

Breaking the marketing mold with machine learning

Leading marketers say ML will help them identify high-value customers, predict intent, and discover new business opportunities.

A briefing paper in association with

Google

Preface

The focus of this survey research, conducted by MIT Technology Review Insights in 2018, was to substantiate how leading global marketers—those exceeding business goals in 2017—are changing priorities to drive growth in their industries. Our research was based on 1,419 phone and Web surveys of marketing executives at the director level and above at companies with revenues in excess of \$100 million. The report, which is sponsored by Google, is editorially independent, and the views expressed are those of MIT Technology Review Insights.

We would like to thank the following interviewees for generously sharing their expertise:

Laura Beaudin, Partner, **Bain & Co.**

Sean Downey, Vice President of Media Platforms, **Google**

Allison Hartsoe, Founder and CEO, **Ambition Data**

Christian Renaud, Research Vice President, **451 Research**

Jeffrey Voorhees, Senior Vice President and Head of Enterprise Analytics and Data Science, **BB&T**

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Executive summary

Leading-edge marketing organizations are shifting both strategy and culture to prioritize data storage and application to produce actionable insights. Results from a recent survey conducted by MIT Technology Review Insights in association with Google showed that “leaders” (companies that have experienced significant growth in revenue or market share) are more likely than “laggard” organizations to leverage machine learning (ML) to help their marketers better understand customer intent. Armed with insight into customer behaviors, marketers can focus on those customers with high lifetime value, providing the personalized and relevant offers they seek.

ML assists marketers in extracting intelligence from the enormous amounts of data their organizations generate daily, enabling certain customers to view the performance of specific

marketing campaigns during specific time periods. ML is a powerful tool that uses empirical data to allow marketers to quickly respond to changing market conditions and customer needs by making informed decisions in real time.

According to the survey, professional services firms and retailers are ahead of the pack when it comes to understanding that predicting customer intent drives better marketing results, and that ML is an adept tool for capturing customer intent. Automotive and financial services are among the other industries where marketers are using ML and analytics to better identify high-value customers.

Analytics and ML can change not just how the marketing function uses data to optimize its messages and anticipate the needs of high-value customers, the survey concludes—it can elevate the definition of the marketing role in the organization.

Methodology

The cross-industry, global study, conducted by MIT Technology Review Insights in April and May 2018, surveyed 1,419 marketing executives from companies with more than \$100 million in annual revenues. “Leaders” are defined as companies with a 15 percent or more increase in revenue or a 15 percentage-point increase in market share over the last two years. “Laggards” are companies with shrinking revenue or market share loss in the same time period.

From retail and travel to financial services and the auto industry, marketers are enticed by both the promised and proven ability of advanced analytics and machine learning (ML) to inspire new practices and enable faster and more useful customer insights. And no wonder: Marketers need to deliver campaigns highly tuned to specific segments of their audience to increase business. This requires churning through lots of data, and where there's an abundance of data, there also needs to be a faster and more effective way to draw insights from it.

Enter ML, which uses algorithms that "learn" over time to make accurate predictions based on data input, without the need to be manually programmed. ML enables brands to cull insights from voluminous data, evaluating the effectiveness—as measured by the behaviors of customers—of different consumer journeys. In a recent survey by MIT Technology Review Insights in association with Google, two-thirds of marketing leaders say their ability to thrive will largely depend on how they apply data. And a very similar percentage (68 percent) of leaders say ML will give their companies a competitive edge.

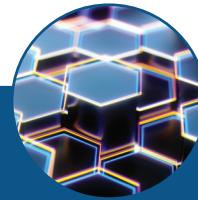
The cross-industry, global study, conducted in April and May 2018, surveyed 1,419 marketing executives from companies with more than \$100 million in annual revenues. "Leaders" (186 respondents) are defined as companies with a 15 percent or more increase in revenue or a 15 percentage-point increase in market share over the last two years. "Laggards" (176 respondents) are companies with shrinking revenue or market share loss in the same time period.

How leaders use ML to get ahead

The survey revealed that leaders are not just those that use data analytics and ML—a key differentiator is how they use it. The survey results showed that leaders are 53 percent more likely, relative to laggards, to say that ML helps marketers better understand consumer intent. And understanding customer intent, forward-thinkers believe, is the future of marketing.

