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The A.I. Revolution Begins With Augmented Intelligence

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"53% of companies believe that augmented intelligence will help better connect the data of supply chains, commerce, and marketing."¹

- Forbes Magazine, 2017

Introduction

2018 is set to be the year that artificial intelligence, or A.I., breaks into the technology mainstream.

Or at least it is according to a rising swell of media hype.

Every day, new articles emerge asking if “Robots [Will] Take Our Children’s Jobs,”² or suggesting that “Artificial Intelligence is Changing Our Brains.”³ In circles from marketing to finance, business operations to data analysis, 2018 is being hyped as the year machines take over the role of human analysts, offering the ability to make fast, informed decisions based on volumes of data that no human could ever hope to analyze in a timely fashion.

But this is where we would like to redirect some of the hype.

At Signafire, our mission is to apply the latest in data science techniques to solve complex business problems for our clients. From natural language processing to automated text analysis, Signafire employs proven analytic methods to help public and private sector clients maintain the stability of product manufacturing, monitor global spectator events, or track brand reputation using publicly available data.

We understand the current excitement over A.I., but when we look at A.I. purely through the lens of the analytics problems our clients face – and examine how we can apply the latest technology to address those challenges – we find that A.I. is just not ready yet. It still cannot make the kinds of informed decisions that humans are so good at making.

So instead of adding to the A.I. hype, Signafire is advancing an approach that takes the most cutting-edge elements of A.I. and *combines* them with the power of the human brain, an approach known as “augmented intelligence”. Augmented intelligence approaches keep human analysts in the driver’s seat, but empower them with an analytic tools set that features many of the emerging technologies that form the basis of artificial intelligence.

In this paper, we’re going to explore how businesses can be applying augmented intelligence technology, we’ll look at the differences between augmented and artificial intelligence, and we’ll help identify solutions that can truly impact a bottom line.

“AI systems [are often] tested on a specific problem or application, and while machines may exhibit stellar performance on a certain task, performance may degrade dramatically if the task is modified even slightly.”⁴

- A.I. Index Report, 2017

Artificial versus augmented intelligence

The term 'artificial intelligence' has been around the data analytics field for decades, but only recently have we seen its application in the business environment. In 2011, IBM's Watson gained notoriety for beating two human contestants on Jeopardy, and after a series of similarly well-publicized events, the technology – and other technical solutions like it – gained enough traction to be applied in business settings. Today, artificial intelligence solutions are being introduced in industries from manufacturing to medical research, in each case promising some form of human-like decision-making and forecasting.

What is remarkable, though, is that despite being advertised as a true replacement for human intelligence – these A.I. systems require an active and engaged team of human analysts, who often come in the form of “add-on services” from the very companies providing the A.I. service.

That is because artificial intelligence is not yet as intelligent as it is hyped to be. While machines can be programmed to analyze specific streams of data, draw some basic insights, and even recommend similar data for exploration, they are not as capable as we would like to think they are at noticing subtlety, drawing bigger picture conclusions beyond the data immediately in front of them, or forecasting, skills at which humans succeed almost uniquely.

“Gains in specific tasks or game-playing proficiency are still a far cry from general intelligence. A child, for example, knows that a water glass tipping on the edge of the table will most likely fall to the floor. He or she understands the physics of everyday life in a way that A.I. programs do not yet.”⁵

- The New York Times, 2017

That is why we at Signafire prefer to distinguish artificial from augmented intelligence, and why we are currently championing the use of augmented intelligence approaches.

Augmented intelligence describes a combination of the human brain and the most reliable facets of artificial intelligence. An approach using augmented intelligence plays to the strengths of both human analysts and machines, assuming that, between the two, humans tend to be the better decision makers while machines tend to be faster analysts. It also assumes that the human analyst should always be in the driver's seat, and that the machine exists to assist, not replace. Our job at Signafire is to ensure that both human and machine are playing to each other's strengths, while filling in the gaps of their respective weaknesses.

For instance, we work with companies that employ some of the top data analysts in the world. These analysts, using proven analytic methodologies, can perform pattern and trend analysis across multiple structured and unstructured data sets to detect threats or assess potential business opportunities. On their own, though, they may not have the capacity to analyze *all* available sets, or provide analysis at a speed that benefits key decision makers.

However, that same analyst, armed with a system that enables automated data ingestion, persistent search, and dynamic discovery – what many consider the building blocks of artificial intelligence – can deliver their analyses in real-time while ensuring that they are looking across, absorbing, and analyzing every possible data point. As an example, coupling proven analytic methodologies with augmented intelligence technology enables human analysts to create complex queries, which filter the information they are aggregating to only the most meaningful. This means that analysts are discovering, consuming, and analyzing more specific data that is also more relevant and can be acted on faster.

In the augmented intelligence equation, the human analyst is fundamental to the final output, but is now able to deliver at a speed and scope that could only be achieved with the aid of intelligent machine computing.

Architecting an augmented intelligence solution

There are three key features that form the basis of an effective augmented intelligence solution for data analysts.

