AI ETHICS

The Ethical Implications of Technology on Humanity

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This module unpacks the evolution of artificial intelligence and how it relates to human intelligence. It explores what 'work' might look like for humans in a future where AI becomes increasingly abundant, by touching upon the jobs and industries that might survive the fourth industrial revolution. The module highlights the skill sets that we will value in a post-automation world, makes suggestions for what potential solutions we may have for the problem of job displacement due to automation, and looks at how the Burning Man experiment demonstrates what humans might keep themselves busy with in a post-AI, post-automation world.

Lecture Transcript

0:02 The ethical implications of technology and humanity, envisioning the future of work in the post AI and post automation world. Hi, everyone. Today I'm keen to talk to you about this topic of job displacement and job automation, and to explore what intelligence will be in a post AI and post automation world. And I think that this is a particularly fascinating field of AI ethics because it impacts all of us in so many different ways. And it will continue to impact future generations. In fact, in many ways, it's a deep and profound technical, philosophical or existential question. And its implications are past just technological progress and technological automation.

0:52 So a little bit about me. My name is Tannya Jajal. I'm based in Dubai in the United Arab Emirates, which is where I'm recording this from. And I have been an active member of the technology space here and contributor to specifically the AI thought leadership space for the past four or five years. I work for VMware, which is one of the leading cloud conglomerates. And through my work there, I've had the good fortune of seeing firsthand what large enterprise software can mean overnight for the lives of people working within organizations that choose to technologically transform or to digitally transform. And I've particularly been drawn in by the question of what the future of work might look like as we automate right? As we essentially outsource parts of our intelligence to automated systems. What role will human beings play in the workplace? What value will we add to society? A lot of my thoughts and curiosity around this, these questions have culminated in my book, "Thinking Machines: AI and the Intelligence Explosion", which is coming out soon on Amazon.

2:08 So I'd like to spend a few minutes talking about the unique role of artificial intelligence in particular here. And one of the reasons that I've chosen to focus on artificial intelligence is because of all the technologies that surround us today, of all the exponentially growing technologies that surround us, AI is probably one of the most unique and groundbreaking, or the most unique and groundbreaking. And that's because AI stands as the opportunity for us to create an entirely new species of intelligence. It's my belief that any technology, or that we build from this point forward or any problem that we solve, from this point forward, which is the era of AI, will

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be the combined effort of artificial intelligence and human intelligence, or of non biological and biological intelligence. It's unlikely to be the sole effort of human intelligence. So unlike other technologies that are developed to solve particular problems, what's fascinating about AI is the breadth of it and how it can be applied, regardless of industry, and how it will no doubt be infused with all the other technologies that we now utilize.

3:25 So, it's confusing for a lot of people within this landscape of AI to even start to think about what AI is right? There's a lot of buzz around it. And we tend to interchange a lot of terminologies within the space like robotics, and machines and systems and programs. One place that I like to start is this, I like to consider that we live in the realm of Narrow AI today - Artificial Narrow Intelligence (ANI) systems. What that means is that most of AI that we're surrounded by, in today's world, is still AI that's designed to complete a particular task. So this can be AI that's designed to check the weather, AI that's designed to play a game of chess, or AI that's like Siri or like Google Assistant that's designed to check a particular task for you like checking how many restaurants are within five miles of your current location. But ANI systems are still limited in many ways, by the data set that they're exposed to and by the input of the programmer, right, so they're given a particular outcome that they're asked to achieve.

4:41 Now General AI refers to a hypothetical point in the future where we will create AI that will match human level intelligence. And this will be AI that can like a human being, or like a human child, can for instance, AI that can learn how to play chess, AI that can learn how to learn a language, that can complete solve a problem, that can learn the foundations of philosophy and morality, for example. And essentially general AI is intended to match human level intelligence in all areas. Super AI refers to an even more hypothetical point in the future, where we will create AI that will far surpass our own intelligence. In many ways, it's not intuitive for us to conceptualize of what Super AI might look like, because it's not within the boundaries of our own current intelligence, to think of super AI. To be clear, today, we're surrounded by Nano AI. And in the future, we might reach a point where we will create general AI. And then from that point onwards, super AI.

5:50 So there's a looming question, which is, how close are we to creating general AI?

