

# Artificial Intelligence (AI) An Introduction: What Every Customer Experience Professional Should Know

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# About This Whitepaper

Artificial intelligence (AI) technology has already started to make its mark on the business world. Because of its looming pervasive reach into customers' lives, the technology also carries the potential to have a huge impact on the customer experience (CX) profession.

This whitepaper was developed by a group of passionate CXPA member volunteers and AI experts from across the globe. It is a high-level guide intended to demystify AI technology and arm CX professionals with the basic knowledge needed to begin or enhance an AI business journey.

The authors of this whitepaper chose examples, resources, books, and case studies based on their own professional experiences, extensive research, knowledge of AI, and their experiences with the application of the technology in various business settings. It's our hope that you find value in the frameworks, guidance, and wisdom shared in the following pages.

CXPA wishes to thank the member volunteers from around the world who collaborated on this whitepaper.

# Introduction

Artificial Intelligence (AI) is now a key enabler in how organizations carry out business. The technology equips organizations with an enhanced ability to solve common business problems and automate day-to-day tasks while simultaneously expanding the realm of what's possible in customer experience delivery.

**This guide is intended to provide answers to the following questions:**

1. What does AI mean? Why is it important to understand?
2. How does AI relate to CX and my role as a CX professional?
3. What are some examples of where could AI fit into my organization?
4. What are the common challenges and best practices surrounding AI?
5. What team capabilities should I consider?
6. Where can I learn more about AI?

## Key Takeaways

- AI can be implemented across the customer journey.
- There is evidence that AI can enhance CX.
- Designing AI to solve a problem is critical.
- Three key questions need to be asked before starting on your AI journey.
- There are common challenges and best practices to consider.



# Understanding AI

The term “AI” has many different definitions. Here is the Oxford definition:

**Oxford definition:** *The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages<sup>1</sup>.*

AI definitions differ depending on the lens through which AI is being considered. For example, technologists might want to segment the types of AI by the way the technology works: does it learn, can it be trained, or is it simply an algorithm and nothing more? AI has several capabilities as demonstrated in the following chart, based on and adapted from the work of Cellstrat<sup>2</sup>.

## Artificial Intelligence Capabilities (originally developed by Cellstrat)

### Assessing

- How AI systems look at the world. E.g. profile building for recommendations of search.

### Sensing

- Taking in raw data for image processing and speech recognition. E.g. Siri.

### Inferring

- How AI systems draw conclusions. E.g. Search engine suggesting remedies when you search symptoms.

### Reasoning

- Thinking about how things relate to what is known. E.g. IBM-Watson.

### Predicting

- How AI systems make guesses about what happens next. E.g. Netflix recommends a show based on history.

### Acting

- Generating & controlling actions. E.g. Cortana speaking to you.

For the purposes of bringing value to the customer experience, we believe the best way to view and define AI is through the lens of customer centricity. As CX professionals, our goal is to always find innovative ways to design and deliver a differentiated experience.

# The CX Professional's Perspective

In 2018 the daily conversation in board rooms, on Twitter, LinkedIn blogs, print media, and conference keynotes about AI, machine learning, virtual assistants, and chatbots reached new heights.

AI is quickly becoming mainstream technology in consumer devices and services. With products such as [Alexa](#)<sup>3</sup>, [Cortana](#)<sup>4</sup>, and [Watson](#)<sup>5</sup>, over two-thirds of consumers are already using AI without knowing it<sup>6</sup>. Many already embrace AI in industries and in companies such as [1-800-Flowers](#), [Spotify](#), and [Dominos](#)<sup>7</sup> in the following ways:

1. Intelligently augmented self-service technologies
2. Data gathering by intelligent assistants
3. Predicting customer needs and then responding proactively
4. Learning about the customer based on data patterns
5. Tracking user interaction on websites to determine if the user may need help
6. Collating data to allow price and feature comparisons
7. Recommendations based on the behaviors of similar customers
8. Using sentiment analysis to track customer emotions and respond accordingly

