Performance|N

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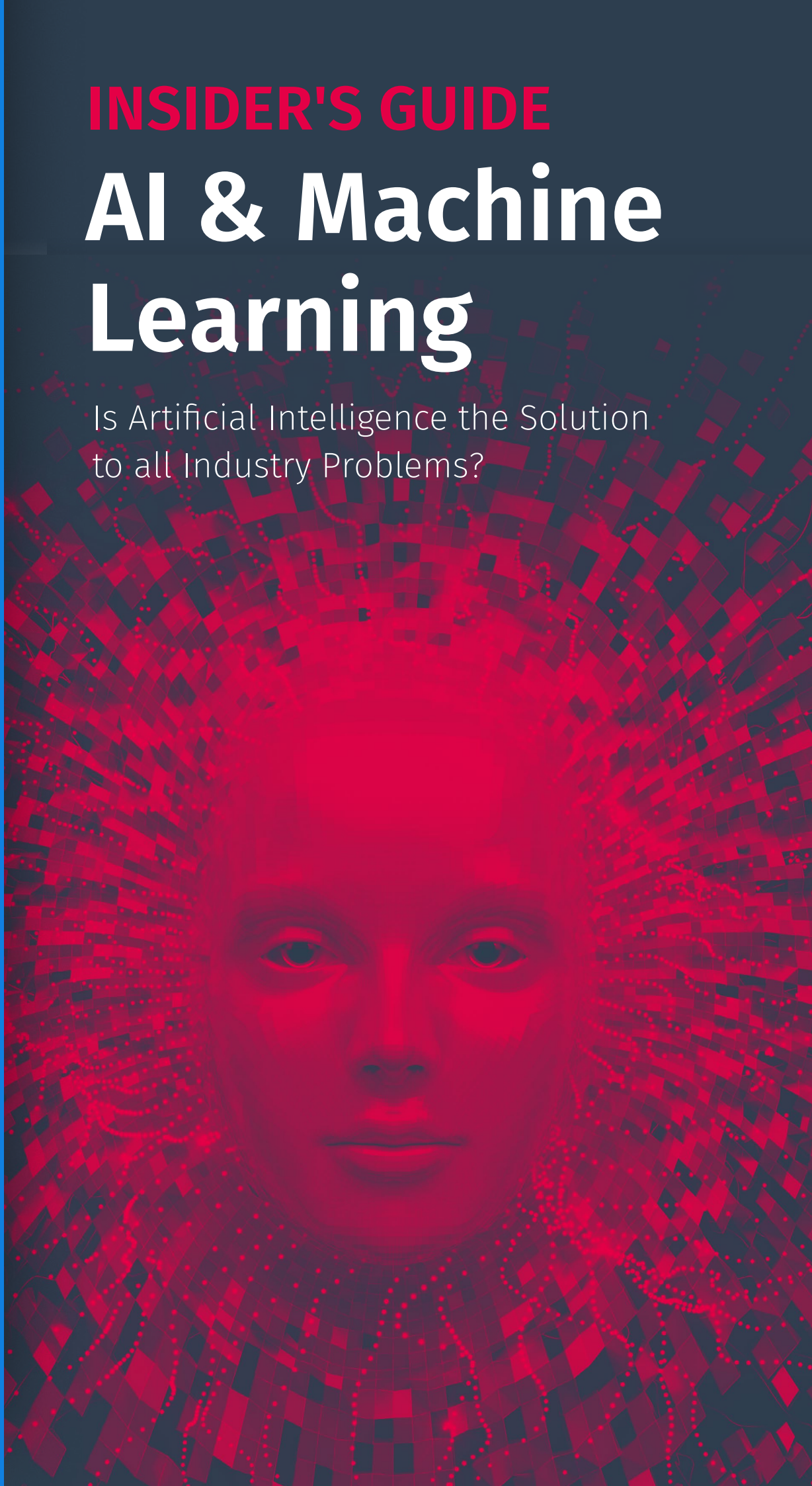
INSIDER'S GUIDE

AI & Machine Learning

Is Artificial Intelligence the Solution to all Industry Problems?



