

AI FOR ALL

Machine Learning as a Service

Featuring contributions from leading thinkers including:

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ACCESS TO AN EMERGING RANGE OF SUBSCRIPTION AI TOOLS WILL TRANSFORM DATA SCIENCE

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nce upon a time, the data that most businesses had to work with was mostly structured and small in size. This meant that it was relatively easy for it to be analyzed using simple business intelligence (BI) tools.

Today, this is no longer the case. Much of the data that organizations are mining is unstructured or semi-structured, and the trend is growing such that more than 80 percent of corporate data is expected to be unstructured by 2020.¹

On top of this, the rate at which this data is being created is expected to increase at such an extent that IDC predicts the global datasphere will grow from 33 zettabytes (ZB) in 2018 to 175 ZB by 2025.²

Simple BI tools are no longer capable of handling this huge volume and variety of data, so more advanced analytical tools and algorithms are required to get the kind of meaningful, actionable insights that businesses need. To keep pace with demand for insights that can drive quicker, better decision making, data scientists are looking to Artificial Intelligence (AI), Machine Learning (ML) and cognitive computing technologies to take analytics to the next level.

No organization can afford to fall behind. As

a result, IDC predicts that worldwide spending on AI and cognitive computing will reach \$77.6 billion in 2022, more than three times that in 2018,³ while the total global business value derived from AI is forecast to reach \$3.9 trillion within the same timeframe, according to Gartner.⁴

THE ADVENT OF MLaaS

Getting started with AI techniques such as ML is challenging. Not only does this require highly specific, high-demand skill sets, it may also call for specialized IT infrastructure and software tools—not to mention a sound data strategy. All this adds up to a significant up-front investment that can be cost-prohibitive for many businesses.

In response to this challenge, vendors have begun offering Machine Learning as a Service (MLaaS).

As the name suggests, MLaaS is a subscription-based model that offers access to AI tools, in the same way that many business applications are now offered in a software-as-a-service (SaaS) model. These AI services can range from developer tools to data pre-processing and model training, through to fully-trained ready-to-use models that can be accessed through an API and integrated into business workflows.

The advent of MLaaS means that, instead of investing in creating their own AI resources, organizations will be able to turn to vendors for an easier, lower-cost ecosystem of offerings that can be customized to their

needs. This heralds a new era for data science—one in which AI tools become easier to use and more accessible to a broader range of companies and roles within organizations.

LOWERING THE BARRIERS TO ENTRY


The implications of the shift to MLaaS are huge. For starters, MLaaS will democratize access to cognitive computing, by making it more cost-effective for organizations of all sizes to experiment with ML and analytics tools. →

\$3.9
TRILLION

Expected total global business value derived from AI by 2022, according to Gartner⁴

175 ZB

The predicted size of the global datasphere by 2025 according to IDC²



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Jake Gardner, Enterprise Account Executive, Domo

“When it’s a service, you take the whole platform administration piece away from the enterprise,” explains Jake Gardner, Enterprise Account Executive at Domo. “That cuts down a lot of the headache and cost that traditionally surround data science and data repositories, and as you take away a lot of the unnecessary expense and manpower that’s needed for the companies to do it, they’ll invest more in getting the results that they want through the data science. That’s going to drive a lot of innovation in the industries.”

MLaaS will also enable smaller organizations to scale up at the pace of demand.

“The greatest benefit of service technologies for analytics is flexibility,” states Meta S. Brown, President of data consultancy A4A Brown. “These [MLaaS] offerings allow teams to ramp up computing resources quickly, or to use a lot of computing power for occasional needs, without the obligation to support those resources at all times.”

As well as being a cost-effective way of bringing ML tools into an organization, MLaaS should make them more accessible to a wider range of roles and skill sets.

“I think that as data science and ML get faster and easier to use, they are going to be used by a broader swathe of organizations and people, even analysts are going to be expected to have a basic understanding of how to leverage data science and ML techniques,” predicts Todd Mostak, CEO and Co-founder of OmniSci. “ML and data science will increasingly be embedded in ordinary business tools that people don’t typically associate with advanced data science.”

He points out this trend is already happening with tools like Tableau used as a popular BI product for Excel so that people can spot anomalies in spreadsheets or in time series can find out the cause. “The user may never know they are doing data science—they just want answers.”

