI, as we saw, is a very odd AI now.



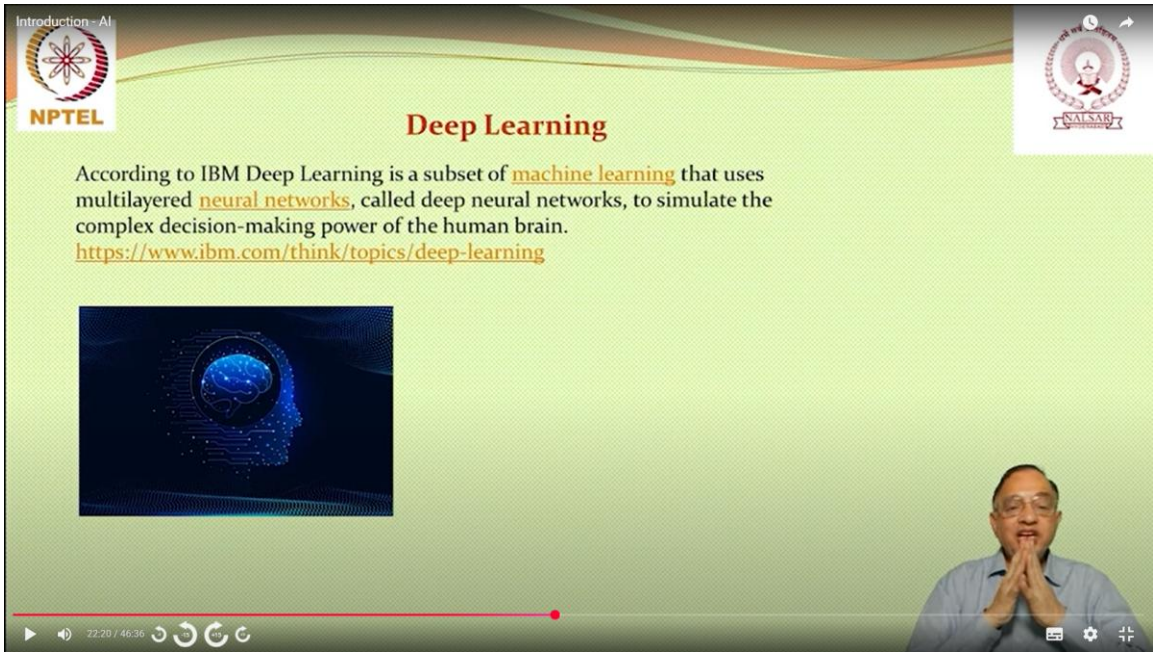
But AI itself cannot be understood unless we understand the three components of AI, and understanding the three components of AI is critical to understanding the role of AI in

law and justice. So, in this lecture, we will briefly touch upon them. In the next lecture, we will go into detail about them. The first component, and a very key component, is machine learning; the second is natural language processing, and the third is deep learning. These three are the key components of AI, and they can act together or on their own, but an AI system normally has these three components built into it because sophisticated systems not only have these three components, but these three components in sophisticated systems also interact among themselves.

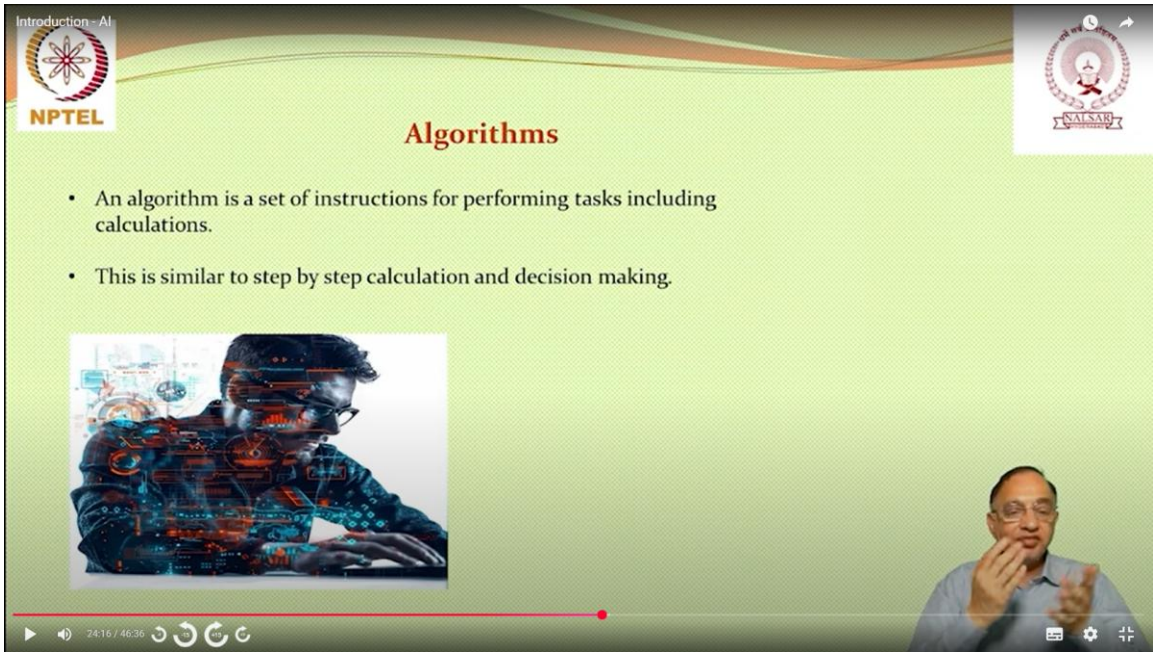
So, machine learning is a key component of AI, which we will describe for now. A subset of AI involves training algorithms to learn from data and make predictions or decisions. Machine learning is a subset of AI where we train algorithms. For what? Algorithms are trained to learn from data, but for what? To make predictions or decisions. As we saw earlier, the goal or objective of artificial intelligence is to simulate us. And then how does it simulate? One way to simulate us is by learning from data. Of course, when we say "data," we are talking very broadly.

We are not specifying exactly what the data is. We will discuss that in the subsequent session. So, learning from data to make predictions or decisions. So, this is what we call 'training algorithms to learn'. So, this is something like learning to learn and understanding to understand. So why do we do it? Because often, humans learn on their own. They do not get trained in as many things as we do. We learn by observing; we learn by emulating; we learn by looking around; we learn by what others do. But algorithms or systems cannot do that. So, they need to be trained to learn from data and to make predictions or decisions. How machine learning works and what the two categories in machine learning are, we will see later.

Natural language processing is something that is very similar to what we do. So, natural language processing in artificial intelligence is about whether we are going to use voice or text and then how to convert natural language through natural language processing in AI. So, NLP, or natural language processing, enables us to provide inputs or communicate directly with AI systems. Again, natural language processing is a key component when we want to make AI widely applicable or for broader applications. Like a machine, you talk over the phone, and then AI picks up your voice; it translates it into a language it can identify, calls you, and tells you back an answer because it is able to understand what you have said by translating it, then creates an answer and gets back to you. Or it sends that query somewhere else. So natural language processing is a key component when we want to use AI for various purposes. So, this is what it is: a subset of AI that deals with the interaction between computers and humans in natural language. Natural language is nothing but what we speak and what we write.