ML assists marketers in parsing the enormous amounts of data their organizations generate

Key takeaways



- 1 Machine learning helps marketers better understand consumer intent—the future of marketing.
- 2 Data-driven attribution calculates the contribution of each customer action along the conversion path to determine which ads, keywords, and campaigns will most directly affect business goals.
- 3 Marketers who don't use ML are missing out on leveraging their data for better product development, service development, customer retention, and customer expansion.

daily. ML gives marketers the ability to view the performance of specific marketing campaigns to certain customers during specific time periods. ML is a powerful tool that utilizes empirical data to allow marketers to quickly respond to changing market conditions and customer needs by making informed decisions in real time, says Christian Renaud, a research vice president at 451 Research, in New York. ML enables marketers to take a customer-centric approach by:

- Making tactical, proactive responses to cut costs and drive operational efficiencies.
- Improving business performance and customer satisfaction.
- Comparing and contrasting past and current performance and making long-range forecasts.
- More accurately tracking and predicting industry trends and customer buying patterns.
- Taking strategic action to drive top-line revenue.

Analytics and data science practitioner Jeffrey Voorhees puts it this way: "A marketing strategy based on customer intent means the business is effectively marketing to the customer they don't

realize they'll become, and delivering the support they'll need to get there." Voorhees is senior vice president and head of enterprise analytics and data science at BB&T, a bank holding company based in North Carolina.

Marketers across myriad vertical market segments are using ML internally and externally, Renaud notes.

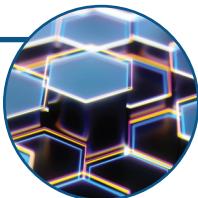
"Everyone is trying to ascertain how to increase the 'stickiness' of their brand," he observes. "How does Android Pay become the payment instrument of choice for Panera Bread, Starbucks, and Google Ride? ML allows marketers to get very targeted. The more you're roped into the ecosystem, the more the marketers and their intended customers can leverage the benefits of ML on a daily basis to perform routine tasks."

Getting to that point requires a combination of data-driven attribution—which calculates the contribution of each customer action along the conversion path to determine which ads, keywords, and campaigns will most directly affect business goals—as well as customer lifetime value (LTV) analysis, customer segmentation, data science, and ML.

LTV measures the value a person brings to a business across all of their interactions over time, according to Sean Downey, vice president of media platforms at Google. LTV identifies customers who

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Jeffrey Voorhees
Senior Vice President and
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bring in more business over the long term, enabling marketers to devote more marketing dollars to reach them.

"The first step is, what do my good customers do?" says Allison Hartsoe, founder and CEO of Ambition Data, a data analytics consulting firm in Oregon. "What do they look like, how did I acquire them, do they call my call center, and what do they ask? Once you know that, you can say, 'Does this look like a high-, medium-, or low-value customer,' and market to them appropriately for the return in value they're offering."

With a "one-and-done" customer, for example, no amount of marketing may inspire them to purchase again, whereas over-marketing to a high-value customer may discourage them from interacting with you, Hartsoe says.

A large majority of leading marketers (89 percent) in the study, in fact, use strategic metrics such as gross revenue, market share, and LTV to measure the effectiveness of their campaigns. According to Downey, LTV helps marketers attract customers who spend more—and more frequently. And it helps them engage and retain those customers.

New mindset, new metrics

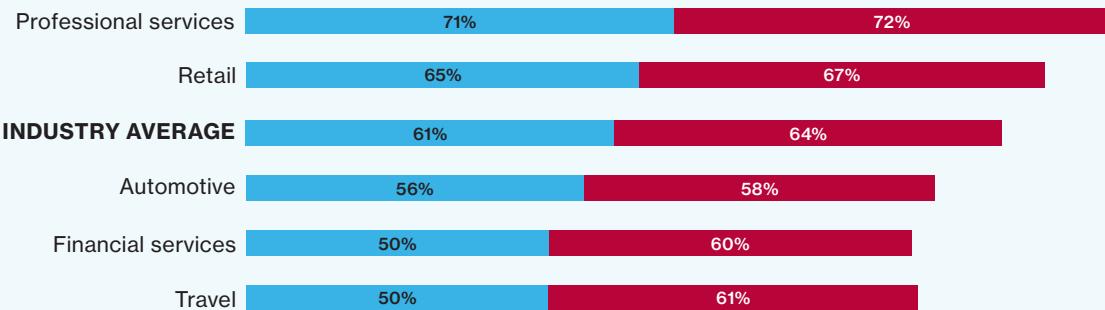
Marketing strategies using LTV and ML also take a longer-term approach to return on investment (ROI), one that measures ROI in a more holistic and a less transactional way. "What you need to do is look historically and see the behaviors that have created high value, and then when you see a customer exhibiting the same characteristics, how do you nurture them along the path to become high-value in the future?" says Laura Beaudin, a partner at Bain & Co., the global management consulting firm.