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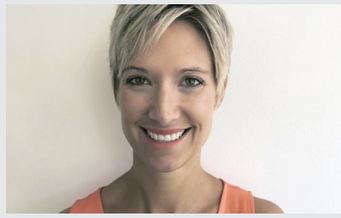

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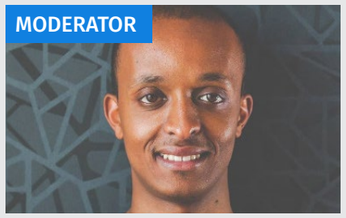

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Foreword

In October 2018, Impact and PerformanceIN hosted a round table on artificial intelligence (AI) and gathered some of the smartest minds in the industry to discuss whether AI is delivering all the promises that have been made about it. The overarching theme seemed to be that machine learning prompts great concepts and yet it is still not used at scale within the digital marketing industry. If we look at Amazon, for example, we can see an impressive blueprint on how AI has strengthened their shopping business and yet many companies simply aren't harnessing the true potential of what AI can deliver.

For agencies, creative should be executed with machine learning in mind. This will improve the production process through to delivery and increase the impact throughout each stage. However, advertisers and their agencies know more about their brand than an algorithm. So while AI can find patterns that humans can't, the human element within the creative process needs to remain human-led.

Machine learning for the affiliate marketing industry takes the manual work out the process. AI will make trading faster and utilise data more efficiently. Yet while we know that automation is successful, it can potentially create more problems than it solves. One question that was raised was how the government is going to regulate AI. If we take away the closed black boxes of Google and Amazon, then all algorithms will look alike but if closed black boxes remain, we have the issues of lack of trust and transparency to contend with.

Over the next three features, PerformanceIN will share the thoughts of Impact and the key agencies, brands and tech partners that took part in the roundtable. This supplement will provide the real truth about the good, the bad and the ugly of all things AI and machine learning.

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Is AI as Simple as an Algorithm or is it More Complex?

AI seems to be the buzzword of the moment and with people questioning its future, what it actually is and voicing concerns of its complexities, is it all down to an algorithm and good maths or is it something much more complex?

The reality of AI is less dramatic than what some people – the media and entertainment industry especially – make it out to be. Believe it or not, AI has been evolving for a long time; it hasn't happened suddenly but software has become significantly smarter of late. As AI systems grow to become even more powerful, they invite more scrutiny, and the 'hype' and 'buzz' around the advances of AI has brought into question – is it as simple as an algorithm or is it more?

More than a single algorithm?

There have been several misconceptions and fears around the singularity of AI, for instance, how does the language develop, how its memory works and how does it process the information? Based on such views, AI is seen as a traditional, single algorithm that is produced using clever mathematics and logic, enabling it to simulate intelligent behaviours and give you an output.

For the most part, "AI can be a simple algorithm but it can also encompass machine learning as well as deep learning", said Lauren Coppin, global audience solution lead at Adform; "AI is more complex because it learns as it goes along by identifying patterns from the data and the information that it processes. It then imitates intelligent human behaviour and requires minimal guidance. This is what brought the 'AI hype' to the forefront and has shown when machine learning is responsible for the work."

Machine learning involves training computers to perform tasks based on data examples, rather than relying on input from a human, and therefore has the ability to "learn" new behaviour without being told explicitly what that ought to be. This implies that machine learning is nothing more than a class of pre-existing computational algorithms. Then, there are deep artificial neural networks, which are a set of algorithms that have set new records in accuracy for many problems, including detecting illnesses in the healthcare sector.

When it comes to deep learning – which can be supervised, semi-supervised or unsupervised – it becomes unpredictable as you can't envisage what will happen. This gives machines new powers and also the ability to fail if a human doesn't intervene.

Eoin O'Neill, CTO at Tug stated that "What was described as an algorithm is now described as machine learning – it is a set of parameters that a human has ultimate control over".