Data Fusion

For any system to offer actionable intelligence, it needs to be pulling from all of a company's relevant data sets, whether those are internal or external, structured or unstructured. In the past, we have seen instances in which some business intelligence providers claim to deliver powerful, "machine-learning"-driven business intelligence, but in practice can only ingest a fraction of a company's datasets into their own systems at a given time. So, their intelligence ends up delivering insights based on an incomplete picture of a company's data. Searching across all possible datasets – meaning billions of data points versus millions – requires that a system be built horizontally – or flexibly – to scale with the breadth of data it is required to handle.

Data Enrichment

A good augmented intelligence system makes use of the currently available components of artificial intelligence to sort through all of that data, enriching it in a way that makes it more searchable and effective. For instance, natural language processing – a technology that lies at the core of artificial intelligence – can be used to organize and assign meaning to unstructured data such as customer service calls, social media posts, or product information. Sentiment analysis, an additional layer that is particularly useful to those who provide customer service, can be used to distinguish the emotional weighting of certain data points.

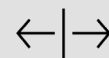
Low-Entry Search and Analysis

The final component of most augmented intelligence solutions is a front-end search and analysis interface – the window between the company's now-enriched data and the analyst charged with deriving insights from it. What differentiates an augmented intelligence solution from its artificial intelligence counterpart is the breadth of its design target. On a day-to-day basis, the intended target of an augmented intelligence solution is a trained analyst, someone who has at least a foundational knowledge of analytic methodologies and advanced search techniques.

However, the solution must also provide a high-level overview accessible to those without advanced analytics training. This view tailors to the decision-makers, business executives, and the C-suite level to whom the analytics teams often report.

As one can see, in an augmented technology solution, each of these three components – from the data enrichment to the front-end interface – is constructed under the premise of teaming humans with machines, and not removing humans from the equation. And as we'll show, this philosophy not only applies to how augmented technology systems are constructed, but also to how they are put in practice.

Components of an augmented intelligence solution:



Horizontal scalability, to search across all possible datasets.



Core components of artificial intelligence systems: NLP, parsing rules, etc...



Front-end search and analysis interface with broad design target.

Augmented intelligence in practice: Auto Manufacturing

Augmented intelligence solutions can be applied across numerous industries and use cases. In each use case, though, it is important to understand that the business intending to implement the system is using it to enhance the capabilities of the human analysts it already employs – not to replace those analysts.

One of the clearest examples we have worked on involves a North American Automobile Manufacturer (“NAAM”), who wanted to bolster the effectiveness of its auto safety analysts by expanding the amount and types of data that they analyze. The team’s ultimate mission is to protect their customer’s safety by getting ahead of possible manufacturing defects.

NAAM’s Vehicle Safety Analytics division (“VSA”) consists of data scientists and technical developers who organize and study data by mining internal and external data sources. These sources include social media, vehicle telemetric data, customer complaints, warranty, call center, and legal claims data. VSA faces billions of rows of the company’s structured data fields, as well as complex unstructured text data which need to be classified into specific hazard categories, such as steering loss or brake malfunction, in order for the team to more easily identify emerging issues.

On their own, VSA would not be capable of searching across all of those datasets at once, and no machine has the judgement to identify problem parts on its own. The only way to enable VSA to analyze all of that data was through an augmented intelligence solution that fused the disparate sources into one system, applied some of the core building blocks of artificial intelligence, and created a smart search capability that VSA could use to identify potential safety outliers.

The system we designed did not remove the human analysts on the VSA team from the equation, (though the client was able to reduce the number of data “readers” that it previously used to cull through the incoming data.) Instead, the system enabled the VSA team to be more productive and effective in discovery, comprehension, and analysis – to spend less time searching and more time doing meaningful analysis. The multiple datasets they were tasked with analyzing now filter through a single, easily-searchable portal, and are enriched with AI-type technologies – from NLP to advanced text mining – that enable the team to look at specific data with pinpoint precision, at pace.

“60% of companies believe augmented intelligence will help them obtain new customers, and over half of those surveyed believe these technologies will help significantly increase revenue.”⁶

- Forbes, 2017

Key Takeaway

There is little question that artificial intelligence marks an exciting advance in the future of computing and business transformation. It is no doubt impressive, for instance, to know that a computer can defeat a chessmaster or win at jeopardy. But we at Signafire want to help companies solve real business challenges, and the artificial intelligence of today is not ready to do that. It is still only as powerful as the human intelligence that is fueling it.

This is not to say that artificial intelligence will not continue to mature – it will. Advancements in neural network applications, cognitive computing, and predictive analysis will bring us closer to the point of full automation in many data analysis environments. And Signafire is invested in ensuring that we and our clients remain at the forefront of those transformations.

For now, though, we advocate for augmented intelligence, an approach that takes many of the underlying features of artificial intelligence and packages them in a way that bolsters human intelligence, without replacing it. Augmented intelligence will give companies a reliable way to maximize their data-mining and analysis capabilities, effectively driving concrete business metrics.

References

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⁴"2017 AI Index Report", P. 36, <http://www.aiindex.org/2017-report.pdf>

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Learn more about Signafire Technologies and our data fusion and content analytics solutions at www.signafire.com



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