WTF

IS ARTIFICIAL INTELLIGENCE?

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Introduction

The rise of the machines? The robot revolution? Tech marketers and PR pros have been working overtime to sell the industry on artificial intelligence by comparing it to everything from C-3PO to Cylons. It's a fair move. After all, pop culture has painted some vivid pictures of what AI looks like, even if most of those pictures end with innocent humans running for their lives from machines run amok.

In reality, the AI revolution in marketing has been quieter but ultimately more consequential than any killer robot fantasy. Marketers are using AI to understand their customers habits, analyze data, respond to questions on social media and build confidence.

In this guide, we'll look at the spectrum of technology that spans simple algorithms to fully realized machine learning. We'll look at practical applications in search, social media, and display, and we'll finally cut to the chase about how we classify programmatic, all to answer one question…

WTF is artificial intelligence?

Algorithm or AI?

Let's work backwards, by first defining what AI is not. Tech marketers looking to snag more ad dollars have labeled all manner of automation technology as artificial intelligence. But where does true AI really begin?

"Much of what we call AI is really just a simple algorithm," said Richard Decker, professor of computer science at Hamilton College. Algorithms can be complex enough to offer up a huge variety of outcomes, but the rules are fixed. "Amazon product recommendations, for instance, or discovery algorithms for social platforms like YouTube don't really rise to the level of artificial intelligence, but they are certainly part of a spectrum."

So, technologies sometimes billed as AI—like search discovery algorithms, or programmatic ad insertion tools—don't quite qualify. The simplest marker of artificial intelligence, Decker said, is that the program can change its own rules to accommodate new data and respond to new challenges.

On the AI side of the spectrum are technologies that can produce unexpected outcomes many orders of magnitude more complex than a simple algorithm. AI has evolved from the early web crawlers that indexed the world wide web to AI-driven automobiles. In May, Google's AlphaGo defeated the world's best player of the most complicated board game, Go. Computer scientists considered it a watershed moment, as the program improved considerably following last year's match. "Last year, it was still quite humanlike when it played," Go champ Ke Jie told the New York Times. "But this year, it became like a god of Go." In other words, it learned and improved, just like real AI should.

What makes AI?

We asked Professor Decker to explain the core AI technologies that make that possible: natural language processing and classification, sentiment analysis, and trend and pattern recognition and analysis.

NATURAL LANGUAGE PROCESSING

"In order for people to really talk to computers, computers need to understand all the variables of human speech. Natural language processing is specifically creating the capacity for a machine to take in the huge amount of variety in human speech and start to dissect and classify it."

NATURAL LANGUAGE UNDERSTANDING

"NLU is the step after language processing. Once you've taken in the data and broken it down into functional units, you need to be able to squeeze some meaning out of it and spit it back. It's teaching machines to understand that 'where is the market?' and 'how do I find the market?' and 'how do I get to the market?' and 'directions to the market?' all mean the same thing."

NATURAL LANGUAGE CLASSIFICATION

"A subcategory of natural language understanding. It goes beyond understanding the words of the text to understanding what the intention behind them is. When you're looking at a big sample text, like a batch of social media posts, you can ascertain the general tone or tenor of the conversation. It can help you detect anomalies like frustration or anger."

SENTIMENT ANALYSIS

"This one actually comes out of semiotics. It's how the machine can analyze affective states and subjective information. To really be useful an AI has to understand the meaning behind the text, the voice and intention. It's using word choice and sentence structure, punctuation, tone of voice etcetera to know if the input is coming from someone who is happy or mad or excited. A perfect AI would understand sarcasm, innuendo, or wordplay."

TREND AND PATTERN RECOGNITION

"Because an AI can process large amounts of data it can detect patterns of behavior that a human agent couldn't perceive. When you're plugged into a big data set, like a social media platform, an AI that understands language could pick up on subtle changes in the conversation before they'd be perceptible to a human operative."

PREDICTIVE ANALYTICS

"Once you understand trends and patterns you can start to anticipate them. AIs can learn from patterns within the data and assign a likelihood to future events. It's not quite Miss Cleo, but with a good data source we can predict human behavior at the aggregate level."

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Where does it matter most?

While there's been a general uptick in interest in AI technologies – spend is projected to top $4.5 billion in 2017 – some sectors are ahead of the curve. Finance, retail, customer service, and media and marketing are just a few industries fervently exploring AI applications.

FINANCE

A 2016 study by Euromoney, a finance-focused thought leadership and research organization, found that 42 percent of global finance executives were committing research and development dollars to developing AI capabilities. The finance sector's fascination with AI spans both customer service and more complicated financial planning applications. Royal Bank of Scotland employs AI-powered chatbots to answer routine customer requests, freeing up human agents for more complex concerns. Meanwhile, big banks like Wells Fargo have turned to IBM's Watson to analyze customers' financial history and habits to ensure that frontline employees offer the right products to the right people.