The human element

With such large data sets, even simple algorithms can outperform expert human judgments at predictive tasks. Lauren Coppin explained how AI is more human than we think and that while there are concerns around what increasingly smart systems mean for human's future place in the workplace and beyond, in reality, AI still needs human intervention.

Sanders Siezen, head of product development at Say it Now agreed, adding that "If no human intervention is required and it changes itself, then you are implementing AI rather than making just smart decisions".

As AI develops, so do the strategies for making smarter machines that can get better at a task over time. Just like humans, we find that we are good at something and then become the expert in our fields. With supervised learning, AI can become an expert at doing one task, similarly to humans. "Within the field of supervised learning that we use, it's about training a system based on human guided input-output pairs that the system can learn from and then self train in the future," commented Will Leuchars, sales director at Increasingly. "We need humans though, because we need to provide those input-output pairs to train the system along with an appropriate volume of example data."

Although, if you take away the bounds of what is possible by humans, such as sleeping and eating, for example, and you have something that is constantly learning, it is able to become an expert at carrying out that task by learning from example data. As computers master more tasks, there are concerns of AI competing with humans, leading to problems further down the line.

For example, an artificial intelligence system being developed at Facebook created its own language, forcing researchers to shut the system down when they realised the AI was no longer using English, but in fact had evolved a reworked version of English to better solve their task. In some cases, the exchanges seemed nonsensical but yet understood by other AI technologies, leading to the danger of AI language overruling the very computer systems that created them.

As data volumes continue to grow, and deep learning drives the automated creation of complex algorithms, it is clear that AI is more than just good mathematics and clever learning. What we do know for certain is that we are only just at the beginning of discovering its full capabilities.

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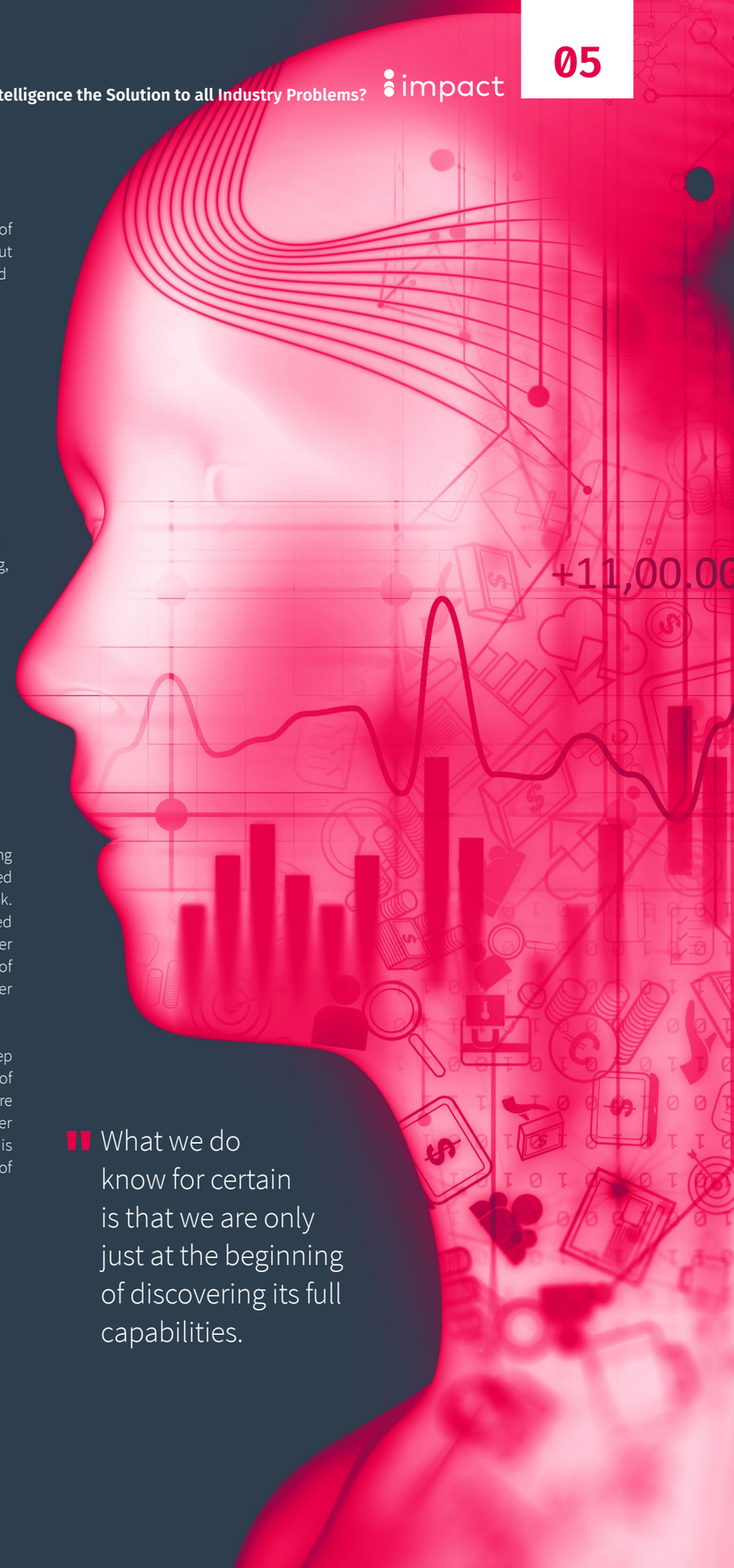