Marketers who take this approach are willing to spend more and take a lower ROI on a campaign if it's targeted toward someone they believe will become a high-value customer. "It's worth it to invest in someone I think will be worth \$1,000 more in revenue this year, and minimize what I'm spending on someone I think will churn," Beaudin says. New marketing metrics that can help capture LTV include brand awareness, recall, net promoter score, and willingness to be a brand advocate, she says.

Figure 1: Professional services firms bullish on ML and customer intent

- Predicting customer intent will drive greater marketing results
- Machine learning can help capture customer intent throughout the journey

Percentage of respondents who agreed with each statement



Note: The industry average includes results from the consumer goods, education, manufacturing, technology, and telecommunications industries along with the others listed.
Source: Google/MIT Technology Review Insights, "Machine Learning in Marketing," a global survey of 1,419 marketing executives, conducted in 2018

Looking forward, not back

Where customer intent comes in is when the business reverse-engineers its insights into the customer journey and LTV: "How do consumers behave differently in the digital space before they interact with you?" Voorhees asks. In other words, what do the digital fingerprints of various customers look like leading up to a purchase, based on their actual online behavior?

With that knowledge, marketers can get out in front of what customers are actually going to do, and design marketing strategies around those predicted behaviors. Little wonder, then, that 63 percent of leading marketers in the study believe that anticipating consumer intent will drive greater results.

"The behaviors we exhibit are aligned with what we're likely to do in the future," Hartsoe says. "If I want to predict where to spend my marketing dollar, I need to look at actual behavior, not just demographics." This is what makes it so important to gather data on customer behaviors across all digital channels.

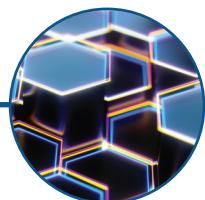
Because this involves so many data points, ML can be crucial for arriving at these insights. "I can't think about thousands of things at once, but I can build machines that do," Voorhees says.

Even when a prediction turns out to be inaccurate, marketers (and ML algorithms) can still learn from the customer's response to a marketing

action. "It might help you see what that person actually does need," Hartsoe says. "The higher concept here is not how can I push more product on you—it's how can I be of service to you."

Businesses that do this, she says, "seem to be offering what you didn't know to ask for. Those are the companies with their act together from a data perspective."

The survey results seem to be evident: leaders are twice as likely



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Founder and CEO, Ambition Data

as laggards to agree that using automation/ML in media campaigns has improved worst-performing ROIs by 10 percent or more.

Industries differ in ML maturity

With more ML advancements to come in the future, companies across industries are at varying stages of data analytics and ML adoption today. In the study, five key sectors emerged as being furthest ahead in terms of tapping into and harnessing customer data for insights on what actions they'll take next, and wielding sophisticated ML tools to make strategic marketing decisions that will drive the business forward.

A large majority (71 percent) of marketers in the professional services sector¹, for example, believe that predicting consumer intent will drive greater marketing results. That's 10 percentage points higher than the industry average—likely indicative of the forward-thinking role these businesses need

to play for their clients (see Figure 1, page 7). With clients turning to professional services firms for ML expertise, use cases, and information on potential benefits, it's essential for these businesses to be on the cutting edge.

A similar picture emerges in how professional services firms regard the role of ML and customer intent. Here again, the majority (72 percent) of professional services companies believe ML can help capture customer intent throughout the journey. Further, nearly two-thirds (64 percent) of marketers from the professional services industry believe using ML will allow their companies to gain a competitive advantage.