RETAIL

Online retailers have likewise profited from AI. Haircare brand Madison Reed has used AI to crack one of beauty's thorniest problems – selecting a hair dye color based on the picture on the box. The Madison Reed color advisor collects data on customer's hair color, texture, preferred style, and length through a Facebook messenger chatbot, and uses algorithms to match the consumer with a recommended shade.

TRAVEL

AI has also found a home in industries that have traditionally valued a human touch. Dutch airline KLM has turned to artificial intelligence to automate its social customer service, a notoriously treacherous area for air travel in particular. The Amsterdam-based carrier used AI to bolster its 235 person social media team with automation tools–including chatbots and automated replies–that handle rote requests, like issuing boarding passes and seating assignments via Facebook Messenger. Human agents, meanwhile, focus on stickier conversations.

AI for media and marketing

Artificial intelligence is facilitating a dramatic transformation in the media and marketing industries. As advertisers look to get more out of their ad buys and publishers try to wring every possible penny out of their impressions, both sides of the buy-sell equation have turned to AI to comb through digital publishing's data troves.

AI-powered platforms like Lucy, created by Equals 3, allows media planners to parse huge amounts of structured and unstructured data (free form text in customer surveys and feedback forms, for example) and combine it with structured data like social media analytics to produce custom insights and define audience segments. Planners who use Lucy can ask it, for example, "Who buys Teslas?" and Lucy will return a customer segment.

One shop, Maxus,has tested Lucy on hospitality brands, using it to measure which sought-after audience segments had been exposed to what media and marketing efforts. The feat required processing unique data inputs from publishers and social media platforms. Lucy also helped a cosmetics brand to perform audience segmentation across its products and match those segments to media consumption habits.

Albert, another AI whose twee name obscures its massive computer power, was created by multinational agro-business Dole to help the company increase sales. After feeding Albert a few key KPIs for its brands, Albert was able to determine which media to invest in as well as the posting times and creative formats that would be most effective. The platform was even able to select and update creative and headlines in real-time to respond to campaign feedback and engagement leaving media planners with more time to focus on the big picture.

AI for social and search

" *Search and social are two of the most developed areas of AI integration."*

Artificial intelligence is doing more than helping advertisers to find the audiences they need. It's also assisting the teams responsible for acquiring new new customers.

"Search and social are two of the most developed areas of AI integration," said Sid Warner, associate vice president of search marketing at Group M. "Advertising is only useful if it's relevant, and on search or social media, people are already looking for some kind of content, so it's easy to get to relevance if you have the ability to respond to the data and the inputs."

Social media platforms—we're looking at you, Twitter—have become a squawk box for anyone with an opinion. Those millions of users letting loose online have created terabytes of unstructured data, an avalanche of information impossible for even the largest human team to sort through on its own. With AI, they can parse that data, analyze sentiment and make predictions in a fraction of the time.

Many brands now employ artificial intelligence to monitor social media platforms, a practice known as social listening. With a sophisticated understanding of human language, AI can analyze social media trends to detect changes in conversations, alerting human operatives to changes in conversations about the brand or gathering information about the feelings of their customers.

In one example, TD Ameritrade used IBM's Watson to index and analyze confidence levels among sports fans. Participants allowed their social posts to be analyzed by Watson, which was able to understand and score a seemingly intangible metric, confidence in their favorite team, and link that confidence to real-world outcomes.

AI for display

The role of artificial intelligence in social and search marketing is fairly forward facing. Platforms that transact on human inputs can naturally benefit from machines that can understand human language and intent. The impact of AI on traditional display advertising is less obvious but still substantial.

"There are elements of AI in things like dynamic creative [optimization]" says Susan Borst who heads up mobile research at the IAB,"Where you're looking at big bundles of preferences and building that ad that's really personalized." According to Borst, AI hits display advertising at the micro and macro level, handling things like optimizing ads at the individual level to match a single person's tastes and conditions, and doing the heavy lifting on big campaigns.

"The trade off with personalization is that you used to lose scale," says Borst. "AI makes it possible to do that kind of personal targeting on a huge campaign, so you're no longer forced to choose between quality of your targeted efforts and quantity of impressions. Because it can look at big chunks of data AI lightens the load for the teams that manage these campaigns."

Boorst notes that AI can be used to sort through the massive amounts of data required to do one-to-one personalization. Mapping information for publisher sites and combining it with social platform data can produce insights about where and how to best reach individuals rather than simple segments.

The future

Computer scientists and science fiction writers have been envisioning the future of AI for decades, but with interactive chatbots, virtual assistants, and personalization algorithms cropping up everywhere from Facebook messenger to the clearance rack it's clear that AI is finally here.