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The Drawbacks of AI

Cheating the System and Regulation

The risks of AI have come into the limelight after companies have been found to cheat the system, and unsupervised AI has called regulation into question.

Companies are investing in AI and it's already changing the way we live. While the technology is advancing and reinventing in a positive way across a variety of sectors, it is also deepening and magnifying the actions of bad players within some parts of the industry.

AI could present huge implications when it comes to trust, hacking and unsupervised machine learning; but when should we intervene?

Cheating the system

With complex, hackable algorithms and unsupervised AI comes the risk of cheating the system. The more data points and variables you start to put in, the more risk there is of hacking their environment and algorithms finding loopholes in their programs. If the algorithm learns from a load of images, you can learn from those images and cheat the system. We have not seen AI that can handle mass amounts of data sets without it being at risk of being breached yet. That is why the industry is trying to defend against it.

Not only does it present trust issues, but gaming of the system can come at a huge financial cost. Amazon is a fantastic example of how a company has employed AI to build a business. Amazon has perfected recommendations and indeed, the customer experience. However, with such power and little regulation, tech giants have the potential to ruin smaller companies quickly.

For example, Fitbit was one of the ranking search results when you search 'smart watches' into Amazon, but a handful of Chinese companies learned how to game Amazon's system's learnings and all of their results came up first, instantly pushing Fitbit's sales down overnight, because its results weren't appearing on the first page. The only way Fitbit could save itself was through paid advertising, which begs the question of whether this is the plan engineered by a company that will profit directly from this. Stories of this happening are common and result in consumers' trust being compromised.

Google is the tech giant that introduced an element into their secretive, complex machine learning system, which apparently caused no search results to appear for 24 hours for one of its high-spending and well-known comparative search advertisers. This manipulation of the system caused significant loss of traffic for the company and Google was temporarily powerless to resolve it. It turned out to be a glitch in the technology that was ultimately outside of Google's control but it showed how quickly machine learning – when it goes wrong – can have a detrimental effect on advertisers. More worrying though was that, when AI goes wrong, humans are at risk of losing control.

Although AI should always be controllable, it's not always understandable. Therefore, is human intervention enough? The worry is that AI algorithm's predictions may be too intricate for humans to comprehend and we may no longer be able to keep AI systems in line.

Implementing regulation

With issues like this arising, there is a call to implement more regulation and government controls around AI. At the moment, the UK government knows too little about AI to take it seriously. But when it fails, who is responsible for it?

