

FOUNDATION OF DIGITAL BUSINESS

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Week 05

Lecture 21

Lecture 21 : Putting AI in practice

Good morning, now continuing on my module on artificial intelligence for business now and beyond. This is the third lecture in this module, putting AI in practice, putting artificial intelligence in practice. So, this we will discuss start with talking about how an industry or a commercial business should start their venture into putting some AI experiments in their real life. So, the agenda for enterprises is as follows. So, reimagining that digital AI first that is for any problem you want to solve, what it means that you

should first take an approach that whether I can use any digital technology or AI to solve that problem. So, enable a new business models, customer journeys, products and services wherever you know each of these areas you want to improve or you want to start a new venture or a new campaign. So, think digital first, think AI first, look at these areas for your possible solutions. So, this is now we are talking really about your mindset. mindset how to move into the future.

So, as you have told we are the whole purpose of this course is to tell you how to lay the foundations of your digital business. So, obviously, it means that for whatever you want to do can we do something using digital technology or and if whether we can also bring in AI. So, that we things do in a obviously, much better faster and cheaper way. So, the next one is about rebuilding the technology stack, rebuilding a stack with the data and the infrastructure. So, all of the companies are using technology in some form or other.

So, that is very few we are talking about of course, medium to large and large company you are not talking about the very small scale industries etcetera. So, they are in a different league. So, our whole perspective is from the point of view of large industries

and medium scale industries. So, technology is being used. But are they the right technology or are they good enough in the today's circumstances or what you are talking about going faster in the digital field or bringing in AI.

So, do I need to look at different obviously, I think we need to look at different technologies that is what we meant is rebuilding the technology stack. So, whatever technology pool you have currently are using will need a relook and reinvestment. equip the AI workforce that is you have your employees. you have your technical employees and your business employees the non-technical people, but you have to empower them with the skills for the coming change because once you are now moving into the digital world that everything will be done using digital technology with the digital frame of mind with the digital mindset and then of course, AI using AI models predictive models etcetera.

Then all the employees will need to be involved in this and they can only be involved in their And by training you are actually equipping your AI workforce just strengthen because they need knowledge without the knowledge you cannot use these complex IT tool. Let us take ERP for example, enterprise resource planning the most common software which is being used by all businesses to run their business and to manage the business could be an example SAP or Oracle, but the main generic name is ERP. So, you have to train all employees to use that software. then only it can run otherwise it will fail.

So, by all means it is all every user has to get trained in the ERP software for whatever roles they have for whatever they need not learn the whole thing or they need not learn all the transactions or all the menu parts all the reports, but for their job for their role whatever is required they need to learn because everything has to be done on the We cannot do anything outside the system for otherwise your books will be accounting books everything will be erroneous. Shielding with responsible AI.

Put in place the new governance AI policies, data privacy, responsible approaches, this is what I was talking about in the previous class in the concluding session that what is meant by responsible AI, because AI being such a powerful tool and you are handling so much of data that is somebody else's data, your customer's data, this brings in lot of privacy concern. This brings in lot of responsibility and accountability. So, in word shortly you have to have a proper governance to manage all the data, manage the data privacy aspect and of course, the data security as well. So, the data should not get stolen, the data should not get misused by either your employee or outsiders.

So, shielding with responsible AI, so this is a very mandatory requirement for any AI The agenda for enterprise is clearly cut out, the face of imminent digital transformation the shift to an AI first approach goes beyond that is it is now taken for granted that whenever you need something or you want to employ even it has gone to such level that in IT services company when they are employing the question is being asked that can this work be done by an AI agent for example, or a software robot. So, implementing chatbots for experimenting with trendy tools like your call centers, customer service, do I have to have people on the phone responding to customer queries, can it be replaced by

agents like chatbots. It demands a complete re-imagination of the digital transformation strategy leveraging AI alongside digital cloud and automation capabilities. So, when we are talking about digital we are actually talking about all these things together, digital technologies, equipments and other things cloud we all know about cloud computing and automation. And this all of this together with AI is what is the whole digital ecosystem is and which is helping to bring in this transformation, you need all of these components or elements

The key players, it was the emergence of the new business models, widespread personalization and accelerated product and service innovation. So, all of this will not be possible without these, you need digital technology, you need cloud, you need automation and you need AI. And this is your new business model, you want to have widespread personalization. So, you want to give your customer the personal feedback, the touch, the experience and accelerated product and service innovation. Like developing example was that COVID-19 vaccine accelerated product that was a classic example of accelerate developing a vaccine in 11 months, which normally takes 6, 7, 8 years.