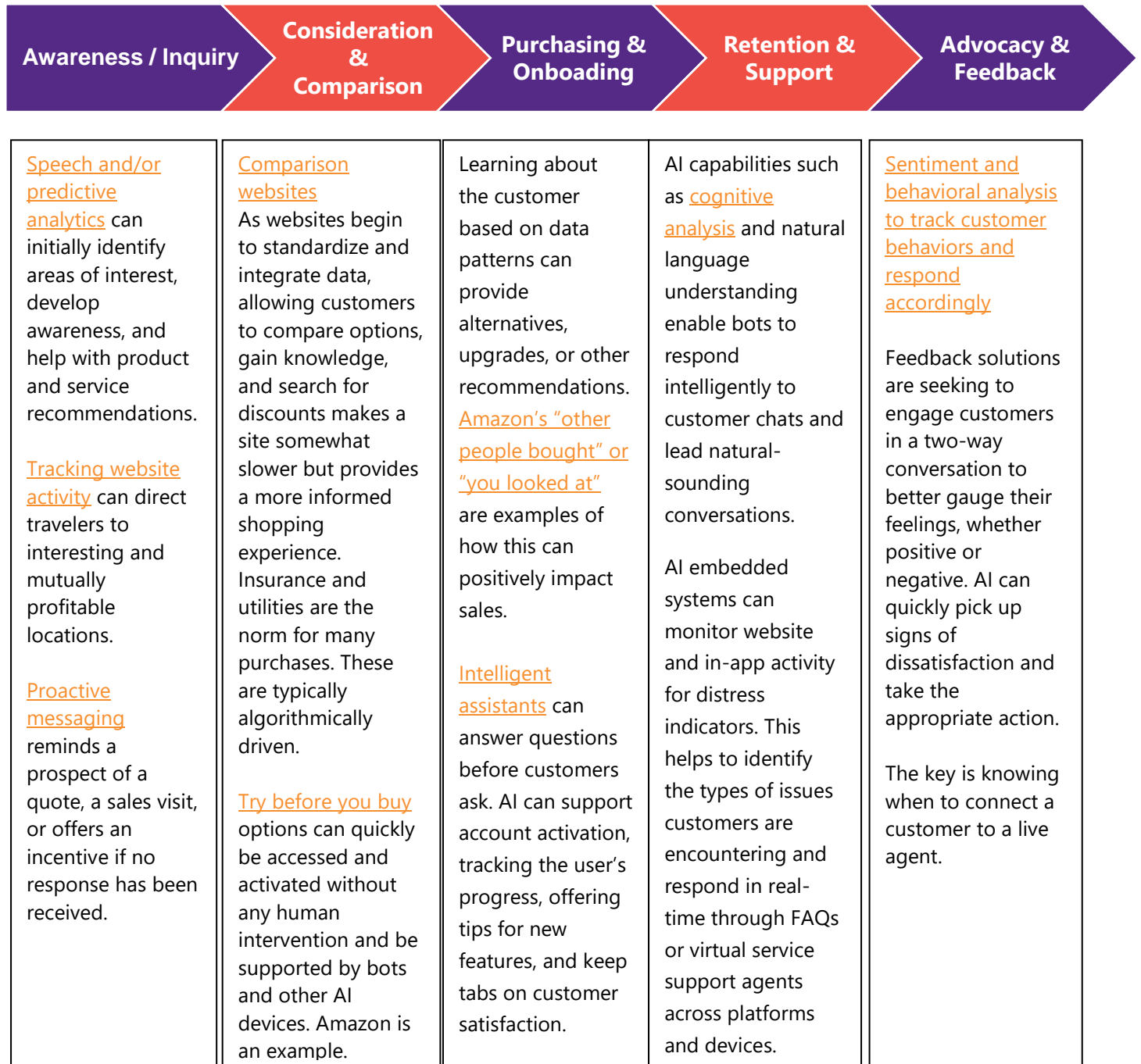
While AI can require a significant time investment to keep up with the latest developments, it is still important not to lose sight of our CX heritage and our mission. This is to focus on how to deliver great CX that is potentially enabled and supported by the plethora of technologies at our disposal.



It is important to remember our CX heritage and our mission, which fundamentally is to focus on how to deliver great CX, irrespective of the shiny new toys that dazzle us.