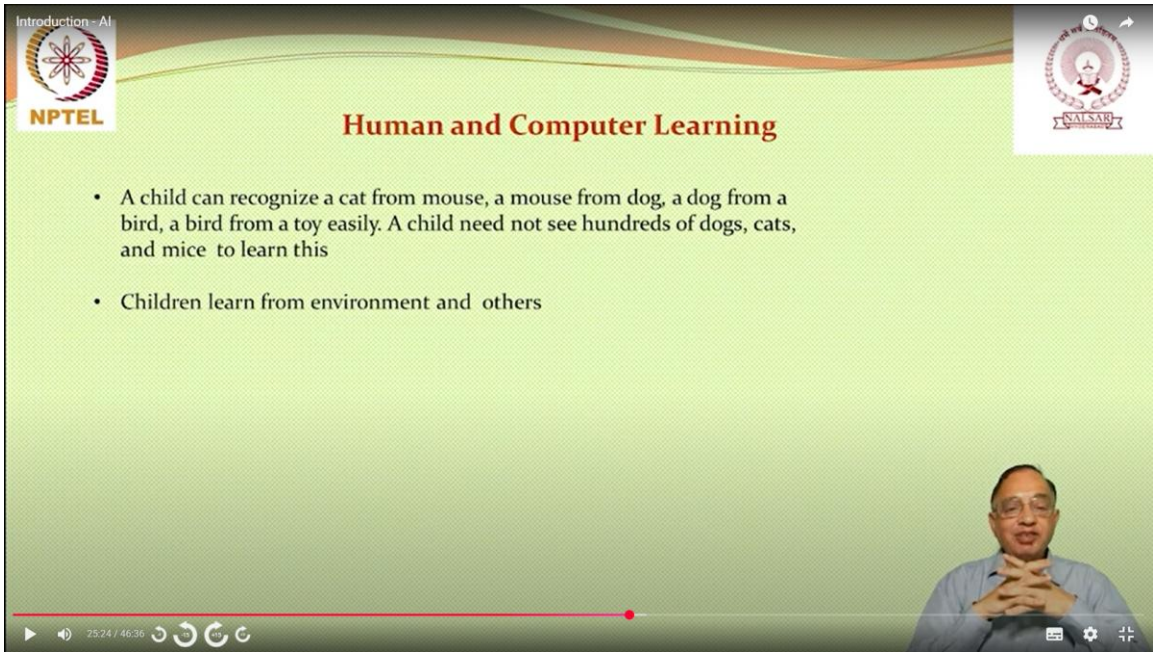


Then, the most important thing in AI is deep learning. As we say, deep learning is something that really drives most of the sophisticated AI applications. According to IBM, deep learning is a subset of machine learning that uses multi-layered neural networks called deep neural networks to simulate the complex decision-making power of the human brain. So, as we saw earlier, we are trying to simulate and then give AI the capacity to reason, learn, and understand. So, what does deep learning do? It is a subset of machine learning; it uses neural networks, which we will see in detail in the next class, to simulate the complex decision-making power of the human brain, or deep learning is a type of learning that simulates our complex decision-making power of the human brain, or we are trying to tell AI to simulate what the human brain will do and then make a decision or arrive at a decision. Deep learning runs as a major component of AI because it is the core power of modern AI today.

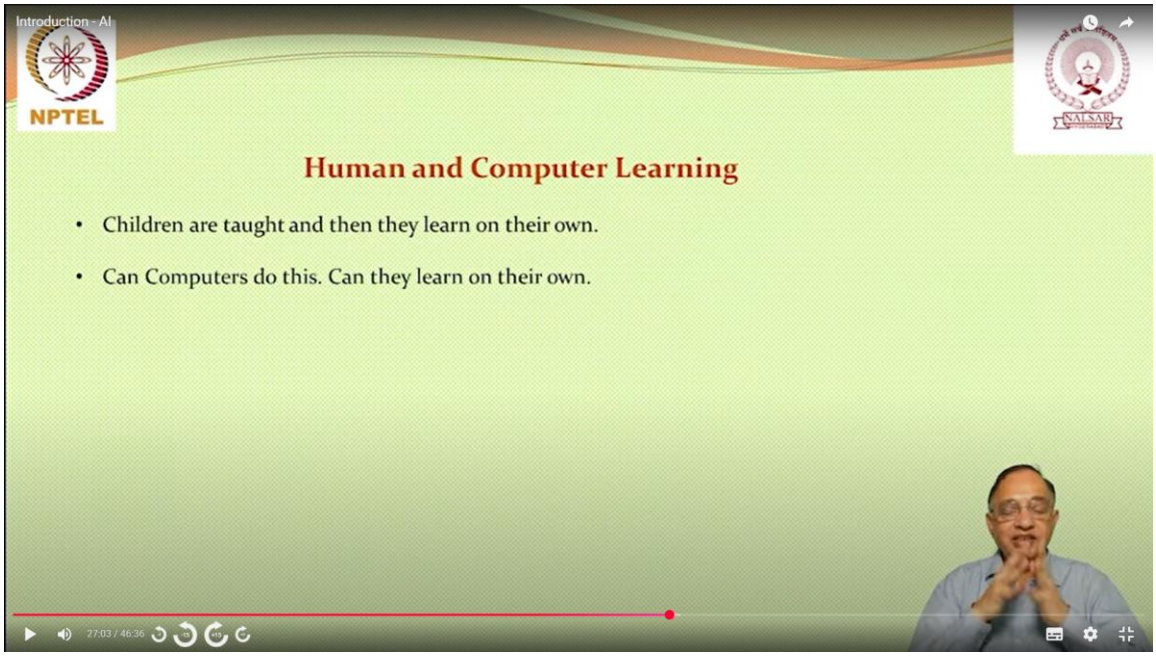


Then algorithms—what are algorithms? Algorithms can be very simply defined as rules, simple rules, or step-by-step procedures for doing things. An algorithm can be as simple as that – whether you should stop your car when the traffic signal is red or green – or it can be as complex as whether you should be able to get a loan or apply for a position, or it can be as complex as when a doctor sees different medical reports of a patient and then decides what exactly needs to be done, whether further operation is required or further treatment is required. So, an algorithm is nothing but a way to make decisions. We can define an algorithm simply. An algorithm is a set of instructions for performing tasks, including calculations.

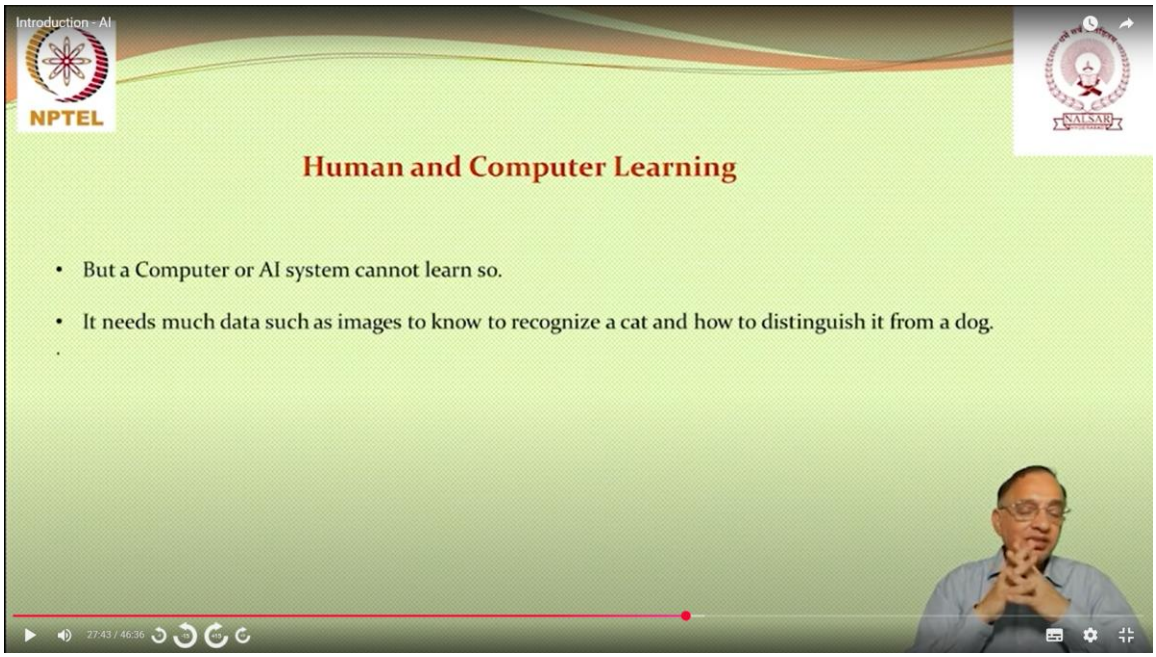
So, it's a set of instructions. See the red signal in the traffic, put the car in park, push the brake, and stop until it turns green. So, this is a two- or three-step algorithm. Then, when it turns green, rush or drive the car. So, there are many things that can be classified and subclassified as step 1, step 2, step 3, and then, if needed, step 4 and step 5. So, this involves step-by-step calculation and decision-making, which we often do consciously and often unconsciously, or we are so used to the environment in which we operate that we can do it without much trouble and without much thought, but computer systems are not that efficient; they are "dumb". So, they need to be told through algorithms, and AI needs lots of algorithms to train itself, to get trained, to understand, to learn, and to apply what it has understood in developing applications, taking steps, and then giving us outputs.