"From an organic search perspective, Google doesn't necessarily have any responsibility because it has gifted the advertiser the traffic. However, from a paid search point of view, they have a significant part to play and a responsibility to ensure it works 24/7," said Eoin O'Neill, CTO of Tug.

"Whilst regulation is often perceived to cause a block on innovation and to slow down development, the UK government is at least asking the right questions. If, as an industry, we can provide them with the right answers, they will increase their understanding of the capabilities but also know when it is the right time to intervene with regulation," commented Stuart Hall, managing partner of product development at GroupM.

Hall believes when it affects the wellbeing of an individual, that is when regulation is at its most important.

"We need to be way of tech companies putting out products that could genuinely have a negative effect on the wellbeing of citizens. If there is no democratic or regulatory control over those companies or products, this could obviously pose a real risk in society," said Hall.

"It's one of those points that we should be racing towards resolving, because as you can imagine, there are multiple positive uses for machine learning that can provide essential service. For example, healthcare AI solutions in the market provide the ability to pick up warning signs when someone is unwell or at risk. Without machine learning, this would not be possible unless we had 24/7 care," added Rory Latham, head of inventory at GroupM.

Trust and reassurance

With these issues comes a lack of trust and an increase in public concern. This could lead to the industry being tarnished with a bad reputation for "black box machine learning" elements and placing the generation and optimisation of media spend above all else. Ultimately, there are limitations to how transparent we can be. When AI produces a decision, its end users won't know how it necessarily arrived there, therefore it is functioning as a "black box" as we can't see inside it.

"There's an element of distrust about new technology in online marketing as people can't see how it functions. This is particularly apparent when automated technology is trying to make important decisions, such as where to spend marketing budget. When you try to persuade someone to move over to a machine learning led way of spending their marketing budget, they might say it sounds wonderful, but because it is a black box solution, they will tend to stick with what they are familiar with," commented Anthony Clements, managing partner of Connected Path.

Latham noted that he had seen a shift in the pitch behind algorithmic black box solutions to try and demonstrate elements of insights; whether in visuals or a walkthrough of how the decisioning had been made. This has been driven by people trying to comprehend the why behind the decisioning rather than simply accepting it is algorithmically led, which is a crucial step in instilling confidence in AI led advertising solutions.

The black box algorithm is often where a lack of trust lies as many AI platforms are still some way off being able to offer a completely opaque view. There have been plenty of user cases where it has driven value for advertisers but as AI is less tangible, it is harder to convey and to provide transparent evidence. For marketers to invest, there has to be reassurance that the machines are enhancing rather than negatively impacting marketing performance.

Lack of understanding

In addition to a lack of trust in AI and confusion over how to translate coherently what the machine says, there also appears to be a lack of understanding around how AI works.

"Companies should ensure that employees know exactly what AI is delivering and can fully explain the capabilities to prospective clients. Investing the correct time and resources will better enable industries to maximise the technology. As technology developments moves at a fast pace, it is important to spend time with the researchers and scientists to fully understand it, as what could have been a limitation a year ago may not be anymore," said Latham from GroupM.

With the above in mind, does it all boil down to simply better granular understanding? Does this mean that companies have to have a better understanding of AI to avoid such issues? Better understanding could result in better regulation (and therefore less cheating the system) and encourage more clients to trust in all that AI has to offer.

With all that said, it seems apparent that businesses should explore the complexities of AI more in order to understand how it can help transform the way we work, as opposed to seeing it as a drawback.

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AI Innovation and Steering the Industry Forward

A recent article from Bing Ads highlighted that when it comes to applying AI and machine learning, it is all about adding intelligence, to machines to supplement and streamline daily tasks, that humans would otherwise accomplish.

Bing Ads' statement rings true in most cases of applying AI and machine learning technology in different industry sectors, whether it's buying or selling digital ads via programmatic advertising, or using digital personal assistants such as Alexa or Siri to answer your most pressing questions.

