EQUITY

Mapping the Influence of AI and Machine Learning

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The evolution of artificial intelligence (AI) has rarely been far from the headlines in recent years. Its influence now reaches into nearly every sector and geography and holds economic and political ramifications that many experts say are on par with the start of the Industrial Revolution in the 18th Century. In a new publication, *Artificial Intelligence: Real Opportunity*, our research analysts examine the growing influence of AI across sectors. In this extract, they explain how they evaluate investment potential for AI capabilities.

Artificial Intelligence (AI) is attracting growing amounts of corporate investment. As the technologies develop and start to make a broader impact, we think the potential value that can be unlocked is likely to grow.

Our ambition when seeking out AI opportunities is to find companies with access to proprietary, domain-specific datasets that can be used to solve real business problems, and unlock easily quantifiable value.

Further, we would look for cases where this could lead to network effects whereby a solution for one customer can be used to improve the offering and more easily win future business.

WHAT IS AI?

AI is the application of technology to achieve real-world goals. Its practical application throughout the economy is growing apace.

AI uses “machine learning” to allow computers to perform tasks that usually require human intelligence. These tasks include data analysis, speech recognition, decision-making and translation.

The application of AI technology can help make sense out of vast amounts of data so humans can leverage it—in many cases more quickly and efficiently than an individual could ever accomplish.

Technology can accomplish analysis and activities that, in some cases, would require companies to hire thousands, if not millions of employees. Used correctly, AI can enable businesses to do more with a standard workforce than was ever thought possible.

Further out on the AI frontier, traditional analytics is giving way to newer "deep learning" techniques across industries and business functions. This is where neural networks, as a subset of machine learning, create AI systems based on linked "neural units," loosely modeled on the way that neurons interact in the brain.

In assessing an opportunity, we focus on three areas: value creation, value realization and defensibility.

Value creation. What is the customer’s specific problem? How much value does solving it unlock and how many similar customers are there to build up a total available market (TAM)? In other words, the total market demand for the product or service?

Value Realization. How does the company think about the return on investment? How easy is it to adopt the technology internally with employees and externally with customers? Does the company have the right data to solve the problem? Does the solution require additional infrastructure (such as the addition of sensors to collect data)? Does it require a change in business flow?

Defensibility. Can someone else come in and disrupt a niche? Are the data proprietary? Is it public domain data someone else can come and build the same algorithms? How fungible is that data? Are there network effects? Does new data (for example from a new customer) improve the algorithm?

Although we aim to take a comprehensive look across the AI and technology landscape, we must also consider the drivers and opportunities for non-tech companies leveraging AI now and in the future.

Concepts that propel bigger ideas are part of our deeper analysis and investment thesis. Being embedded in Silicon Valley, we gain academic partnership-level insight from “AI intelligence developers” and firms that possess unique AI-based platforms and data sets.

What Is AI Worth?

Global consulting firm PricewaterhouseCoopers estimates that by mid-2030s AI will contribute up to $15.7 trillion to the global economy.[1]

Meanwhile, McKinsey & Company Consultants estimates that AI techniques have the potential to create $3.5 trillion to $5.8 trillion in value annually across nine business functions in 19 industries.[2]

Within the financial services industry alone, the application of machine learning could result in $1 trillion in cost savings by 2030.[3]

Supply and Demand Sides

As investors scope out potential opportunities, we consider the machine learning universe in two ways: supply and demand.

Supply

The supply side features companies that design, build and facilitate machine learning. These might include:

- companies that generate algorithms,
- semiconductor capital equipment companies (companies that build the semiconductor factories known as fabrication plants, or fabs),
- semiconductor companies (chip and memory manufacturers) and
- companies offering cloud services.

Demand

The demand side includes companies that use machine learning to enhance their business.

Examples of demand-side business might include companies with unique and compounding datasets that they can leverage to drive greater productivity in their businesses as well as new sources of revenue.

Application Software as a Stealth Play for AI

With their massive datasets, control of computing power and large teams of AI specialists, we think tech bellwethers in e-commerce and social networking are obvious beneficiaries of recent AI advancements.

We regard enterprise software-as-a-service (SaaS) application companies as a stealth play for AI. Businesses often use application software provided by vendors or built in-house to perform various functions. Nearly all of us use application software on a daily basis—for example, in creating and editing a document on your computer. Application software companies should likely benefit from AI technology because they control two unique and compounding datasets:

Product Usage Data. Unlike their legacy on-premise peers, SaaS companies have near-perfect visibility into how their products are being used. They can leverage this usage data with machine learning to improve a SaaS company's products. We believe this should support SaaS companies' pricing, reduce churn and make the sales process more efficient.

Customer Data. Unlike their legacy on-premise peers, SaaS companies have their customers' data. They can mine these data to generate new revenue sources and keep customers more engaged with SaaS providers' offerings. We believe this represents a profound change and can create significant opportunities for SaaS vendors well beyond the traditional software market.

Challenges to Adoption

Innovation in AI will likely bring us closer to further technology integration in our day-to-day lives. But incorporating the technology isn't simply hiring some data scientists and running some algorithms.

In our experience, successful integration requires a top-down commitment to transforming various aspects of a business. Our research tells us the biggest bottleneck for more effective AI application in business remains the data. For many companies, a lot of data is simply untapped. In others, the data are siloed, it's not normalized, it's not labeled and it's not really usable.

In order to succeed, in our view, a company needs the ability to leverage the right combination of technology investment to add the compute power and data services necessary along with the human resources to apply the correct skillsets to create the desired outcomes.

That's not an easy feat for many companies, but those who can take advantage of the data they are naturally creating as a business can use it to their advantage against a newer competitor.

AI and Beyond

AI presents the opportunity for a new frontier that could stretch across every facet of business and the economy. The technology involved can help people make faster, better and cheaper decisions, but most observers believe the relationship has to be collaborative. And if successfully implemented, we believe this intertwined environment of machines augmenting human intelligence should result in better outcomes.

Download the full paper, *Artificial Intelligence: Real Opportunity,* here.

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What are the Risks?

All investments involve risks, including possible loss of principal. Stock prices fluctuate, sometimes rapidly and dramatically, due to factors affecting individual companies, particular industries or sectors, or general market conditions. The technology industry can be significantly affected by obsolescence of existing technology, short product cycles, falling prices and profits, competition from new market entrants as well as general economic conditions. The technology sector has historically been volatile due to the rapid pace of product change and development within the sector.

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1. Source: PricewaterhouseCoopers AI Impact Index, June 2017.

2. Source: McKinsey & Company, "Modeling The Impact of AI on The World Economy," September 2018.

3. Source: Autonomous.com. "ARTIFICIAL INTELLIGENCE: $1 Trillion in Exposure from Artificial Intelligence on Finance." April 24, 2018.