Unlike other emerging technologies, JINI is now easily accessible on demand simplifying the establishment of the technological foundation. So, JINI is at the hand of everybody today in my phone. I have a geni capability, chat GPT is there. So, I can type anything and get the geni's output or in my computer I can use the Gemini and Gork and you name it there are so many LLM models available today. Perplexity and all of them are ready to give me answers to anything I ask, not only answer I want them to do something, summarize a text, write a case or whatever.

Development of a clear enterprise AI and Gen-I strategy is then paramount because Gen-I is now available with everybody like if I am a teacher I am teaching an MBA course and

all my students they have this Gen-I with them. So, if I give them any assignment they will use Gen-I can I stop them I cannot as long as they have a computer as long as they have internet. which is like today's internet is like having water electricity etcetera as a part of your infrastructure basic infrastructure. I cannot stop them from using Gen I for submitting any assignment doing any assignment even project work.

So, what is the solution? In education field this has come as a big challenge and we are still struggling to find the answer to that. If you take online courses, then if you give assignments or exams or tests. So, how do you proctor those exams and tests to ensure that the student is not using taking the help of gen AI. So, that itself is another set of technology.

computer vision, cameras, videos etcetera to see find out whether he is genuinely doing the test or doing using some other help assistance tools to get the answers. So, that is one aspect. Of course, in a business context we are not so much worried about all this, so that something else. So, we want to just ensure that or all employees get access to such tools they have it and how they can use it meaningfully. So, augmenting how you work, working smarter, machine learning is capable of extracting more meaning from very large and highly complex data sets than a human ever could.

So, AI can thus see patterns, similarities and anomalies where human experts see none. If you take the case of cancer detection human specialist can recognize several hundred malignant patterns in a cancer scan whereas, an AI can recognize thousands. The reason is that when it was trained the AI tool the model was shown may be huge set of scans 5000, 10000 scans based on which it developed its expertise or knowledge that if you take compared to a human doctor. How many scans has he seen? It depends of course, on his years of experience and where he is working, but it will be in 100s maybe 1 or 2000s 3000.

So, his expertise will be lower or lesser than that of the model AI model who has been exposed to much more larger number of scans. So, it can be expected that the output detection output for new scans of a patient will be better from the machine from model than the doctor. But anyway this is open to debate I do not take it just for granted, but this is the way people are thinking and considering and developing AI models for various applications and one of the most important application is medical diagnosis. And that is where we need to be also very very careful because it is health human beings better experience for customers.

Using AI and particularly the cognitive aspects of the technology, a business can vastly improve the way it interacts with customers. That could mean using digital assistants and chatbots to converse with customer 24 by 7 through social media, digital platforms etcetera. It could mean making personalized product or service recommendation on an e-commerce So, all of this is giving you better customer experience, one is the response the chatbots is available anytime 24 by 7, there is no Sunday, there is no evening, no night, anytime you want to have an answer you can get an answer. And then you can make personalized product or service recommendations on an e-commerce site.

So, maybe nowadays you can heard about it that if you in a dress buying a trying to buy a dress through AI tools you can have a picture of yours and taken and they will show you that you are wearing the dress. So, in a virtual format you see yourself wearing that particular dress which you are planning And then you can decide whether that dress looks good on you the color or the shape or whatever the fittings and I can take various views rotate your figure front back side etcetera and from top bottom whatever you want to various way you want to look you can look because now it is a digital view and you can just turn it around digital. So, that can gives you give you added you know.

or to help you take a proper decision that this I want to buy it or I do not want to buy this particular dress. Diffusing innovation, innovation begets innovation. So, if you are innovative it will be it is a very spiraling effect. The spillover effects of a radical new technological cascade through entire economies changing everything forever. and ways that were never forcing.