Most marketers invest in AI to apply or integrate the technology into some sort of process. AI tech platform Increasingly, for example, helps retailers increase incremental basket revenue. Their platform intelligently serves AI bundles and cross-sell/up-sell using the latest in machine learning algorithms driving 15% uplift. According to Increasingly sales director, Will Leuchars, "if you are pitting a machine learning algorithm versus human intuition, the machine will always win."

"WhiteBULLET is responsible for detecting and demonetising privacy websites using elements of machine learning as an "AI lawyer", by validating online content (such as ads and stock imagery) from a website or app, deciding whether they're at low or high risk of infringement of copyright. Currently, we have to trawl websites to gain this insight. The future view is that by using AI, we will be immediately able to identify the content without downloading the content," said Filip Petru, WhiteBULLET's head of operations.

Meanwhile, in the performance and direct response marketing space – particularly in cross-channel attribution – machine learning is being applied to allow advertisers to review and undertake pattern analysis on mass data to identify which of their marketing investments are delivering value, and which ones are not. Brands can use platforms such as Altitude by Impact to find out which marketing initiatives are likely to be contributing most significantly to conversions and revenue by running machine learning algorithms at speed.

While the previous examples indicate efficient application, there are some questions about its effectiveness and whether AI and machine learning is capable of doing much more than completing simple algorithm tasks.

Referring to examples of voice assistant technology applied to Google Home and Amazon Echo respectively, Charlie Cadbury, CEO at Say It Now explained it is "landing narrowing expert tasks and as marketers learn to grasp AI capabilities, they need to focus on an expert task that they can really excel at and grow from there."

Driving innovation

If we break down the key components applied to AI, the likes of voice assistants and chatbots, for example, have been referred to as "subsets" of AI and it's these components that appear to be steering the innovation in everyday tasks.

"Give it five to ten years and personal assistants will become a huge part of our lives," said Stuart Hall, managing partner of product development at GroupM; "Within advertising and marketing, we'll need to go through personal assistants to get to the end consumer; that's going to be a challenge and one we're already tackling with our clients."

In some "extreme innovation" cases, AI is and continues to be a disruptor in many areas. Whether in medical research by detecting biological conditions faster than a single doctor can identify, in self-driving automated cars, or in agriculture, where machines can plant seeds and manage crops on farms. Bringing it back to digital marketing terms, Sander Siezen, CTO at Say It Now added that "the real innovation for digital marketing when excelling with AI is through targeting where people will no longer receive ads that annoy them as the ads will be stopped by an algorithm before it reaches the individual.

The result will be to deliver only the ads that are specific to them and are successfully and accurately delivered at a relevant time."

Is it for everyone?

There's no ignoring the fact that AI is playing an influential role in today's modern world, powering technological capabilities that impact our daily lives. Within digital marketing, AI allows for more sophisticated advertising, data handling, campaign execution, and performance optimisation.

While there has been much discussion around the subject and high expectations at play, what are the next steps for AI and machine learning and is it necessary for everyone?