With spending on the rise and a growing number of applications across both consumer facing and business technologies, AI is fixed to make an even bigger space for itself in 2017 and beyond. Faced with a future in which data is so plentiful that human agents will struggle to grok it, a wave of AI assistants are emerging to distill insight and meaning from the chaos and provide human marketers with enhanced capabilities to meet the challenges of the digital era.
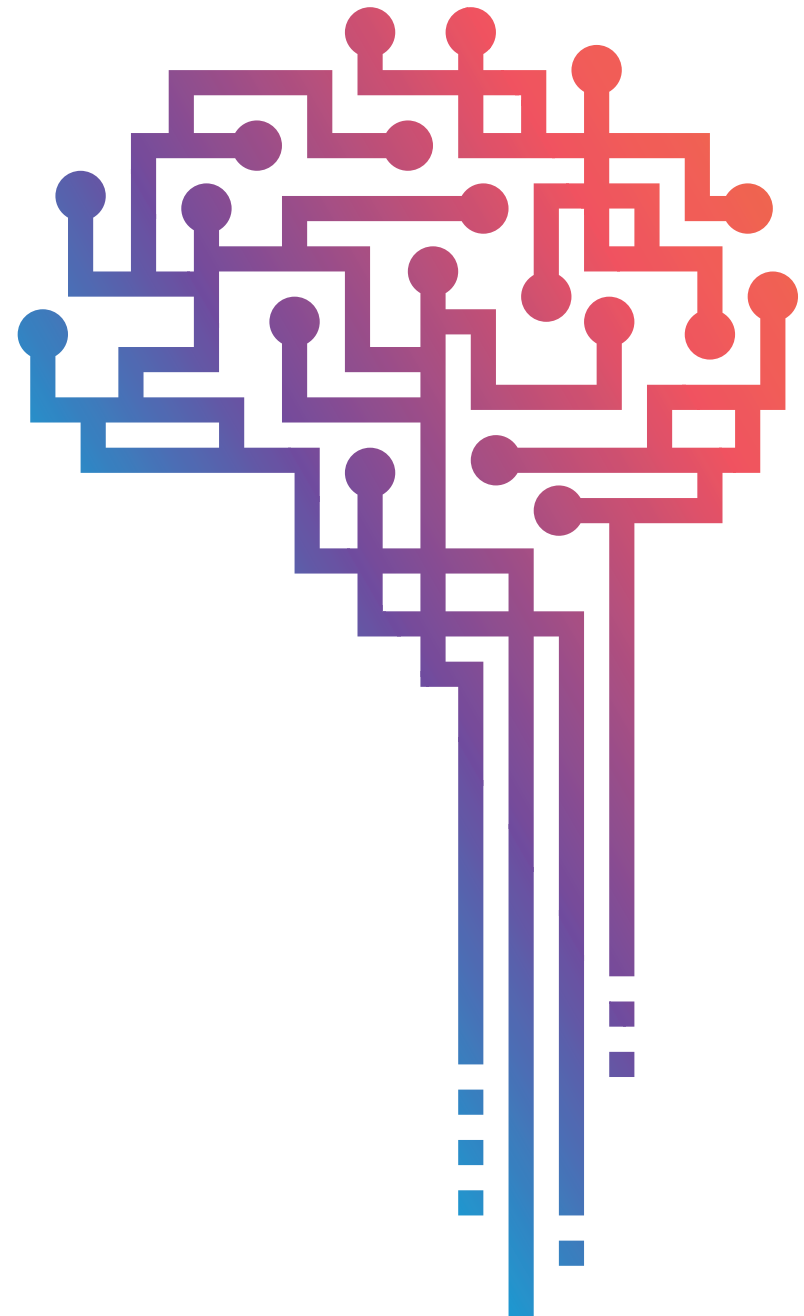
GLOSSARY

ALGORITHM

A rule or set of rules used to make decisions.

CHATBOTS

Automated conversation tools that can understand human language to varying degrees, provide information, and complete simple tasks. Usually found within text-based messengers or as stand-alone applications.

MACHINE LEARNING

The ability of computers to "learn" information that they haven't been explicitly programmed with.

NATURAL LANGUAGE PROCESSING (NLP)

The part of computer science dedicated to training computers to understand human language as it is spoken or written to facilitate machine-human interactions.

NATURAL LANGUAGE CATEGORIZATION (NLC)

Understanding the intent behind language.

PREDICTIVE ANALYTICS

Using statistical algorithms, machine learning techniques, and data to determine the likelihood of future events.

PROGRAMMATIC

The buying and selling of digital advertising inventory using algorithms to optimize and target.

SENTIMENT ANALYSIS

Determining the emotional content and meaning of a natural language communication using context and word choice.

STRUCTURED DATA

Data collected in a defined format that can be easily converted to numerical inputs and classified using spreadsheets.

UNSTRUCTURED DATA

Data collected from less defined tools like surveys and open-ended questions.

VIRTUAL ASSISTANTS

Software assistants design to assist users and perform tasks such as Apple's Siri, Amazon's Alexa, Microsoft's Cortana.

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