# AI Across the Customer Journey

Identifying the applications that can initially be handled by AI and ensuring there is a swift transition to a real, fully informed and capable live person sounds simple but is more difficult in practice. The following chart identifies some scenarios across the customer journey.



# How Can AI Enhance CX?

A recent IBM study<sup>8</sup> highlighted how companies are using AI to enhance CX in three main categories:

1. **Insights.** Leveraging AI can help uncover and identify actionable customer insights that drive impactful business decision-making, from defining their CX strategy and approach, to customer inquiries, to identifying which combinations of channels are most effective in engaging different segments of customers. Credito Valtellinese (case study 1, at right<sup>9</sup>) leveraged AI to enable their CX teams to make quicker, more informed decisions.
2. **Customer interactions.** Integrating AI into various market facing experiences that customers can connect and interact with is becoming popular with the use of cognitive technology and the ability to integrate AI into existing applications. See the Knorr case study 2<sup>10</sup> on the lower right side of this page.
3. **Automation.** Deploying AI to efficiently and effectively automate workflow process, saving time and resources, e.g., marketing automation and campaigns. This allows CX and marketing professionals more time for creativity, strategy, and effectively working smarter for better business results.

## Case Study 1:

### Credito Valtellinese Using AI insights to become more customer-centric

Credito Valtellinese, an Italian retail bank, knew its future depended on evolving to customer-centric banking. The challenge: internal systems were product-oriented. The most critical data was scattered within the bank's unstructured customer data sources, making it hard to extract and exploit. Credito Valtellinese implemented a customer analysis solution that uses AI to identify, capture and index unstructured data along with online shopping habits, and personal financial arrangements. Using natural language processing (NLP), the solution creates a detailed profile for each customer. This profile is used to build highly targeted segmentation models for multichannel marketing campaigns. Marketing can now independently run sophisticated cognitive analytics with improved agility. As a result, the bank has seen a 10 percent increase in campaign conversion rates.

## Case Study 1:

### Knorr: Using AI to personalize the customer experience

Knowing Millennial foodies are often interested in small, artisanal food brands, Knorr wanted to help ensure its big global brand also made it into their shopping baskets. This food brand, owned by Unilever, created the "Flavour Profiler" for the Knorr Love at First Table campaign using AI technology. Modeled like a simple personality quiz, the profiler instantly analyses consumers' answers and classifies them into one of 12 flavor personality types and then serves up perfectly tailored recipes. Sitting at the core of Knorr's popular campaign, the Profiler has received 1.3 million visits, and purchase intent among Millennials has increased by 12 percentage points.



# Design Considerations

As CX professionals, any time a new technology or tool is being considered for our company or organization, there may be a rush to launch before all of the design and implementation details have been considered. AI is no different. Design and implementation should be carefully considered.

Following are some design considerations originally introduced by Simon Chan, the original founder of PredictionIO.

- 1. Is it solving the right problem(s)?** There is a big temptation for some businesses to "jump in" to an AI program without first taking the time to evaluate if it is even truly needed. The best use case for any AI typically is one that aligns with existing strategic objectives, therefore solving the highest priority problems, or exploiting the highest priority opportunities, for the business.
- 2. Who are its users and what are their needs?** Chan suggests that to implement AI successfully, you must understand the needs of your users. Consider all potential users of the system, their basic needs<sup>11</sup>, and the typical missions they undertake with current processes to fulfill those needs and add value to the customer's journey. One should also be very clear about the goal of AI. For example, is it to enhance an existing human worker's experience or replace it, either in part or in whole?
- 3. What should be "in scope"?** Not every user need is going to be met, and many users will have competing needs. After creating a list of needs through detailed research, financial resources, and technical feasibility will then play a part in narrowing the focus of the final product. A simple prioritization matrix<sup>12</sup> can be used to ensure a proper balance is found between value-add to the business and value-add to the customer.
- 4. How will you measure success?** Define the measures and metrics you will use to define the success of the AI. For example, is it for a bot to be able to handle a certain percentage of web inquiry on its own?
- 5. How will you govern the evolution of the AI?** Change management will play a huge role as technologies continue to grow exponentially in power over the next few decades. A proper steering committee must be put in place so that the AI is able to adapt and change as the business needs of customers evolve over time. Considerations of agility and ethics<sup>13</sup> should be made to ensure the technology is able to respond to changes in the marketplace quickly. A great example is Microsoft's Bot Framework which can be plugged into a growing number of channels such as Facebook, Skype and e-mail. If they had picked only one platform they would have exposed themselves to the risk of sudden market changes. By doing the heavy lifting up front, they have baked in a level of agility which should serve their platform well.