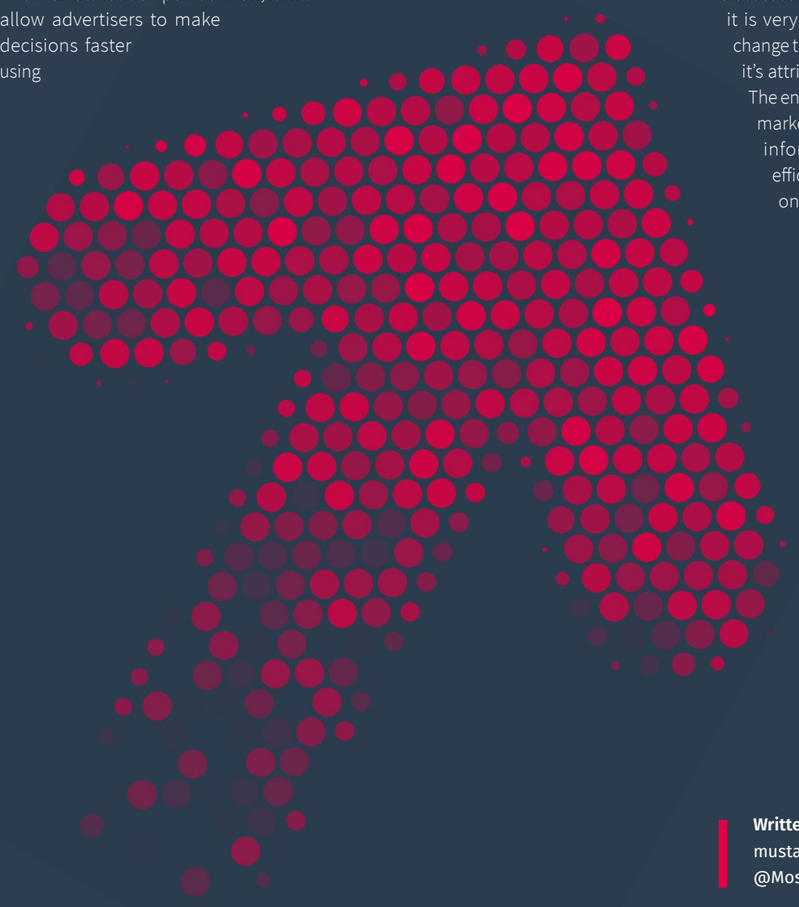
"From an attribution point of view, it will allow advertisers to make decisions faster using more data to make spend decisions with more confidence," said Connected Path's managing partner Anthony Clements; "From an affiliate point of view, affiliate marketing still remains one of the most manually run marketing channels and AI has the potential to be a disruptor, adopting basic machine learning technologies that already exist to make the execution of affiliate marketing more efficient."

"The most prominent use case for machine learning is to more clearly calculate the benefit and value that their affiliates, influencers, brand to brand partnerships and other types of marketing investments bring to their business. Ultimately, platforms such as Radius and Altitude by Impact are built with machine learning running through the very heart of the technology. Machine learning does all the hard work of calculating incremental value of each initiative so that marketers don't have to," added Impact's associate account executive, Tom Armstrong.

When it comes to buying digital media, GroupM head of inventory Rory Latham indicated that AI will have the biggest impact on fraud mitigation and client protection, due to the vast amount of data points being pulled in, which when done manually, can prove a difficult task.

"Industry pressure around ad fraud continues to grow year-on-year; that's the area that AI solutions can make the biggest impact financially," he said.

Given the real-world, effective applications discussed about AI and machine learning, it is very likely that the technology will change the industry for the better, whether it's attribution, ad fraud or voice search. The end result is that it will surely enable marketers to complete tasks and make informed decisions much more efficiently while steering innovation on a wider scale.



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Q&A: What Does the Future Hold for AI?

As we think about what the future of AI looks like for the digital industry, we spoke to representatives across the advertiser, agency and publisher side to see what they think the future of AI looks like.

What were the key takeaways from the discussion around AI?

Will Leuchars: A key area for me is how natural language recognition is improving in AI. This is within the work we do and also other areas of performance marketing, for example automated content creation and email optimisation. Another key point is how AI is defined. Are we solving business problems using computing power and statistics or are we looking for a truly intelligent machine that can do everything? Today, it's the former.

Tom Armstrong: Everyone sees AI as something that is a potential threat to society and mankind. However, when AI is applied to business, replacing manual tasks for certain areas of businesses specifically, it definitely has its uses and is advantageous in that respect.

Stuart Hall: The key takeaways are how we shouldn't approach AI as a catch-all term. Too often, people call everything AI or machine learning, when the fact is that everybody has specific use cases for AI. Everyone in the digital media, advertising, and the ad tech sector needs to get better at using and referring to particular AI products which are often based on distinct needs. With clients and customers, it is about defining "this is the technology we have – it has machine learning elements – but here are the specific use cases, here's what it will do, and here are the benefits".

Is there enough evidence today to justify the use of AI and machine learning technology in performance marketing?