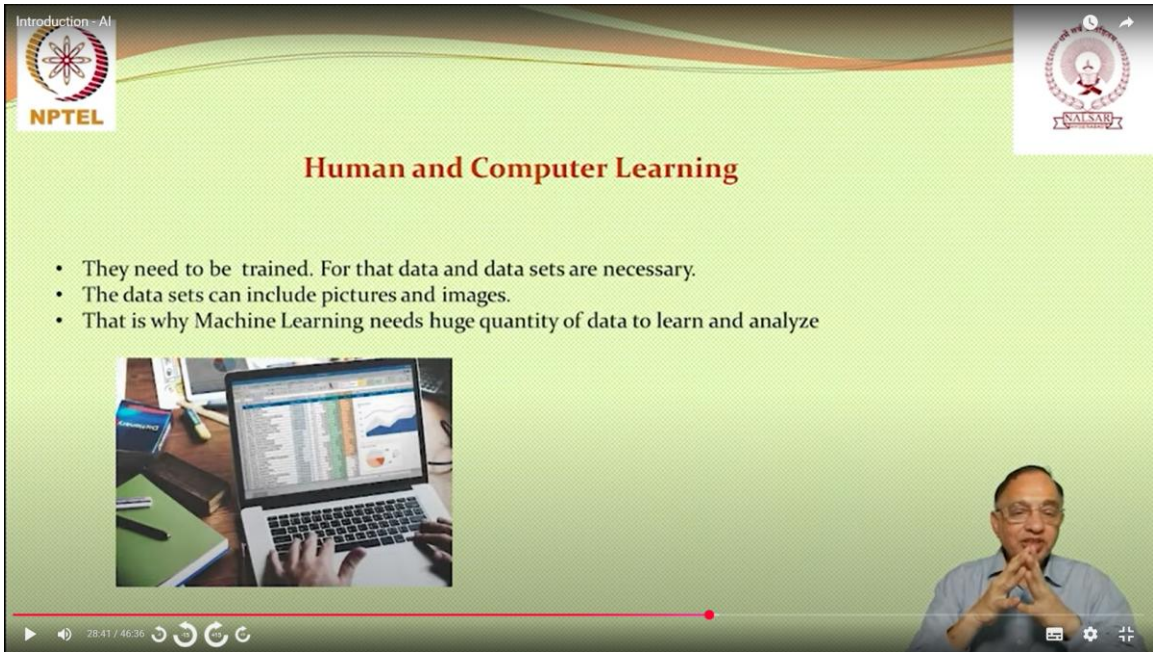
Here, we will see what the difference is between human and computer learning. A child can recognize a cat from a mouse, a mouse from a dog, a dog from a bird, or a bird from a toy very easily. Even a two-year-old child or even a one-year-old child will be able to differentiate them, if not identify them by their proper names. But to do that, a child need not see hundreds of dogs, cats, and mice to learn this. A child would have seen many cats, many dogs, and many mice. But there is no need to look at hundreds of cats to understand what a cat is. No need to see hundreds of dogs to understand what a dog is. And then, a cat has four legs, and a dog has four legs, but a child can easily differentiate a cat from a dog, a dog from a bird, a bird from a mouse, and a mouse from a toy. So, a child can differentiate between inanimate things and animate things, between animals and humans, between toys and humans, and between different categories of persons, beings, and non-beings. And then, children learn from the environment; they learn from others, and then they learn on their own. So, complete human learning happens because we have the capacity to learn, we look at things, we understand, we recognize, and then we pick up our own reasoning and logic, and then we apply it, and then we learn as we go. So, learning is a continuous, ongoing process for humans. And then, in day-to-day life, we also learn many things, although we may have started learning as small children.



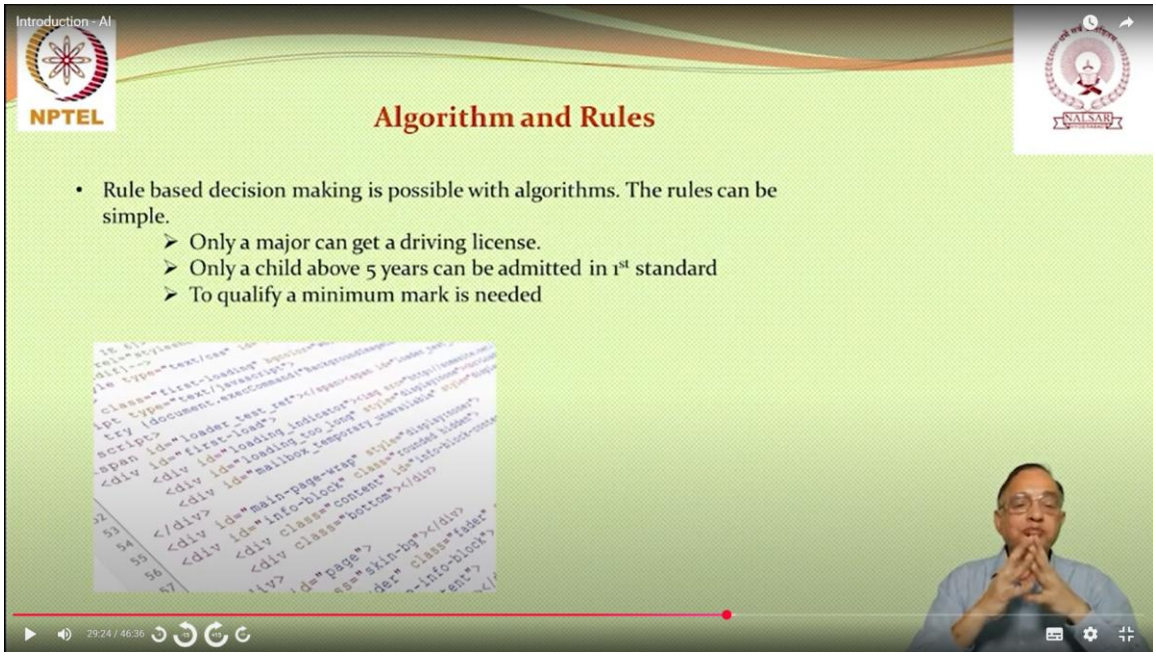
So, children are taught, and then they learn on their own, and then they learn how to learn. Now, computers – can they do it? When we say computers, it is also applicable to robots and robotic systems. So, robots and computers—can they learn as we do, and can they learn on their own in the sense that they can determine what they should learn, what they should avoid, what they should do if they see a wall, and what they should do if they see a red light? So human learning, if it can be mimicked by a computer, becomes computer learning. So, we need to teach computers to learn as we do, and that is the greatest challenge when we want to apply AI in different applications or even use AI.



But the problem here is that computers and AI systems cannot learn that way. They lack the capacity to learn as we do. But for that, they need a lot of data, such as images, to know how to recognize a cat and then how to distinguish it from a dog. So, they need to be taught; they need to be shown hundreds and hundreds of images of cats and dogs even to differentiate between what is a cat and what is a dog. And then they should know how to differentiate a cat from a dog and how to identify or not mistake a cat for a dog, a dog for a wolf, or a wolf for a tiger. So human learning is much simpler in our world terms. Whereas computer learning is much more complex because computers need to be taught how to learn. So, learning how to learn, if we can teach it to computers, they can do wonders.