So, when electricity was first discovered nobody imagined that it will be used in such a way today we just cannot do anything without electricity. The same is probably going to be true shortly for internet probably internet and this phone and handsets etc probably will not be able to do anything without these infrastructure and those gadgets tools. So, AI will impact socially to society to a similar degree. Its innovations will diffuse through businesses and beyond to whole economies. This phone for example,

smartphone was an innovative product from Apple. Now, because of this now it is now generating lots of other cascading innovation that is what it means when you say diffusing innovation or innovation because innovation. So, one of the other new things are coming into the smartphone it has become almost like a like a say medical device for example, you are using to monitor your heart beat, your oxygen content, the smart watch or how much you walked, how much energy you are spending, fitness device I mean

what not. And you are measuring and doing so many things through this phone handset which was basically meant to make calls and receive calls

and then it became smart because it could do it added a computer and it could have added also a music device. So, the automation of tasks we once thought needed human intelligence to the ability to see patterns in vast amounts of data to new cognitive human technology interfaces. This technology will have far reaching and radical implications for our working and personal So, now we are seeing we are realizing that we for everything we need a phone for to get a taxi we need a phone, to book a airline ticket we need a phone, to book a train ticket we need a phone. So, for everything we need this phone.

So, that is how it is becoming so ubiquitous. So, finally, we are also gradually see that for everything we need we need some AI tool or technology for our daily life not only our business life, but even our personal daily life. So, an important point here is vital to start with the business case not the technology. Now, we are coming back into the practice of it. So, how to the company should start.

So, first think about the problem the business case, what you want to solve not the technology do not get into the technology part in the beginning. Think first about what you want to do not what the technology could do only then should you add AI to the mix and analyze where it can add value. that should include assessing the feasibility of using AI, the effort versus return and the risks involved. Because when you start an AI journey it is difficult, it takes time, it needs technical people, talents, educated people, trained people also it lot of investments in terms of computational power primarily.

So, that is expensive. So, not necessarily that particular use case will justify this investment from a ROI perspective return on investment. But, that does not mean you should not use it. So, this is the open question open debate when to use AI and when not to take the chance not to use AI. You should also include finding a willing business sponsor to push adoption across your organization.

So, you need somebody to push. Most of the time it is your CEO or it could be any other senior high level CXO executives who has to put push this agenda of introducing AI. Because after all getting people to change their behavior is often the hardest part in introducing any radical innovation. What are the top three barriers to AI adoption innovation? What can prevent you from getting into an AI mode?

For the leaders, it is attracting, acquiring and developing the right AI talent. So, it starts with HR. So, do I have the right AI talent? And if I have, I have to retain them, I have to develop them and retain them and if I do not have then I have to acquire them, attract them and acquire them because without talent I cannot do the project.

Competing investment priorities, I might have many other investment requirement priorities for my limited fund. So, then AI can get a lower priority. security concerns resulting from AI adoption. So, that is what I was talking about previously the responsible AI part. So, I start with an AI start using lot of data, but what about the risk?

If something goes wrong I can be sued. The example I gave you about that hospital the thing detecting cancer etcetera. The hospital management will think many times that if there is a wrong false positive or a false negative. that it said no not a cancer, but actually there was a cancer and the patient dies. So, the hospital can be sued at least in developed countries definitely they will be sued.

So, these are the things which are acts as barriers to AI adoption shall we or shall And no clear cut answers and in general things limited or no general technology capabilities because many of the organizations today do not have yet the AI technological capabilities. Lack of leadership support and then unclear or no business case for AI applications. So, your business case for AI it is not very clear or you are trying to do it just because you want to try something new. That is another thing which you have to consider that is it a genuine case for an AI solution or you are just want to do it just to see your experience what AI is all about.