5:59 One way to conceptualize it is to consider that we live in the exponential era, which is driven by the rise of exponentially growing technologies, not just technologies like AI, but digital biology, AR and VR, robotics and nanotechnology. And exponentially growing technologies are on a really interesting trajectory, because they don't progress in the way that we can linearly conceive of progress, or how things have progressed historically. So think of it this way. Let's say you wish to take 30 linear steps, and each step was one meter in life. If you took 30 linear steps, you would end up 30 meters ahead of point A. But if you were to take 30 exponential steps, you would end up circumnavigating the globe 26 times. That's the power of exponential growth. It's, again, not very intuitive to us.

6:59 And all of that means that we're living in what's known as a VUCA world: a volatile, uncertain, complex and ambiguous world. That's what some experts at Harvard Business School, I believe, have coined it. And it's an apt term. Because, in many ways, the World Economic Forum posits that we are at the brink of the Fourth Industrial Revolution, which is driven by the rise of these exponential technologies that are completely disrupting the way that we live, and the way that we work. And in this volatile and uncertain, complex and ambiguous world, some key questions come to mind that we have to address especially within the realm of ethics and practicalities.

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And one of the most important questions within that realm is what sort of jobs will we do in the future? And how do we equip ourselves with the right skills to do those jobs?

8:02 So McKinsey and World Eccount Forum say that 45% of tasks that human beings do today can be automated using existing technology alone, if we were to utilize it across all these industries. And that's a scary number for a lot of people, because that means that we will continue to build technologies that will continue to automate more jobs. And it means that a lot of people could potentially lose their jobs. And the short term job displacement could absolutely be an issue. But what it also means is that we've seen the decline of specialization and repetitive work, which is, in some ways, a good thing. So here, Dubai, the Dubai government is heavily focused on future focused initiatives, and is building out arms within the government like the Dubai Future Foundation, where they're focused on foresight, where they're focused on imagining and co-creating what the future might look like. And in doing so, they've created some really exciting functions and job roles within those government arms right.

9:15 Now, what this means, or what it stands as an emblem of, is the decline of work that we don't want to be doing anyway. Gallup polls today tell us that 86% of employees are partially or completely disengaged within the workplace. So in some ways, we do have to wonder, even if automation might cause job displacement in the long run, what will it mean for the state of human mental health, for job satisfaction, for satisfaction within life generally, in the long run and for future generations? And, we have to ask as well, what intelligence is, right?

10:00 If we are creating artificial intelligence that can do what we can do, then how do we define intelligence? And how does this definition change over time?

10:10 I like to think of it this way, intelligence is the ability to create products of value in society, to find solutions to problems, and to identify policies to achieve goals. It's also important to bear in mind though that there are different ways of being intelligent. Howard Gardner, who was a leading intellectual and educator, came up with the theory of multiple intelligences, which is that different human beings have different ways of being intelligent. And one way to consider it is that some of us are great at music, right? Some people are naturally more talented with musical instruments, others are better kinesthetically. So they're better sportsmen or sportswomen, and some are excellent at mathematics. And some are great communicators, some have great degrees of empathy. Now, we all have all these different kinds of intelligences within us. But how well we serve on each of them various rights, some of us are better than others, while others are worse at some. And it, of course, means that through time, we can learn and improve our capabilities in these different areas through practice.

11:33 But within that realm of the different types of ways of being intelligent within the theory of multiple intelligences, there are aspects of human intelligence that are easiest to automate. So in some ways, mathematical intelligence, or logical intelligence, linear thinking will be easier to automate, right. And that's because we know this already, but AI systems or any program really is much better at human beings at taking large amounts of data and making calculations. Indeed that's why we use calculators and very basic tools to do things at a much faster rate than most human beings can. Machines are also really good at pattern and image recognition. So the power of AI lies in data analytics. And generally speaking, these are units Input A to Output B calculations.

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12:29 But today, we are starting to develop AI that is learning to mimic the human brain through a mechanism known as deep neural networks. And deep neural networks, or artificial neural networks, are designed to mimic biological neural networks. So most of these programs are still focused on Input A to Output B calculations, which means that you could give a program a large data set like, for example, all of the historical data on every game of chess ever played, and ask it to learn how to play chess, right?