So, to train them, we need an enormous quantity of data and data sets, and then these data sets will include pictures and images. Machine learning, as we saw, is one way to teach machines; that is why it needs a huge quantity of data to learn and analyse. And then, deep learning – the moment we say machine learning, when we say a huge quantity of data to learn and analyse, we will see later why data is the core of AI, and when it comes to the application of AI in law and justice, data is a key input, a key element, but then data can also be a key constraint, a key deciding factor as well.

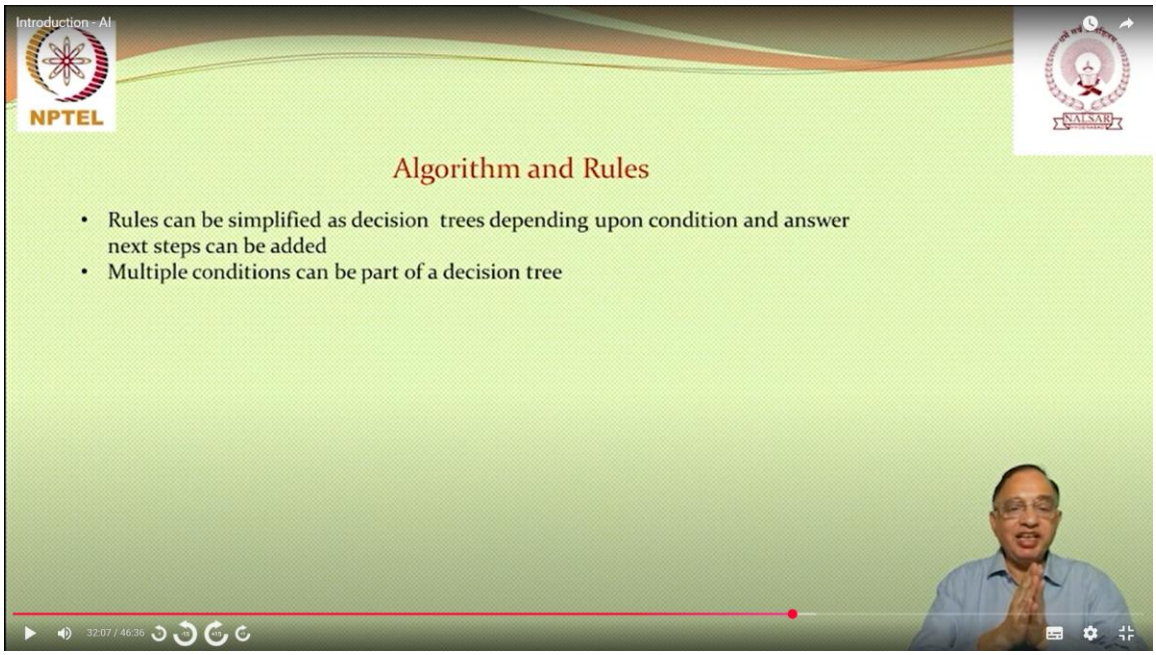


Algorithms and Rules - an algorithm, as we saw earlier, is nothing but a set of rules. So, rule-based decision-making is possible with algorithms. So, we need to break up the complex rules into smaller ones, and then the smaller ones can be broken into sub-rules. For example, there is a rule that only a major or a person who is over 18 can get a driving licence. If you are over 18, you can get a driving license. But then that itself will not give you a driving license. You need to take a test. There are a couple of other parameters. But the fundamental starting rule is age. 18 and above, yes. Less than 18? No. But when we say 18 and above, that does not automatically translate to getting a driving license. So, what are the rules? We can look at them, derive an algorithm, and then make rule-based decisions based on that.

Similarly, a child above 5 years can be admitted to the first standard, but this also means that even if the child is 6 years old, the child can be admitted. But can a person of 12 years or a child of 12 years be admitted to the first standard? When we say 'above 5 years', does it mean any age above 5 years? It's a question where the algorithm will say if the child is above 5 years but less than 8 years; the rules in this school will allow the child to be admitted to the first standard. But the child is more than 8 years old and cannot be admitted to 1st Standard unless there is an exemption or the rules are relaxed on account of some parameter or criteria. So, this is algorithmic decision-making or algorithm-based rules.

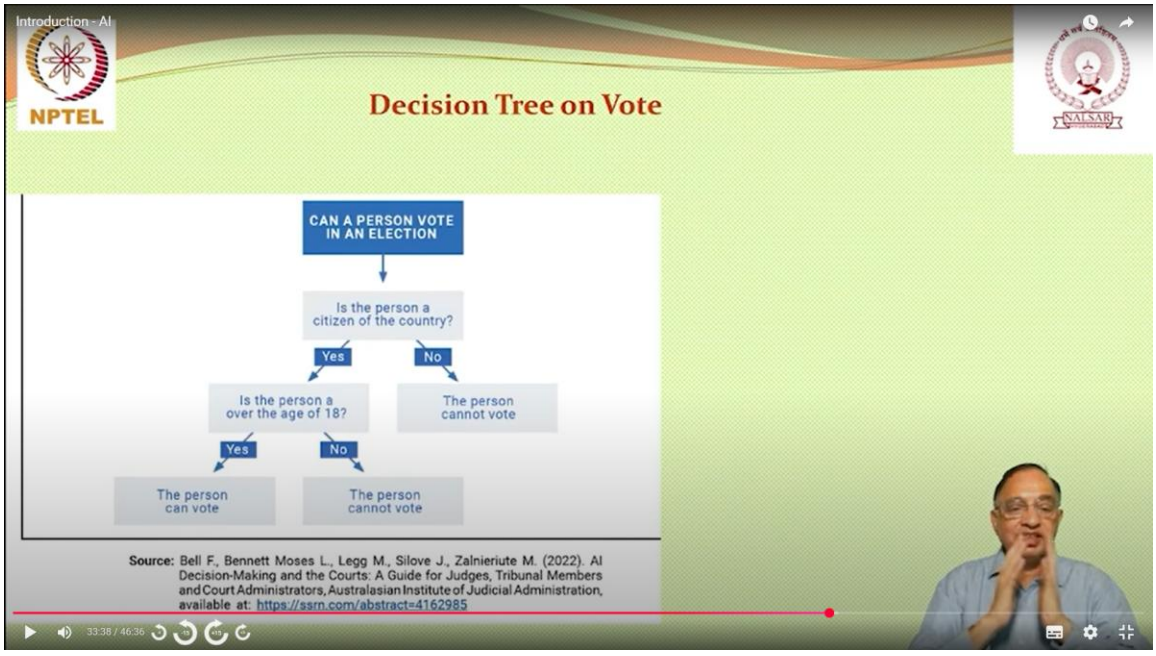
To qualify, a minimum mark is required. So, categorizing people who have qualified with a minimum mark of 35 is not sufficient. Why? We need to subcategorize: first class, second class, first class with distinction, second class, and then just pass or further A Plus, A, B Plus, B, C Plus, like that. So, when we set the minimum mark to qualify, that is the first and most important criterion. But subsequent criteria will derive from that further classification and then set additional norms. So, algorithms and rules depend upon specific rules with specific conditions and also specific do's and don'ts, or the conditions that will apply in different categories. So, if you can understand what an algorithm is, it is

very simple to understand why algorithmic decision-making is important in law and justice.