This could mean data is used in new and unexpected ways →

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Meta S. Brown, President, A4A Brown

EXPERT VIEW:

The future of Machine Learning as a Service



Jake Gardner

Enterprise Account
Executive at Domo

“As MLaaS grows, it will enable a new style of data scientist—not your statistician or PhD, or even master’s and math-type person, but your average everyday user, your line manager, your analysts who might have more of a marketing focus. Everybody will be able to take this and be able to use it. It’ll just be so easy and so cheap that your marketing department will be doing machine learning to understand its impact on the sales and inventory, and how that maximizes ROI.”



Amit Marathe

Director of AI & ML at
Inseego Corp

“In the future, all businesses will be able to use MLaaS and self-driving data science platforms to generate real-time visual insights to save lives, improve productivity, increase profitability and transform their business like never before. Using the power of data, businesses will be able to disrupt themselves, as opposed to waiting for somebody else to disrupt them.”

by more organizations and more people—and that better decisions are made through every managerial layer.

A CATALYST FOR INNOVATION

All of this means that MLaaS is expected to unleash a new wave of innovation.

To date, the data race has been dominated by organizations with pockets deep enough to invest heavily in AI. These businesses are already enjoying wins across a wide range of industries. For instance, in financial services ML is being used to detect fraud and identify money-laundering behaviors. In a recent survey by Refinitiv of 450 financial professionals, comprising executives and data scientists, 90 percent of respondents indicated that they had deployed ML in one or more departments, and three-quarters believed it now represents a core part of their business strategy.⁵

MLaaS will level the playing field, enabling organizations with more limited resources that may be lagging behind to play catch-up and incorporate ML into their workflows.

For example, businesses will be able to use self-service data science platforms to generate real-time visual insights and improve productivity. These will enable data scientists to provide insights about individual customer behaviors to such an extent that businesses can produce just the right quantity of highly customized goods and services for each customer. This could drive significant production efficiencies and

significant market advantage.

Sectors such as healthcare could benefit from customization using individual patient vital signs and medical history. For example, research firm, Emerj, envisages using an ML application with an agent (such as Amazon Alexa) to adjust a patient’s dose of pain killers or antibiotics by tracking data about their blood, diet, sleep, and stress.⁶

Alternatively, ML might be deployed to automate repetitive tasks, such as search and information retrieval, or sorting products into various categories. Businesses could quickly cut administrative costs, increasing efficiency and freeing up staff for higher-value tasks.

Kirk Borne, Principal Data Scientist and Executive Advisor at Booz Allen Hamilton, believes that MLaaS will evolve to be able to advise businesses on what problems they should actually solve with their data.

“One prediction for the future is that we’re going to be applying our data science and these algorithms to our data science itself. So, the data science is going to bring about that meta level of data discovery—that is: ‘Here’s what you should look at,’ ‘Here’s what you should pay attention to,’ or ‘Here’s the trend or pattern that needs your attention right now.’”

NEXT-GENERATION AI SERVICES

This evolution of MLaaS services is likely to be rapid. According to Research and Markets, the MLaaS market is expected to expand with a compound annual growth rate of over 43 percent for the period 2019 to 2024. It →



MLaaS could be especially beneficial in low-tech sectors such as agriculture and oil and gas

43%

The expected compound annual growth rate for MLaaS services from 2019 to 2024 according to Research and Markets⁷

believes the MLaaS model will dominate the AI market, with users able to choose from a wide variety of solutions focused on different business needs.⁷

“There’s going to be a fork in the road where you’re going to have two very clear categories,” predicts Amit Marathe, Director of AI & ML at Inseego Corp. “One is going to be people who want to have ultimate control and build everything themselves. The other is agriculture, oil and gas, and anything else that’s non-tech—those people don’t have the manpower to assemble teams to go and build everything from scratch.”

Borne goes further still, predicting that organizations will be able to pick and choose the functions they need, just like today’s users can browse an online store for smartphone apps.

“I believe they [MLaaS services] will be like commodity markets around algorithms,” he says.

Borne cites the example of chatbots, which are already available via APIs and enable a small company to have almost a full customer service department, even with few staff.

“If someone calls your company for some service or with questions about things, the first line of answering can come through the chatbot, which has been fed your FAQs (frequently asked questions). So, the chatbot will know how to answer the FAQs, which is usually about 80 percent of the work of the customer service representative, anyway.”