An important implication of the shift. that AI teams must be interdisciplinary and not simply technical. So, this is one thing also one has to understand that AI is just not that IT person or the AI data analyst person, it is normally multidisciplinary. For example, in Microsoft they employ whole team including writers means writers means writers content writers, psychologists to give its operating system which is AI Cortana as unique personality. The key point is this if the state of AI technology is not already streets ahead of our collective imagination, it soon will be it is growing exponentially.

This is the message to the business leaders that makes it very different from previous technology revolution. What is possible with AI will only be limited by your willingness to experiment and use it. So, this is very important to understand that the capabilities are enormous. So, what is what will limit is our willingness how much risk we can take which new areas we want to try it out and use it try it out as a pilot and use it coercion.

The risks involved, trust how do we demonstrate to citizens that an AI is safe to use, how can we do avoid biases unconscious or not being written in from the outset.

The answers to these questions like transparency, accountability and decisions taken by AI must be open to appeal and interrogation. So, you have to be very transparent in your work because data can have lot of bias, we will talk about it in subsequent classes, different biases and they can obviously impact the response and the output. Liability, what happens if an AI makes an error? Suppose, a driverless car hits a person and person is injured or killed or whatever, who will be responsible?

There is nobody driving the car. It is an autonomous car driven by computer software and then with sensors help or sensors etcetera. So, whom do you penalize? So, these are such questions still open questions security. How do you prevent unauthorized or malicious manipulation of an AI system?

I have been talking about this earlier also. Security becomes paramount and is compounded by the increasing use of open source code, because now things are available that all generating tools are available to anybody. They are all open source to a limited extent, because they use the paid version for more higher applications or larger volumes of course, they have to make money, but basic things are all available open source. The control part is a big question what happens if a machine can take over a process, how does a human take it back the control system.

So, this is futuristic we talk about super intelligence, super AI, artificial general intelligence if you heard where people are seriously talking about when the computers become equal or more intelligent than human beings. So, once they become more intelligent there is a fear that they will start controlling many things which we do not want them to do. Strong recommendation is take a human first approach to a thinking that means, adopting a framework of what we call responsibility which we have already talked we will talk about it more later. So, part of the responsibility is the how to govern create the right governance framework

So, anchor it to your organization's core values, ethical guardrails and accountability frameworks. Design will trust into your AI from the outset by accounting for privacy, transparency and security from the earliest design stage. So, keep all these things in mind when you are beginning your AI journey. Is your governance there? Are you considering the design aspects?

Make sure algorithmic accountability bias and security metrics are included, this bias will keep coming again and again. So, when you are using an AI tool for something and output is impacting say your customers, so that bias can play a big role. So, you have to be very careful right from the beginning that you know the set of metrics you should keep monitoring. V skill democratize the understanding of AI across your organization to break down barriers for individuals impacted by the technology. So, there should not be any categorization of employees that people who understand and can use AI tools and people who cannot.

So, you do not create such differences within your organizations which will create bring in lot of HR problems. So, keep that in mind that the entire organization should be you should have some minimum level of AI literacy which is very important. So, that everybody should talk the same language, then you will have lesser problems in acceptability of all these AI tools and techniques. some practical steps that every business can take now to make the AI more explainable. So, inventory, think about the decisions that are or will be taken by the AI in your organization, which of them would require an explanation.

Do they relate even directly to key areas like employment, recruitment, lending, education, healthcare, housing, inclusion or safety. I will give you an example. Recently about year back Amazon was hiring in US and then it came out somebody found out that it was negatively biased towards black women. So, from all the CVs they were receiving they were using an AI tool to shortlist because they are using huge number of employees CVs. And there is even a AI tool and that AI tool for whichever data it was trained etcetera intentionally or unintentionally it had a bias.

So, it was rejecting black women candidates. So, obviously, when this came out there was lot of bad press for Amazon. A similar problem came with even a Harvard for their admissions selection, it was biased towards a certain category of students. by race or color or region or whatever I will not give you the details that is not important, but what is important is that these AI tools can do something take some action you may not be aware of it. So, that is what you should be careful.