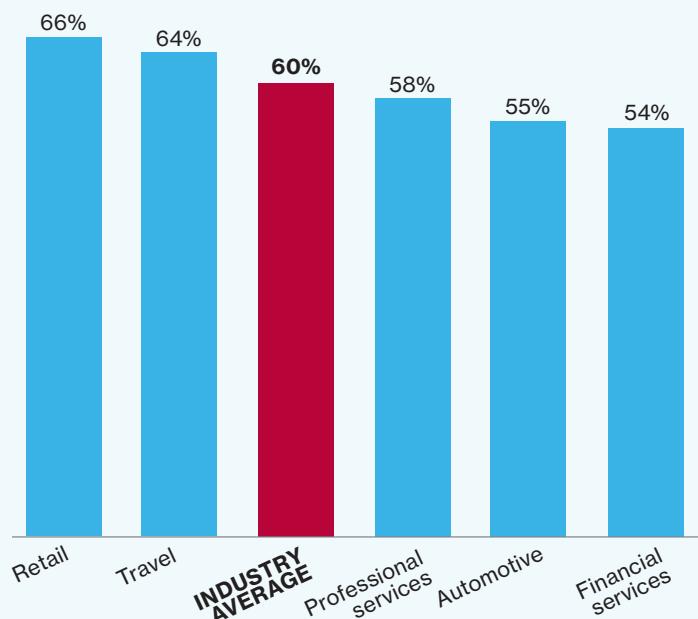
Understanding the power of data

While retail and travel marketers may be less focused on customer intent currently compared with professional services marketers, they're significantly ahead of other industries in their

Figure 2: Retail, travel marketers believe data use drives marketing success

How companies apply their data will play a key role in their ability to thrive

Percentage of respondents who agreed with the statement



Note: The industry average includes results from the consumer goods, education, manufacturing, technology, and telecommunications industries along with the others listed.
Source: Google/MIT Technology Review Insights, "Machine Learning in Marketing," a global survey of 1,419 marketing executives, conducted in 2018

¹Businesses in the professional services sector refer to systems integrators, third-party consultants, resellers, and technology advisors.

understanding of the relationship between their use of data and business success. Marketers in the retail industry, in fact, are 10 percent more likely than marketers across industries to believe that how companies apply their data will play a key role in their ability to thrive (see Figure 2, page 8).

Marketers in the retail and travel sectors, after all, must constantly refresh their marketing plans to align with seasonal product offerings. Marketers in these sectors are also under extreme pressure to meet and exceed quarterly and annual revenue goals. This means having deep insights into current trends in shopping, travel, and hotel stays—from specific products to what destinations are most popular with consumers and the peak times to book vacations and hotel stays. Marketers also find ML useful for predictive analysis to forecast trends 12 to 24 months in advance, using existing, empirical data.

Further, the sheer volume of data generated by customers researching purchases and travel plans online has spurred travel marketers to develop a sophisticated understanding of the value of data, and be more advanced in how they use it. Marketers in both industries are using analytics to optimize their marketing campaigns, personalize their marketing outreach, and create customer loyalty.

In fact, when it comes to advanced techniques such as cross-channel data-driven attribution (DDA) and ML, both retail and travel marketers are poised



for growth. While about one-quarter (24 percent) of travel marketers are currently using cross-channel DDA, more than one-third (33 percent) say they will use it by next year. In retail, the number of marketers currently using cross-channel DDA will grow from 30 percent this year to 35 percent next year.

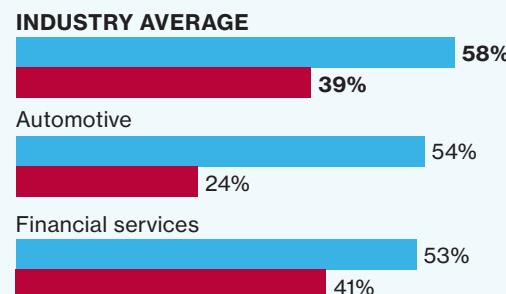
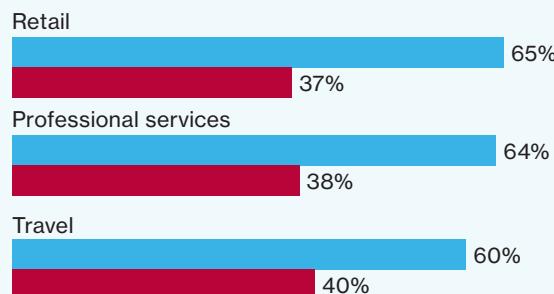
A similar picture of growth emerges in the study data showing a clear gap between current use of these techniques and a strong belief in ML as a competitive weapon (see Figure 3).