13:10 But today, we are able to build AI that has the sort of neural network structure where you can let the program run and it will take all of that sensory information, which is the data, and it will learn, relearn and unlearn by itself. And that's where that power or that leap of narrow AI to general AI comes into play. Because with deep neural networks and artificial neural networks, we're essentially building systems that can learn by themselves. And that are able to conceptualize of outcomes by themselves. So one excellent example of this is Google's DeepMind that was designed, that created AlphaGo, an AI that was designed to beat the world's best Go player. Go is a very famous game played in China for the last 7000 years that requires large amounts of logical and strategic thinking. And ultimately, AlphaGo did beat the world's best Go player. But what was amazing was that it did so by playing a move that was never before seen in the history of humanity playing the game Go. So in doing so, AlphaGo demonstrated strategic and original thinking, and it was able to, essentially using the power of its deep neural networks, was essentially able to think for itself.

14:49 Yet, we know that AlphaGo is an emblem of what could be, but it takes a lot of effort to create an AI that can function like that, and it takes a lot of time for that AI to become really good at what it does. So what that tells us though, is that original thinking and strategic thinking are the kinds of skills that are very difficult to automate. And it means that, as some experts believe, we are driving ourselves into what's known as the imagination age, where creativity and imagination become the primary creators economic value from human beings. And that's because everything that can be outsourced, will be outsourced to automation and to AI. That leaves the more difficult to automate skills, like creativity, and imagination to human beings. Because these are the kind of skills that are much harder to replicate in machines, even if the possibility remains, the effort that it takes is much harder. Whereas we know that AI systems are much better than we are at doing certain things like pattern recognition, like large calculations, like data analytics.

16:04 A lot of this brings to the forefront an important question, which is, what career should one choose in a world of automation and artificial intelligence? And that's something that, within the education reform space in the Middle East, it's a question that I'm often explored with young minds, because it's a question that is relevant to all future generations and is relevant to any parent. It's also relevant to organizations that are on the cusp of digitally transforming right now.

16:44 So within the Middle East, I've been instrumental in running some favorable programs, specifically for high school students to develop what are known as future fluencies, that are skills like critical thinking or scientific literacy skills that they can apply across industry. And one of the reasons that it's so important to do that is because we don't know what kind of jobs and industries will exist in the future. An example of this is to consider the existence of a job like a cloud architect or social media manager. A few decades ago, these functions never existed within organizations, yet today, they are creating economic value for a lot of industries, a lot of organizations, and a lot of places are hiring for that, right. So rather than trying to envision what sort of jobs we

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might have in the future, one thing we could consider is what sort of skills should we develop in order to thrive in the future?

17:48 Tony Wagner is an innovation expert from Harvard University. I would highly recommend his work. He works with the Harvard Innovation Lab. And he wrote a remarkable book, which is "Creating Innovators: The Making of Young People Who Will Change the World". And Wagner says that, if we're to consider the future, that we need to think of seven critical skills that will be relevant in that future, right? On the one hand, we've got critical thinking and problem solving. Then there's collaboration across networks and being by influence, there's agility and adaptability, this will be particularly important, especially the COVID crisis pointed to that. But even beyond that, the ability to adapt one's skill set beyond industries if one industry becomes obsolete, versus another initiative and entrepreneurship. So we are no doubt seeing the rise of entrepreneurs in every field and in several economies including developing economies. There's a large prevalence around that, and entrepreneurship, and the ability to be a solopreneur or the ability to create economic value by oneself will become more and more possible as we create large social media platforms in which people can push out their content, can push out their products and their solutions.

19:21 Effective oral and written communication. Today, we do have AI that can do certain things, they can write articles for example. I would recommend to those who are watching this course, to check out GPT 3 which was created, which is essentially an LP that was asked to write an article on what it will mean for, what the rise of robots will mean for the human race. And when that article was written and published in "The Guardian", it went viral and it demonstrated the extent to which we can automate verbal linguistic intelligence within AI systems. Accessing and analyzing information. In a world where we live in, you know, where we have abundant information, we do have to consider how to analyze this information, right? Misinformation versus disinformation is quite, quite important. And finally, curiosity and imagination. So like I said before, curiosity, imagination, creativity, art, will be extremely difficult to automate, because though today, we have systems to which you can feed in prompts, text prompts, that the AI that creates artistic images based on, it's still quite, it's still quite difficult to automate, the entire artistic process. It is still quite difficult to conceive of, or imagine what future scenarios might entail.

