

# Hello marketing, what can artificial intelligence help you with?

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## Abstract

Artificial intelligence based applications are emerging in a broad range of expert domains. News about AI based solutions in medicine, industrial production processes, logistics, mobility and digital marketing trigger discussions and a lot of speculation. The market research industry seems hesitant and at the same time eager to embrace this new technology. In this article the author provides a definition of artificial intelligence and its different forms: narrow AI, hybrid AI and strong AI. He concludes his reflection on the question whether it's feasible to develop AI based marketing insights solutions with the recommendation: it's time to embrace AI.

## Keywords

Artificial Intelligence, AI, Marketing Insights, Market Research, Narrow AI, Hybrid AI

Over recent decades, we have become accustomed to hearing or reading about dramatic predictions on how technological developments will destroy, or at the very least dramatically transform market research. If not social media, then definitely big data would undoubtedly mean the end of market research as we know it; with its roots in scientific methods and empirical research.

Artificial intelligence (AI) is the latest big game changer. The number of AI start-ups is growing rapidly, there are more and more conferences dedicated to the topic, and we hear a lot about big tech companies investing huge amounts of money in AI-related developments. Somehow, this does not come as a surprise, as there has been a lot of buzz about machine learning, deep learning, and analytics over the last couple of years—and that is what AI is about, right? All these developments are alluding to the simple fact that data alone, hailed as the “new oil,” is not doing the trick.

However, just labeling a solution, AI won't make it relevant or successful. What does AI really mean? Is it just a synonym for extremely powerful algorithms and neural networks or is there more to it? The current hype around AI is creating a blurry picture calling for clarification. Complex data landscapes can be explored to understand what information they provide. However, data will only translate into significant business potential if related to the right use case. Similarly, the use case determines the appropriate analytical approach and degree of automation.

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I'll refrain from creating a dystopic vision of the future, and instead focus on the question whether AI—in its current development stage—can replace or augment the expertise and methods it takes to inform marketing decisions. The latter is, at least in my humble opinion, the essence of market research. And if AI is powerful enough to inform decisions such as will person A like product B and will consumer X purchase the car Y at price Z, then it's overdue to embrace it. Especially if it's doing a better job than human experts. The remaining step for such a system would be to automatically trigger the best possible marketing action and continuously learn from the market response.

## Back to basics

To understand what AI is capable of, it makes sense to look at the basic definition first:

Artificial intelligence (AI) is intelligence exhibited by machines. In computer science, the field of AI research defines itself as the study of “intelligent agents”: any device that perceives its environment and takes actions that maximize its chance of success at some goal. (Wikipedia, 2018)

There's a lot of information in these few lines. The first part can be translated into: “[. . .] computers do things that require intelligence when done by humans” (Copeland, 2000). So, it's easy to crack the “artificial” in AI; this obviously means machines/computers are doing something, not humans. The tricky bit is the intelligence. In the very early days of AI, before John McCarthy held the famous “Dartmouth summer research project on artificial intelligence” in 1956, Alan Turing (1950) wrote a wonderful paper under the visionary title “Computing Machinery and Intelligence.” The first two sentences of Turing's paper are remarkable—and they give us a solid clue:

I propose to consider the question, “Can machines think?” This should begin with definitions of the meaning of the terms “machine” and “think.” (Turing, 1950)

## Intelligence?

What constitutes intelligence or in other words, how can a machine possibly think? Human beings think all the time, but it's not easy to distinguish thinking from purely mechanical processing. There's no point in drifting into a philosophical discussion on this; let's focus on the required ingredients of the “think” component; representing the “intelligence” in AI.

The following are more or less application independent:

- Learning;
- Knowledge representation;
- Reasoning;
- Prediction/planning.

Depending on the specific problem at hand, we'll need a lot more; for example, the particularly tricky emotional intelligence. Back in 1950, each of these ingredients must have been considered a major challenge. However, today, in the age of Apple's Siri and Amazon's Alexa, AI has obviously evolved and many problems have been solved. In fact, in today's terminology, we distinguish different evolutionary stages of AI, ranging from application-specific, narrow or weak AI to Artificial General Intelligence (AGI) or strong AI.