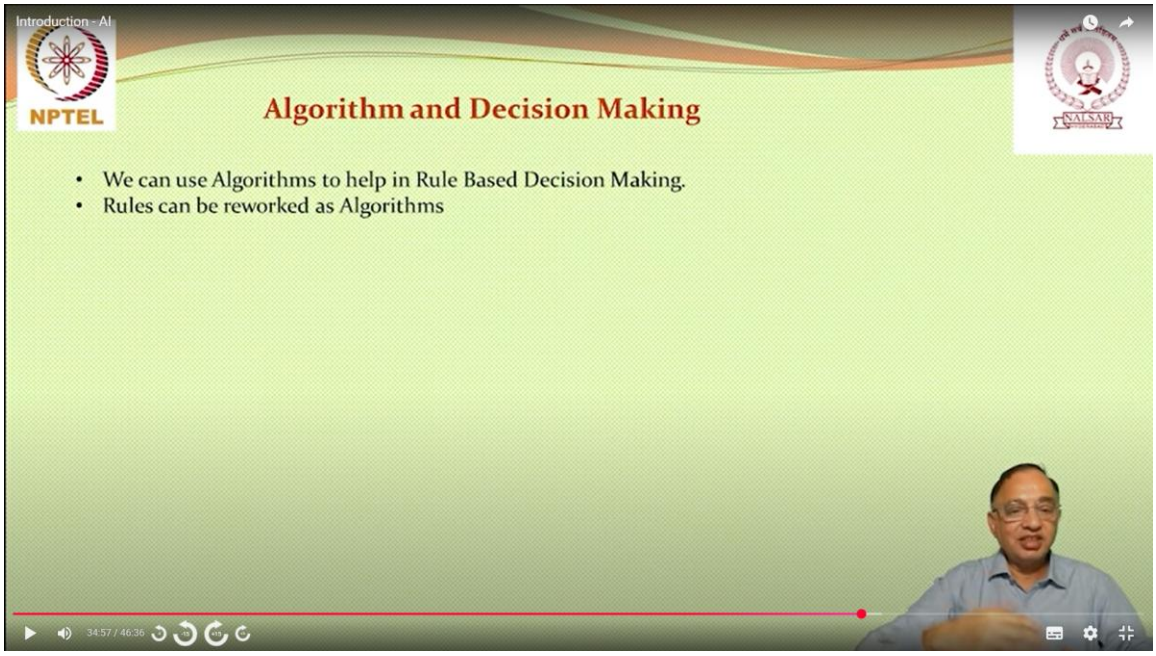


Now the rules can be broken down into small rules, subsets of rules. They can be further simplified as decision trees; depending on the condition and answer, next steps can be added. We will see this in the example now. And then multiple conditions can be part of a decision tree. So, what is a decision tree? A decision tree is a tree or a set of rules codified as a tree to understand, to ask questions, and then to give answers, or to give input and then take answers, and then to go further down the line or to go up the line.

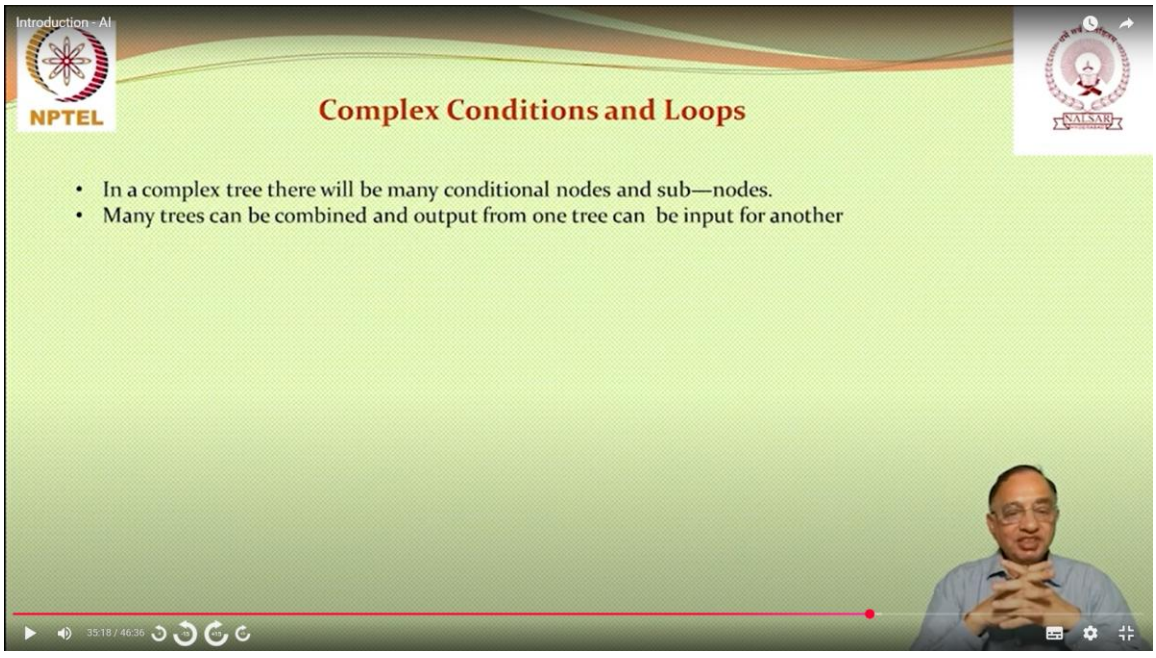
So, a decision tree will typically look like this. A decision tree is similar to using legal rules that have conditions. For example, the legal rule is that you cannot vote if you are less than 18, so this is a legal rule and a condition. Age is a condition. But a lunatic may not be able to vote even if he is 20 years old because a criterion under the law is that only a sane person can be considered a voter. So, if there is going to be such a law, then there are two conditions that apply: the person has to be more than 18 years old, and that person has to be sane. In that way, different conditions can be applied to a rule, and based on these facts and conditions, a decision can be made. Can a person vote? Can a person buy a car? Can a person get a driving license? Can a person marry? Can a person be a citizen of a country? Can a person open a bank account? Can a person enrol themselves in an occupation? Or can a person go abroad? We will look at a small example to understand this.



Can a person vote in an election? First, we mentioned age, but then there is also a criterion that we didn't mention, which is equally important. Is the person a citizen of the country? Now, if you are above 18 but not a citizen of the country, if you are a traveller or a tourist, or if you are a student in the country, you won't be able to vote. So, the decision tree first asks a question: Is the person a citizen of the country? If we say yes, then what is the age? If we say no, the straightforward answer is no. The person cannot vote regardless of age. So, the matter is closed. Then, when we say the age, another tree opens up. What exactly is the person's age? If a person's age is 18 or above, yes, he or she can vote. If the person's age is 18 or less, that person cannot vote. The matter is closed here. Now, the subtree can be extended further; here the person can vote, but is the person sane? Or is there some other criterion, such as that the person cannot vote if the person has a voter ID in more than two places or more than one place? That will come next in the decision-making tree. So, a complex decision can be broken down into different conditions: yes or no; if no – then this, if yes – then this.