So, this is in all these areas this is what is meant by inventory. So, what is if the output is selection category and if somebody asks for an explanation I should be able to give the explanation. Assess, consider any quantitative and qualitative models that are already

providing explanations for decisions taken by AI. How are they performing for their intended recipients? Design, revisit the design principles used for your AI.

How could they make the process of making decisions more human centered and understandable? So, all of these things you have to keep under your consideration when you start the agent. Do not leave it to the technical person, I have given it handed over to my CIO and he will handle all of these things. The whole management should be involved in to ensure that all of these things are catered to. Audit, review the data.

How do you ensure AI using data sets that reflect the evolving nature of your workplace? Now, this is the most difficult task because data sets are normally huge large volumes. So, it should be audited before you are using the data and you can you may not may have to use tools for auditing the data because as the volumes are very large. So, human auditing manual auditing may not be feasible. Given AI's revolutionary potential and far reaching spillover effects, the broader societal implications of using it cannot be ignored.

This means collectively addressing some important questions. So, some of these questions are being asked and will be asked and you should be aware of it. How do we make sure people have the skills they need to thrive in an AI driven world? Like for example, the smart phone there are even some people today educated people also who do not use smart phone, many people today cannot use a net banking or do not use computer internet banking. So, you have a group of people who are say digitally not literate illiterate or something

So, they have lots of problems. So, you come to a suppose you come to reach a town by your train and you get into out of the station and you need a taxi. So, you need a phone smart phone to book a taxi, otherwise you do not get a taxi. Previously there was a queue you stand in a queue and there is a counter and the taxi is to come and you take a taxi at the airports or the railway station big ones. But today it is all app dependent everything is through a phone if you do not have a phone

or a smartphone or maybe worst case it happens to be also there is no network for the I lost the network or the phone is the battery there is no charge or the battery has failed it is after device can fail. So, right at that point of time you feel very helpless because whatever you have you have lot money in your purse you have a credit card or whatever but you cannot book a taxi if your phone is not working or you do not have that phone. The next big question is how many existing jobs will AI replace?

That is a big question being asked all over the world. And people are talking about UBI universal basic income that give people some basic income etcetera. The other question being I mean the other answer is provided that AI will create new set of jobs, but if you just take the case of that autonomous car. If all the taxis today become autonomous self driven, so many taxi drivers will be out of job. Now, it will create new jobs, but you do not expect a today's taxi driver to become AI programmers for example.

They do not have that educational background, they have to do something else. So, these are the questions being asked in the society, how many new jobs will be created the new type of job, will some people need to find income and fulfillment from sources other than work, what new legal frameworks are needed when AI is taking the decisions. So, if the decision has been taken by AI system, what is the legal framework if something goes wrong, who is to be sued, who is to be brought to the court. against whom actions can be taken.

The similar thing like the driver or the autonomous car which hits a car hits a passenger or does an accident. might humanity even face an existential threat when AI is become more intelligent than their creators. This is of course, the last question the big question people are seriously discussing also when super intelligence will come. First question is when will it come? Many say in 5 years, some say 20 years, some say may be end of the century, some say never.

So, lots of opinions are floating around, but the serious group of thinkers who think that it will come quite soon not very far maybe 10, 15, 20 years. What happens then nobody has a clear cut idea when computer suddenly become more intelligent smarter than human beings how things will change you can only just imagine, but it is very difficult to perceive. But anyway these are just giving you the whole gamut of what the situation is at the moment

futuristic, today, tomorrow, immediate future and of course, certain long term things which it just to give you a perspective of the whole thing. So, that you get interested in this technology and I think you should all of you should be need to be aware of this technology and then read because things are lots of material available on the internet news items keep coming. So, you should keep track. of what is happening. And because it is also happening very fast and some of these things can have very deep impact on our lifestyle

and since we are talking about business in the way business will change or the way business will work. So, you have to solve thing is that to create this awareness and interest in this new field not that you have to be a technical expert that is not the purpose of my lecture session, but overall high level idea and what it can do and what it should not do. So, with that I will end today's session. Thank you very much.