Sander Siezen: At this moment in time there is significant evidence to prove that AI is usable in a variety of different industries. We have gone beyond the experimentation stage and there are real examples in a variety of businesses that show that machine learning can be applied on a wider scale.

Julia Smith: There's a huge amount of evidence to show how important AI is; not just in performance marketing, but in every aspect of digital marketing as well. If we look at fraud prevention, artificial intelligence is right at the heart of how fraud prevention tools, such as Forensiq, by Impact are built. From the algorithms used to analyse the behaviour and track new patterns to pinpoint fraudulent activity, we are able to use AI to deliver a comprehensive technology to identify fraud. AI is gearing up to be one of the most important influences that is going to define our industry.

Rory Latham: There's definitely enough evidence to justify the use of AI. Having said that, it should not necessarily be pushed into every area of the industry, unless there is a valid reason for using it. Outside of advertising, AI can have a huge impact on someone's life and make a real difference.

Eoin O'Neill: In terms of justifying the use of AI and machine learning technology, yes, there absolutely is enough evidence. It seems like there are a lot of ways in which people have identified opportunities both commercially, and in terms of enhancing processes and methods that they currently operate. It is more a case of understanding the limits of what and where you need to exercise control.

A key element to understand is what is the human interaction within that process and where is that needed. If you just leave machines to themselves, do they just end up creating more problems than they're trying to solve? In the long run, the key benefit will be understanding how human interaction improves AI.

Anthony Clements: Speaking specifically about the performance and affiliate industries, I think firstly, what is enough evidence? Secondly, I think there are some great examples of machine learning in affiliate marketing, and how that technology can really make a difference to the way that the channel works. I think the channel is quite a manual channel in the way that affiliate advertising is delivered. I think it's a channel that really needs some elements of basic machine learning technology to help disrupt it. There are lots of great use cases – CPA management, forecasting and day-to-day programme management – where machine learning is making a difference.

At the moment, the adoption rate is perhaps the issue. I don't think those technologies are being adopted at scale to prove it's the thing that the industry is going to have over the next few years.

How do you see the technology evolving in the coming years?

Will Leuchars: A huge frontier is the field of emotion intelligence in computing called affective computing. In the performance context, imagine Google Assistant understanding how we feel using voice, vocab and capitalisation and so serving ads that respond to our emotional state – for example if we're sounding angry showing us ads that settle us down like ads for chocolate, weekend breaks and beer.

Rory Latham: I see it evolving hand in hand with regulation to ensure that it is building greater efficiencies through all the developed understanding, pattern reading and rapid decisioning that AI and machine learning can drive. While still understanding the limits from a moral and ethical perspective and ensure that it doesn't overstep that limit in either case.

Lauren Coppin: I hope to see us have a lot more adoption and trust in AI, and see a more unsupervised AI that looks at solutions we might not have even thought about. I also think we have had automation, yes, but let's start using AI to help us make decisions and actually be able to predict solutions that are going to drive much more focused targeting. AI really helps make intelligent decisions such as when we should target specific users with specific content, for example, that a human could never find out.

Charlie Cadbury: The use of AI is absolutely going to grow dramatically. The main providers are going to get faster and better at responding to customers questions and that's going to deliver more trust in the channels; specifically on the conversational channels like voice and chatbot. That, in turn, is going to drive increased adoption especially for brands who operate in those channels.

Anthony Clements: The affiliate industry will be fundamentally changed in the way affiliate advertising is traded between publisher and advertiser. Next year there will be greater adoption of basic machine learned techniques – for example, pattern analysis, forecasting, and spend management. I think those things will come into the affiliate industry to change the way day-to-day account management is carried out. These trends are already beginning to appear.

Contact us

In 2019 PerformanceIN will play host to a series of exclusive roundtable events specifically designed to stimulate discussion on some of the industry's most pertinent topics. Each roundtable will be followed by an online digital supplement like this one.

For more information on how you can get involved with PerformanceIN roundtables, either as a sponsor or an attendee, please contact content@performancein.com