Chan states, "to answer the above questions, you must focus on one complete use case for one type of user at a time, starting with the highest priorities for the business." After this fundamental research is complete you can then move to the human-computer-interaction elements associated with typical technological design projects.<sup>14</sup>

# Implementation Guidance

In 2017 many organizations jumped on the AI bandwagon. Consider:

- By 2020, 85 percent of all customer interactions will be handled without a human agent ([Gartner](#))<sup>15</sup>
- Eight out of ten businesses plan to implement some type of AI by 2020 ([Oracle](#))<sup>16</sup>
- More than two-thirds expect to see or use a messaging app when interacting with a business ([Chatbots Magazine](#))<sup>17</sup>
- 70 percent of respondents prefer to use chatbots to interact with companies for simple to moderate interactions and transactions ([Aspect](#))<sup>18</sup>

While there is plenty of support for implementing AI, many organizations either view AI as the newest shiny toy and they want to be a first adopter, or it is the “silver bullet” to solving all their CX woes. They went “all in” without formulating an AI strategy impacting alignment to overall organizational goals, which create inconsistent experiences and rework of processes.

**Before engaging AI, organizations should ask themselves three key questions:**

- What is the purpose of AI in my organization?
- What is the business and customer problem I am trying to solve?
- How will AI improve my customer’s experience?

## 3 Key Questions

- What is the purpose of AI in my organization?
- What is the business and customer problem I am trying to solve?
- How will it improve my customer’s experience?



# Common Challenges

CX professionals may face opportunities and challenges as they work on AI projects and initiatives. Consider staying ahead of the following potential challenges.

1. **Disclose you're using a chatbot.** Trying to pass off a chatbot as a human can damage trust in customer relationships, so fully disclose to customers you're using a bot and consider other ethical implications<sup>19</sup>.
2. **Knowing your customers' needs.** Know when a customer wants to use a chatbot versus speaking with a human. Not understanding this is inviting frustration and dissatisfaction.
3. **Incomplete knowledge base.** Make sure AI is using one complete knowledge base. Continue to improve the knowledge base as your information repository grows. Missing pieces of a knowledge base will hurt the experience you provide to customers.
4. **Have an escalation plan.** Know when to escalate from a chatbot to a human. Not all escalation plans are the same. Implement different rules based on customer needs and channels.
5. **Consider back office systems integration.** The last thing you need is for customers to repeat information to multiple bots or agents to get an issue resolved. AI tools need to have the same access to information as live agents do. You don't want to damage a relationship you took so long to build. Ensure AI is integrated into your CRM, finance, and other systems.
6. **Commitment to continuously improving AI.** Just like CX, AI is not one-and-done. Continue to improve AI so you continue to improve your customers' experience.

## Common Challenges

- Disclose you're using a chatbot.
- Knowing your customers' needs.
- Incomplete knowledge base.
- Have an escalation plan.
- Consider back office systems integration.
- Commitment to continuously improving AI.



# AI Team Capabilities

I will dramatically change the way CX teams operate. Gartner predicts that AI will disrupt the jobs of 1 million phone-based customer support agents by 2020<sup>20</sup>. Customer experience must involve a balance between the efficiency, speed of technology, empathy, emotion and complex problem solving that humans provide. Therefore, humans will remain the core of great customer experience but only if you play at their strengths and augment with artificial intelligence<sup>21</sup>. Below are some examples:

1. **Empathy and knowledge.** Systems that automatically scan incoming digital interactions, such as email or social media messages and suggest relevant responses to agents not only help them deliver faster, more productive service, but empower them with the knowledge they need to meet customer needs.
2. **Emotion.** One of the roles of agents is to provide human, emotion-based response. Using techniques such as Natural Language Processing (NLP) digital communications can be analyzed for factors such as context and emotion, enabling both human representatives and AI agents to respond accordingly with personalized, empathetic replies.