Service providers are already expanding beyond just offering ML developer platforms to offer a feast of specific ready-made functions, which can be accessed via APIs and integrated into an organization’s workflow to solve numerous specific problems.

Google, for example, has Google ML Engine for experienced data scientists, while in beta is Cloud AutoML, described as a suite of ML products aimed at those with limited ML expertise.⁶

As the MLaaS eco-system evolves, so too will the sophistication and complexity of the capabilities. Services are expected to extend beyond predictive analytics, data transformations and visualizations, and move

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into facial recognition, and natural language processing too.

In today’s market, services like Amazon Comprehend offer the ability to find company names in analyst reports, or identify negative reviews⁸—but in the future, natural language processing systems will be able to offer more human-like understanding of speech.

“I think that natural language processing will eventually get to a point where it will be able to determine where a person is from based on how they use words and how they construct a sentence, as well as slang—possibly even down to the particular state or →

region,” says Jared Dame, Director of AI and Data Science at Z by HP.

A4A’s Meta Brown is particularly excited by the possibilities of machine listening services.

“Nobody’s talking about it, but the potential is tremendous,” she says. “For example, if you’ve ever used YouTube search, you know it’s very difficult to find what you want unless the keywords you use match the title. Video and audio content search could be vastly improved if machines understood all of the content.”

AN ERA OF COLLABORATIVE DATA SCIENCE

One of the barriers to broader adoption of ML and data science in general is the enormous complexity that users have to come to terms with. Dame says that automated ML systems will be required to get over this hurdle. He predicts that so-called “low-code” development platforms, which support rapid application development with minimal hand-coding, will allow anyone to create a working solution.

“I see the future with automated ML is low-code environments being able to produce automated ML, or automated deep learning as well, for the general consumer. So someone who is an artist, who has no computer background, will be able to go in, build an algorithm on a web tool that could be a cloud-based utility or on a local machine, and then publish it as a service to help sell their wares or do something.”

A more flexible, open-access approach to ML will have significant implications on the role of the data scientist and team structures.



For instance, Jim Duarte, Data Scientist and Principal at LJ Duarte and Associates, argues that data strategy needs to extend beyond IT/OT and that more subject matter experts (SMEs) from various disciplines need to be involved. As MLaaS makes more tools available to a wider group of roles, the need for a more collaborative approach will only grow.

“The biggest opportunities are for management to become educated beyond their belief that everything data, belongs to IT/OT,” he says. “When IT/OT is given the budget for ‘data’ and expected to make decisions on storage, cleansing, formatting, accessibility, as well as analytics, in a vacuum, then there will be areas that will be unable to make good decisions from data. One example would be choosing a ML tool. IT/OT has little experience with advanced analytics.”

MLaaS will make more tools available to →

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Jim Duarte, Principal, JL Duarte & Associates



data scientists and allow them to focus on higher-value tasks. Although the role of some data scientists may shift, Duarte does not see the need for them diminishing.

“Data scientists hold the keys to the whole data picture, from collecting it to presenting it to decision makers,” he says. “What excites me is the larger acceptance of analytics for decision making. The key is to position the analytics among the decision makers at all levels.”

SHAPING THE FUTURE

No longer will data science be the preserve of larger, better-resourced businesses. MLaaS will be an increasingly valuable tool for data science teams at organizations of all sizes to obtain vital data insights and predictions across most

industries. A rapidly growing MLaaS ecosystem is set to enable integration into business workflows through APIs, while the technology will become more accessible, putting the power of ML into the hands of more of the workforce.

As MLaaS makes more tools available to a wider group of roles, it should also drive innovation outside of traditional data science roles. Organizations that can broaden data strategy beyond their IT team and put analytics at the disposal of decision makers at all levels will see the biggest gains.

“I think it is going to become a big differentiator for those organizations that are able to become data driven, and there will be the haves and the have-nots,” says Mostak. “It will become a market advantage to use data science because there is so much data at your disposal these days.” ■



KEY TAKE AWAYS

MLaaS is democratizing access to ML, making it less complex, and costly to use

An ecosystem of MLaaS tools will enable easier integration into business workflows

Easier-to-use MLaaS tools will lead to broader use within an organization for non-specialists

MLaaS will allow data scientists to focus on higher-value tasks

Find out more about the benefits of MLaaS.

LEARN MORE

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