21:02 So the role of imagination to thrive in the future will become particularly important. And in existing school systems, we ignore a lot of these skill sets, we focus on a lot of the mathematical intelligence, a lot of the logical scientific, rote memorization, but what's obvious is that those skills will not be relevant for the future, because those are the kinds of skills that we will automate most easily. So we need to focus on teaching young minds how to cultivate imagination, how to be entrepreneurs, how to think critically, and how to analyze information within the sea of misinformation and disinformation of the current era.

21:48 So the question that all this brings to mind is, what will the role of humans be in a post singularity world? Right? So the singularity refers to the hypothetical point in the future in which human beings will merge with non biological intelligence to saturate the entire universe with our own intelligence. And in some ways, this concept is counterintuitive for a lot of people in the sense that even technologists and experts have a difficult time grappling with what a post singularity world will look like. I, personally, struggle with it. One source to start is to explore Ray Kurzweil's book. Ray Kurzweil was former director of engineering at Google. And he wrote "The Singularity is Near" and he has a new book coming, which is called "The Singularity is Nearer". And he tries to conceptualize

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what the singularity world will look like, which will contain the sort of intelligence that doesn't exist within our landscape today.

23:00 But also, you know, from an ethical perspective, we do have to wonder what the role of human beings will be. So I personally like to consider that if we outsource all of our intelligence to AI, and if we can build systems that can solve major problems for us, through the use of, by creating abundant resources, for example. So if we leverage AI to figure out a way to, for example, have renewable and abundant energy for every human being or to distribute and aggregate food across to all societies that need it, then what will we do?

23:51 And one solution, one exciting and sort of controversial solution is to think of the Burning Man experiment. Which is Burning Man is an experiment in community in art. It has been happening over the last 20 years, and every year, nearly 100,000 people come together in the middle of the desert in Nevada. And in the middle of the desert, all these people come together to create some of the most astonishing works of art that has ever been created on the planet. And everyone at Burning Man comes together with a mindset of having a gifting economy. So everyone is bringing their gifts to one another, there is no commercialization. And at the very core of Burning Man is experimentation, playfulness and innovation, right. An artistic expression.

24:50 So the belief is that if we create a world in which we no longer have to focus on mundane, repetitive work to keep the world running, where we can outsource that to AI, that we might actually end up playing more, creating more art, imagining more. And all that ties back to what experts believe would be known as imagination age, right, which is an era in which creativity and imagination become the primary creators of economic value. So I wouldn't be surprised if we foresaw a future in which we value the human beings contribution or value to society, based on his or her artistic contribution. However, they might do that.

25:36 And I believe that that might solve our problem of employee disengagement or of people having disengaged lives where they feel dissatisfied with the sort of mundane repetitive work that they're doing. And they're actually left free to play, to experiment, and to push the boundaries of human progress.

25:56 So I would also highly recommend, for those who are curious about what the future of work and future skill set might look like, and to learn more about the Burning Man experiment as well. I would recommend reading “Cosmic Citizens and Moonshot Thinking” to explore the role of education in an age of exponential technologies, written by education expert Rohan Roberts. Rohan Roberts posits, he really lays the foundation for a solution for what an educational model should look like in a post AI and post automation world, especially with the rise of AI and other exponential technologies. So I would highly recommend that.

24:42 And on that note, I would like to wrap up this short lecture. And really, the whole purpose of exploring, you know, the role of intelligence and the role of humans in a post AI world is to consider that we absolutely need a reevaluation of ethics, morality and the purpose for humanity. Dubai, and the Middle East, but Dubai in particular, is very future focused. And here, there's some really exciting work being done in the educational reform space, but also from the government perspective, to upskill people and to create exciting jobs and to create a culture of innovation, and R&D so that people experiment, play and create, and innovate more. So stay tuned with the progress that we're having within the region. I would be keen to share with anyone who's interested in

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following my work. And to learn more, please feel free to follow me on social media or keep an eye out on Amazon for my book, where I explore a lot of these topics in further detail. Thank You.

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