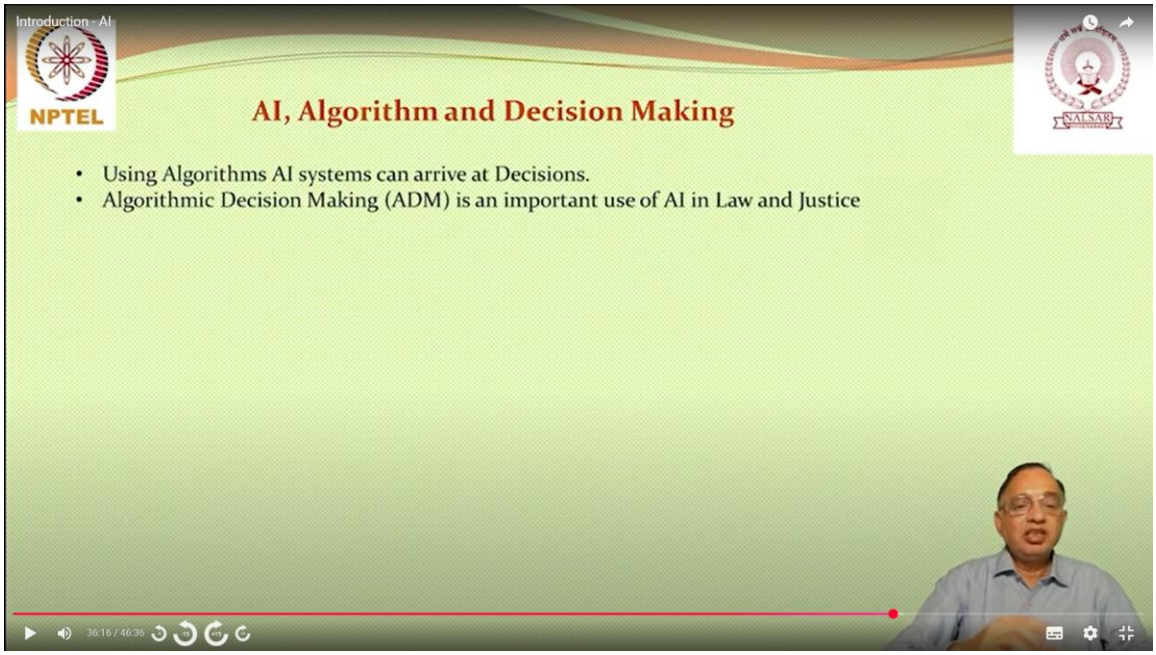


So, these rules can be reworked into algorithms. We can use algorithms to help in rule-based decision-making in law, and then the rules themselves can be rewritten as algorithms, and the algorithm itself can become code.



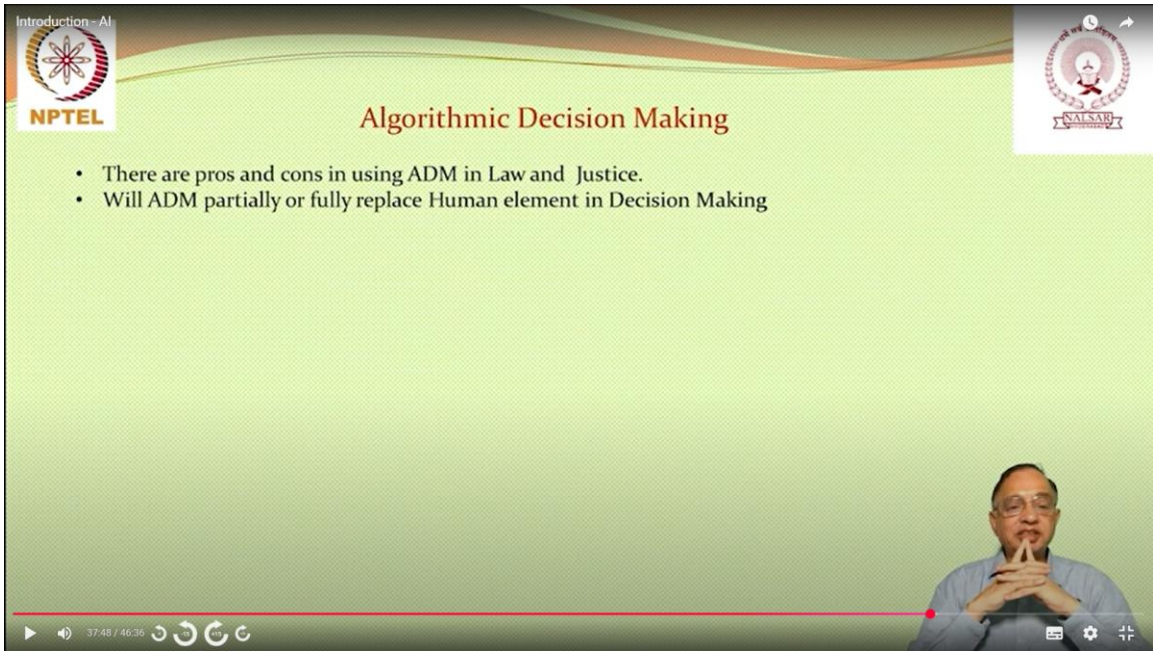
So, complex conditions and loops are very important. In a complex tree, there will be many conditional nodes and sub nodes, as we saw. Age, citizen, etc. But there could be other criteria and other parameters. And many subtrees can be combined into an output from one tree. For example, a person's age is greater than 18. So, this is an output, and the answer is yes. It can serve as an input for another subtree. So, the complex conditions and loops themselves are amenable to algorithmic thinking, rule-based reasoning, and then

law-based decision-making. So, when we say this, we are saying that different laws or complex laws and conditions can be broken down into simple rules, which can be developed further as a complex tree, and then the complexity can go on increasing depending on the conditions and facts of the case.

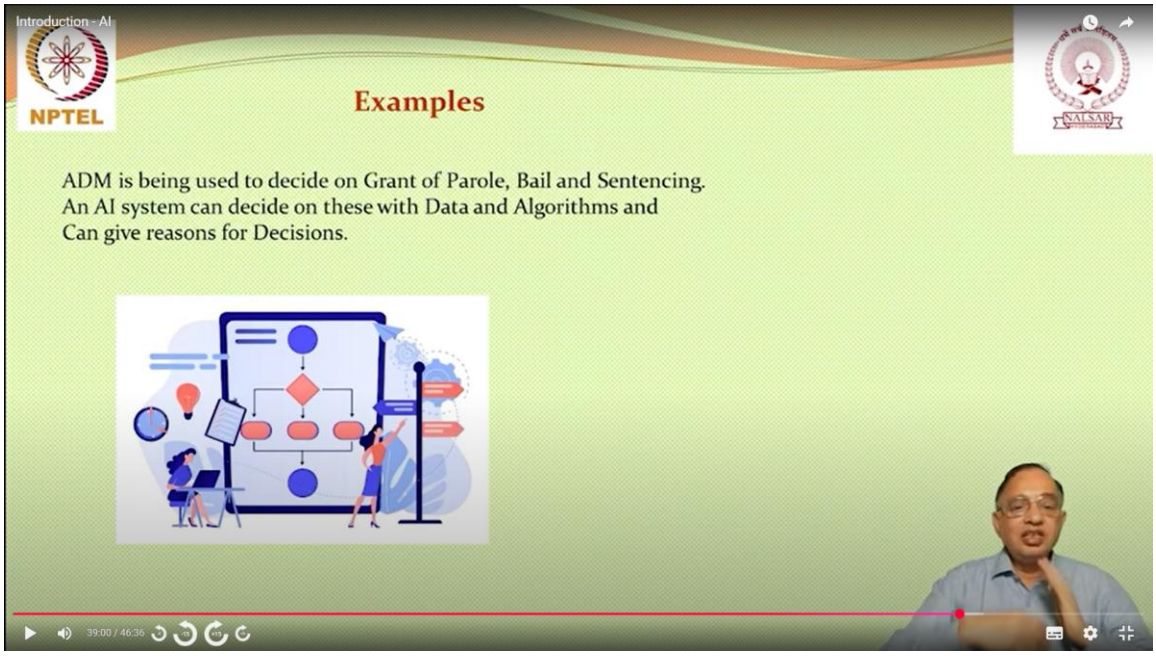


So, we now need to understand 'Artificial Intelligence, Algorithms, and Decision-making' – by using algorithms in AI decision-making, we can arrive at decisions. Algorithmic decision-making is an important use of AI in law and justice, in the sense that in law and justice, we can use algorithms for different decisions, not just one. Across the different domains of law and justice, we can include labour law, environmental law, contract law, insolvency law, securities law, and banking law. In any field of law, any subdiscipline of law, algorithmic decision-making can be used and applied.

In fact, day in and day out, algorithmic decision-making is applied, although we may not be aware of it because those complex decisions are made by systems that run either partially on artificial intelligence or fully on artificial intelligence. For example, denial of a loan or denial of a credit card, or granting of a loan or granting of a credit card, can be based on algorithmic decision-making, which can differ based on many other factors, such as the person's credit record, the person's income level, and the person's previous use of credit cards. So, algorithmic decision-making will be a process that uses data, utilises algorithms, and then AI systems need to be trained to use algorithmic decision-making to arrive at decisions.