Perhaps the most serious consideration should be that of tackling the operational complexity gap introduced by any new AI systems. As pointed out by Frances Frei (Uncommon Service)<sup>22</sup>, businesses should first look to ensure the operational complexity of any task related to a new system is as low as possible. Only when this has been achieved should training and development be used to bring the skills and competencies of the employee into alignment with the requirements of the job.

This puts a strong emphasis on streamlining workflows and system integrations. If these areas are not given proper attention or are pushed off as “administrative” tasks, then the organization risks being unable to close this gap. Such a gap will not yield harmonious experiences for the customer and will also cause frustration among employees.

*"The goal is to get a closer match between employee sophistication and operation complexity. Many companies design service models for employees they don't have - for a payroll filled with super-stars. IT solutions can help or hurt your employees' productivity, often in dramatic ways. IT tools that work are sensitive to the employee experience."*

**(Frances Frei)**

# Recommendations

The overwhelming amount of AI information and options may appear to be quite complex to understand. A clear view of the problem you are trying to solve and ensuring it aligns to the strategic objective is a good place to start. The following best practices are recommended for a successful result.

1. **Conduct research.** Read blogs, books and whitepapers, listen to podcasts, attend events such as webinars and conferences. The Appendix of this whitepaper lists suggested additional resources.
2. **Treat AI as a product.** Put your product manager hat on, ensure all appropriate stakeholders are involved in decision-making, and ask:
  - How deep will we take AI?
  - What tasks will we use AI/chatbots for?
  - Where is the data that the AI will need to access?
  - Do we trust the data that the AI will need to access?
  - What is the plan in preparing for AI implementation?
  - If we're using a chatbot, at what stage do we escalate from a chatbot to a live agent?
  - What will success look like?
  - What measures and metrics should we consider to track AI performance and ROI?
3. **Define use cases.** Ensure that the use case is properly defined with the appropriate level of detail e.g. How will AI be used? Chatbots? Sentiment Analysis? Optimize contact center? Predict and prevent churn?
4. **Pilot first.** Start small with something like a chatbot, or with a subset of customers.
5. **Keep customers top of mind.** Do customers want a bot/AI? Review your VoC surveys and data. Gathering guidance from customers' needs, expectations, and preferences will give you the business intelligence on how and where to implement AI. Be sure to ask customers specifically about their needs when considering implementation.
6. **Integrate with other channels in the customer journey.** A chatbot is another customer channel in the customer journey. Integration will ensure they have a consistent experience across channels.

# Best Practices

- Conduct research.
- Treat AI as a product.
- Define the use cases.
- Pilot first.
- Keep customers top of mind.
- Integrate with other channels.



# Conclusion

We are at the dawn of a new era, where AI is already engaging with us on our own turf, in many cases without us even realizing. As the technology continues to grow and amplify, the most important goal remains the same: human needs. No matter how great the disruptor, no matter how great the potential before us, the winners in the AI revolution will be those who put humanity at the core of their AI strategy. As a CX practitioner, with the knowledge presented in this whitepaper, we challenge you to take a bold step forward into this new era and spend time thinking about how AI can help your customers. Consider this your invitation to the next great revolution. We hope to see you there.