Today's perception of AI in the general public is massively influenced by movies like *Her* or *Ex-Machina*. "Super" intelligent systems easily outperform human intelligence on pretty much all fronts and speak to their inferior human contacts (the word "user" seems inappropriate in this context) with the voice of Scarlett Johansson—the latter at least in *Her*. This type of AI is referred to as AGI, or even Superintelligence, and it's fair to assume that for the time being, it's science fiction.

## **Narrow AI**

Weak or narrow AI is tailored to a specific problem or task and cannot deal with other challenges without being re-trained and/or modified. Calling this weak AI is a little misleading, as it's by no means easy to develop such a system. The name only makes sense if we look at the following question: How strong and flexible is the system in relation to human intelligence? Weak or narrow AI systems lack the flexibility of human intelligence; they fall short in terms of the scope of components that comprise human intelligence but can be very powerful in their domain. In fact, they typically aim to beat humans in their specific domain, and once they achieve this, they get a lot of media attention. DeepMind's (now Google/Alphabet) AlphaGo, or IBM's DeepBlue are popular examples. Pretty much all AI that is operational today falls into the narrow AI category: Apple's Siri, which goes back to a SRI International spin-off acquired by Apple and a speech recognition engine developed by Nuance Communications, Google's Assistant, and Amazon's Alexa. There are plenty of narrow AI solutions addressing use cases in numerous industries ranging from health care to defense and—spoiler alert—marketing!

## **Strong AI**

Strong AI, full AI, and AGI are being used synonymously. A Strong AI system is as powerful and flexible as human intelligence and is not tailored to a specific problem or task. Strong AI has not been achieved (yet).

## **Hybrid AI**

Recent developments are calling for a more granular terminology than the two extremes of narrow AI and full AI. We can observe rapid growth of narrow AI with applications for an increasing range of use cases and on top of that the emergence new extremely powerful AI systems; some of them blending multiple narrow AI solutions, capable of adapting to new challenges. The latter are still not strong AI; however, more than "just" narrow AI. Call it semantics but I simply wouldn't want to put IBM's Watson where it stands today or the AI engines of companies like Google into the same bucket with a chess computer on steroids. AI solutions that combine multiple narrow AI modules are referred to as hybrid AI (Greenwald, 2011), and this field is growing at a fast pace (Martínez de Pisón, Urraca, Quintián, & Corchado, 2017).

## **AI solutions for marketing**

Marketing and Data Scientists can leverage a very rich toolbox of predictive models, machine learning approaches, and the like. I wouldn't refer to these as AI, although some of them can be leveraged when developing AI solutions. We'd expect an AI solution to be capable of learning, knowledge representation, reasoning, and prediction or planning. All of that can be focused on a

narrow field like language, or image processing. The solution can naturally leverage multiple narrow AI modules—then we're talking about a hybrid solution.

The availability of ready-made AI components, such as language processing or image recognition, that we can access free of charge or for a license fee is amazing. More services and application programming interfaces (APIs) are emerging constantly. What's even more impressive is the open access to toolboxes like TensorFlow, with very user friendly interfaces via common analytical platforms or languages such as Python or R. This enables Data Scientists to leverage very powerful tools and algorithms without even leaving their comfort zone. They don't need costly on-premise technology stacks because the well-known cloud services can be scaled up as needed. So, if someone has a clearly defined use-case and knows how to use what's available, it's not rocket science to create a hybrid AI solution.

This leaves us with the question if an AI solution can replace the human expertise required to generate valuable marketing insights, consequently trigger respective actions, and continuously learn from what it's doing. Well, of course this is already happening in areas such as online targeting and dynamic attribution, next best offer solutions—the list goes on. No surprise that we see these solutions growing rapidly in the digital ecosystem because these decisions are made at such scale and speed that a human would be simply lost. And it doesn't stop there. Training an AI system so it learns the association between brand preference and consumer profiles is just another use case and adding a nice voice interface is the icing on the cake. So, "hello Marketing, what can AI help you with?" It's time to embrace AI.

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