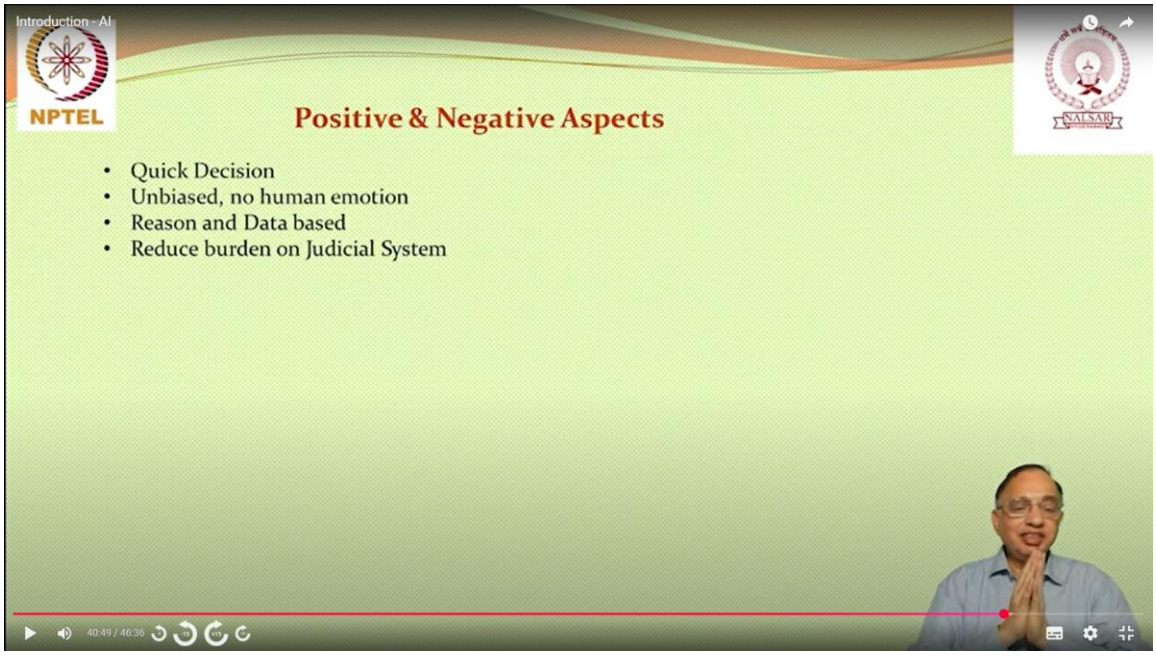


Now, there are pros and cons to using them in law and justice. The first pro and con are whether algorithmic decision-making can fully replace the human element in decision-making. This is an important topic because often we cannot say that humans can be eliminated. Let everything run on AI; let everything run on algorithmic decision-making in law and justice. We will see later why. Okay, but can we allow them to participate in decision making partially? Yes. At the preliminary level or to scrutinize the first level of decision-making. For example, whether the person is 18 years of age or older, or whether the person is really creditworthy – does he or she have any credit card dues pending? These first-level decision-making processes can be done by algorithms, but then, for subsequent decisions, humans can intervene, or the final decision-making can be left to humans. But theoretically, it is possible that algorithms can be defined in such a way that using AI algorithmic decision-making can replace human decision-making based solely upon data, facts, conditions, and rules.



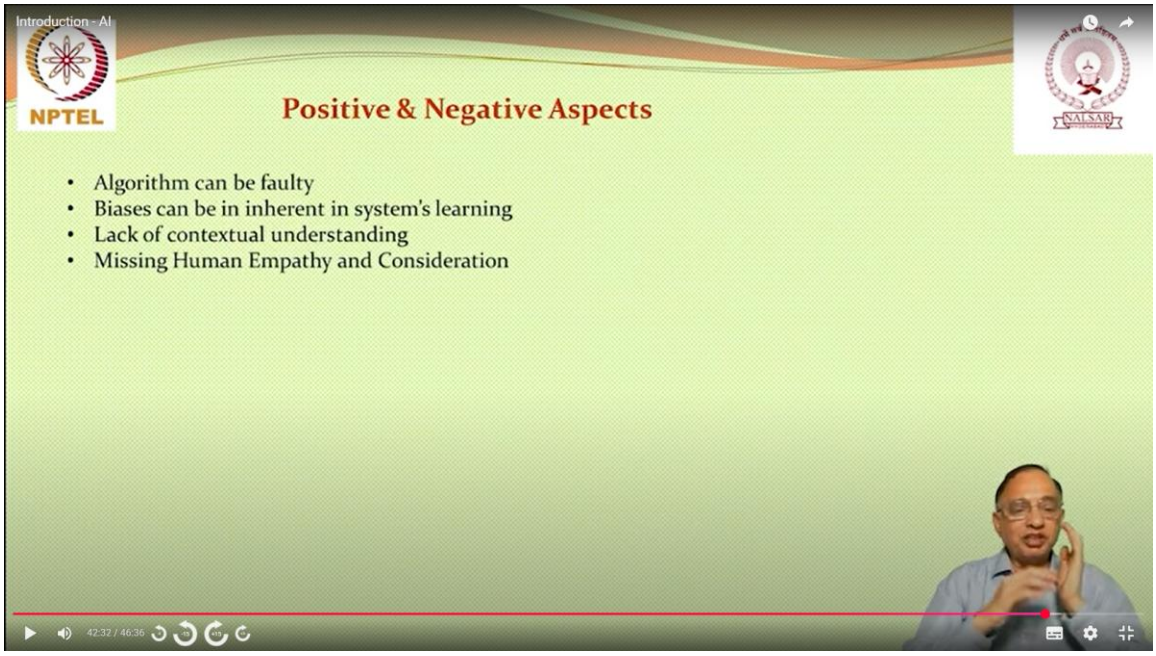
Now the pros of this are clear; for example, algorithmic decision-making can be used to decide whether a person can be granted parole, in the sense that a convict can leave prison due to something like illness or to meet his family or for some other purpose. Or can someone be granted bail? Or can someone be sentenced in the sense that someone can be convicted or acquitted? Algorithmic decision-making can be used in all three decision-making aspects of criminal law - whether to grant parole, grant bail, deny bail, sentence, or acquit. An AI system can not only decide these things with data and algorithms, but it can also provide decisions, in the sense that an AI system can tell you why this decision was arrived at and on what parameters.

Now, we can train AI systems. We also know that AI systems can process vast quantities of data and arrive at decisions. But it's also important that they tell us why they arrived at these decisions and what the reason is, what's the rationale. And this is precisely what we do when we make decisions. That is why judges write pages and pages of decisions, justifying the decisions, giving precedents, taking up arguments, telling us why they accept one argument, telling us why they do not accept another argument, and why they gave the judgment based upon balancing various factors. So, algorithmic decision-making can, in theory and in many instances in practice, act as a judge, or it can play the role of a judge, but the question is, should that be allowed?



The positive aspect here is that decision-making is very quick, in the sense that, given the right amount of data, algorithms and AI systems can quickly decide on cases, with no need for them to, like humans, take so much effort to write, dictate, analyse, and they can do it, and they can be unbiased. There are no human emotions. The algorithmic decision-making will not consider whether it is the convict or the accused; it will have no human emotion, and it will have no bias when it comes to human emotion. So, it can be unbiased, but as we will see later, this question of unbiasedness itself is problematic, or it can be biased; we may not be aware of the bias. This, we will see later, is a problematic assumption.