# Contributors

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# Glossary

AI	Artificial Intelligence - The theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. <sup>23</sup>
Algorithm	Algorithms are used for calculation, data processing and automated reasoning. <sup>24</sup>
<a href="#">Alexa</a>	Alexa is Amazon's virtual personal assistant that has been around for about two years and keeps getting smarter. It lives inside the company's <a href="#">Echo smart speaker</a> , among other devices and offers users the ability to dictate commands to the assistant to control products throughout their home, listen to music, and more. <sup>25</sup>
Bot	An internet Bot, also known as a chat bot, web robot, WWW robot or simply bot, is a software application that runs automated tasks (scripts) over the Internet. Typically, bots perform tasks that are both simple and structurally repetitive at a much higher rate than would be possible for a human alone. <sup>26</sup>
Cognitive technology	A subset of artificial intelligence that involves self-learning systems that use data mining, pattern recognition and natural language processing to mimic the way the human brain works. <sup>27</sup>
<a href="#">Cortana</a>	Cortana is a virtual assistant created by Microsoft. It can set reminders, recognize natural voice without the requirement for keyboard input and answer questions using information from the Bing search engine. <sup>28</sup>
Machine learning	Machine learning is a field of computer science that uses statistical techniques to give computer systems the ability to "learn" (i.e., progressively improve performance on a specific task) with data, without being explicitly programmed. The name machine learning was coined in 1959 by Arthur Samuel. <sup>29</sup>
Natural Language Processing(NLP)	Natural-language processing (NLP) is an area of computer science and artificial intelligence concerned with the interactions between computers and human (natural) languages. <sup>30</sup>
Virtual assistants	"A virtual assistant is a software agent that can perform tasks or services for an individual. Sometimes the term "chatbot" is used to refer to virtual assistants generally or specifically those accessed by online chat (or in some cases online chat programs that are for entertainment and not useful purposes). <sup>31</sup>
<a href="#">Watson</a>	Watson is a question-answering computer system capable of answering questions posed in natural language, developed in IBM's DeepQA project by a research team led by principal investigator David Ferrucci. <sup>32</sup>



# Appendix: Resources and Further Reading

WEBSITES	PODCASTS/WEBINARS/ DOCUMENTARIES	BOOKS/WHITEPAPERS	HASHTAGS
<a href="#">AI Weekly</a> <a href="#">Marketing Artificial Intelligence Institute</a> <a href="#">Artificial Intelligence Blog</a> <a href="#">Learn with Google AI</a> <a href="#">MIT Artificial Intelligence</a> <a href="#">List of Top 10 AI, Data Science and Machine Learning Resources</a> <a href="#">Facebook AI Research (FAIR) Chatbot for Beginners</a> <a href="#">Chatbots Magazine</a> <a href="#">Chatbots Life</a> <a href="#">Machine Learnings</a> <a href="#">Machine Learning Weekly</a> <a href="#">Microsoft Machine Learning Blog</a>	<a href="#">CXPA – AI Impact to CM Management – Webinar</a>  <a href="#">How CX is shaped by Artificial Intelligence – The modern Customer Podcast – Interview with Humana</a>  <a href="#">Answers to your AI Questions - Gartner</a>  <a href="#">Ethical Pitfalls of AI – Forrester Wave</a>  <a href="#">Game Over: Kasparov and the Machine - "A powerful documentary that examines the ethics behind IBM's Deep Blue chess match with Garry Kasparov."</a>  <a href="#">Alpha Go - "A beautiful film that shows how AI can help illuminate what it means to be human."</a>  <a href="#">The secret life of modern living: Algorithms - "An insightful documentary that shows just how much AI is already in use in our day to day lives"</a>	<a href="#">Applied Artificial Intelligence</a>  <a href="#">Mckinsey – An Executives guide to AI - Whitepaper</a>  <a href="#">An Executives Guide to AI - Book</a>  <a href="#">Artificial Intelligence for Marketing</a>  <a href="#">Designing Bots: Creating Conversational Experiences</a>  <a href="#">Designing Agentive Technology: AI That works for People</a>  <a href="#">Life 3.0: Being Human in the Age of Artificial Intelligence</a>	<a href="#">#ArtificialIntelligence</a> ,  <a href="#">#AI</a>  <a href="#">#ANN</a>  <a href="#">#BigData</a>  <a href="#">#Data</a>  <a href="#">#Datascience</a>  <a href="#">#Robotics</a>  <a href="#">#Chatbots</a>  <a href="#">#Robots</a>  <a href="#">#machinelearning</a>  <a href="#">#ML</a>  <a href="#">#neuralnetwork</a>  <a href="#">#NLP</a>  <a href="#">#DL</a>  <a href="#">#deeplearning</a>

# Endnotes

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