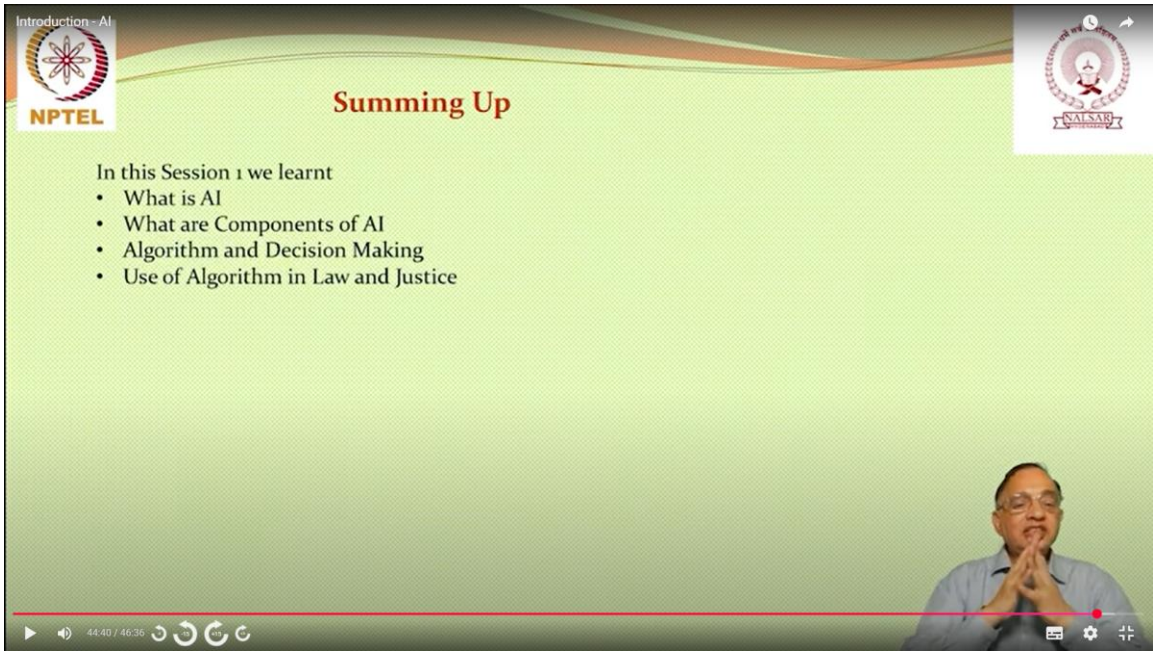
And the positive thing is that this is purely data-based. Logic, rational-based, data-driven, fact-based. And it can be reasoned. So, with these three major positive aspects, if AI systems can be used in judicial systems, they can quickly reduce the pending burden of backlog in cases, or they can be used effectively to alleviate the burden on the judicial system. Now the burden on the judicial system is also not just the question of backlog cases. New cases, for example, bail applications, parole applications, or even petty fines like traffic violations—these things can be handled by algorithmic decision-making based on law and justice systems very effectively and efficiently.



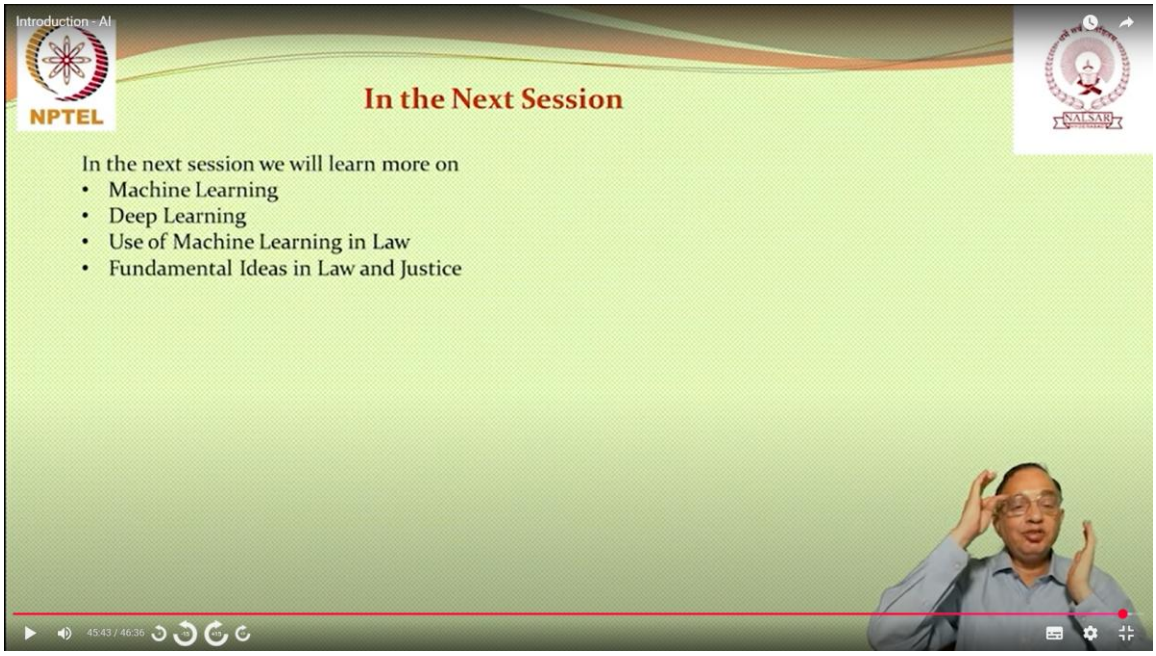
But there are negative aspects that we need to be very, very aware of. One, the algorithm may be faulty. It could be based on the wrong reasoning. It could be based on wrong facts. It could be based on a wrong interpretation. And then there could be biases in the inherent system's learning. This we will see later in great detail regarding how, in some cases of algorithmic decision-making, biases and prejudices have really made us question whether we need algorithmic decision-making in law.

The lack of contextual understanding. These systems understand things in a very dry way, in the sense that they don't understand the context; they look at the facts, what they understand as facts, they look at the conditions, and they apply. So, they do not understand why this person did this, or they don't understand the context. So, in one way, this understanding of context – or the lack of understanding of context – makes them totally bias-free, but human understanding and human decision-making cannot be simply based on a lack of context. We understand things in context. We understand behaviour in context. We understand people in context. We do not simply look at it as data. We do not simply look at them as components of different chemicals, a body, or a person with a body.

We look at humanity. We look at human beings. So, we look at our rights. We look at our responsibilities. We look at so many other parameters in that. So algorithmic decision-making may, in fact, miss human empathy and consideration. So algorithmic decision-making can give precise, reasoned judgments, but it will lack human empathy and consideration. Now this is a major negative impact because when we talk of law and justice, we do not apply, we do not think in terms of an interpretation of law and justice that is devoid of human consideration, devoid of empathy, and devoid of understanding of the human condition and the way society works, the way people work. So, everything cannot be reduced to algorithms, everything cannot be reduced to data, and everything cannot be reduced to algorithmic decision-making.



Summing up, in this session, we learned what AI is. We started with what AI is, the definition of AI, and then why AI. We understood that it is something that will simulate or replicate human understanding, human decision-making, and human capacity. We also looked at the three components of AI and then discussed why they are very important, particularly why some applications, like natural language processing, are used on a day-to-day basis, although we may not be aware of them. Then, we dwelled in depth on algorithms, algorithmic decision-making, and the use of algorithms in law and justice. What we saw in the last two—algorithmic decision-making and the use of algorithms in law and justice—we have just scratched the surface. In the subsequent classes, we will go into greater depth regarding these matters to understand why the major application of AI in law, which is algorithmic decision-making, is both a boon and a bane.



So, with this, we wind up the class. In the next session, we will learn more about machine learning, deep learning, how machine learning is used in law, and then what the fundamental ideas in law and justice are. So, when we talk about fundamental ideas in law and justice and then combine these, we will be able to understand or contextualise the role of artificial intelligence in law and justice in a much better way than looking at law and justice as an abstract idea or something that is very vague. So contextualising artificial intelligence and putting that in the context of law and justice also needs a nuanced, broader, fundamental understanding of basic law and concepts in justice, which we will discuss in the next class. Thank you.