As more retail and travel marketers deploy ML, the results will undoubtedly spur others on.

Figure 3: The belief vs. use gap for retail and travel marketers

- ML will allow the company to gain a competitive advantage
- Currently using ML in marketing

Percentage of respondents who agreed with each statement



Note: The industry average includes results from the consumer goods, education, manufacturing, technology, and telecommunications industries along with the others listed.
Source: Google/MIT Technology Review Insights, "Machine Learning in Marketing," a global survey of 1,419 marketing executives, conducted in 2018



As Beaudin explains, ML can comb through data to discover markers of high-value customers, as well as the journeys they take, so you can customize journeys for other valuable customers and create an experience that is most relevant to them.

Beaudin points to a national retailer that embarked on a marketing campaign involving cross-selling to frequent cosmetics buyers. In the process, however, the retailer discovered another high-value customer profile: young men in their early 20s who had just graduated from college and needed their first suit. That behavioral marker, along with other data, suggested they'd return annually for another suit, positioning them as a valuable relationship to nurture over time.

"Before, the retailer had never talked to those people" through targeted marketing messages, Beaudin says. "They saw the same catalog as other customers, with cosmetics and women's jewelry, instead of a yearly sale for the suit they'd buy." By using tools like ML to identify early-on the markers you need to act on, she says, marketers can discover a powerful way to use data to create that custom experience.

Progressive yet conservative

The automotive and financial services sectors, while quite different from one another, are actually bound by very common purposes. Both sectors need to meet or exceed quarterly and annual sales and profits goals, which requires them to be progressive in their use of customer data to market effectively. This may explain why the two industries are closely aligned when it comes to their use of value-based customer segmentation, with over two-fifths of respondents in both industries currently using this approach (see sidebar). Both industries also reflect a nearly identical point of view when it comes to believing ML will provide them with a competitive advantage.

At the same time, both sectors must also comply with increasingly strict and ever-evolving regulations, which can slow their data and ML initiatives. Financial services businesses, for example, have strong legal and compliance requirements surrounding transparency and how they use data and algorithms, Downey says.

Siloed data is another challenge cited by

A common data approach

The automotive and financial services industries share common objectives and characteristics.

Both must meet aggressive sales and profits goals, requiring marketers in both industries to be progressive in their use of customer data:

- More than 4 in 10 use customer segmentation.
- More than 50 percent believe machine learning will give them a competitive edge.

The industries also face the same challenges in launching ML marketing initiatives:

- They must comply with rules regarding algorithms and how they use data.
- Marketers in both industries must cope with major disconnects in data sharing.

Source: Google/MIT Technology Review Insights, "Machine Learning in Marketing," a global survey of 1,419 marketing executives, conducted in 2018

automotive and financial services marketers. Automakers, for example, can collect data on LTV and customer preferences through their custom-configuration website tools, but what they do with that information can be disconnected between the automaker and its dealerships. And while financial services organizations have broad access to customer data, the data is not always shared across business lines, from credit card to loan type to checking accounts. "There's someone marketing mortgages versus savings accounts versus other loan products, each with individual goals and each having a separate conversation with the customer," Beaudin says.

Financial services and automotive marketers are not alone in this regard; respondents across all

industries rank siloed data as a chief obstacle to implementing DDA, which most (60 percent) leading marketers agree is essential to understanding the journeys of their high-value customers.

To create a more unified view, some organizations are beginning to create teams around customer profiles instead of products “so they can optimize what they’re putting in front of the customer, and at the right time, given what they know about the customer versus how they run the P&L inside the company,” Beaudin says. Doing so will require a willingness to change in industries that can be slow to innovate.

The discrepancy between belief in ML providing a competitive advantage and actual use is far greater for automotive marketers than financial services marketers. This is despite the fact that in the automotive industry, the embedded ML, analytics, and internet-of-things capabilities in vehicles and onboard systems add immediate, tangible use-case benefits that marketing professionals could readily promote.

An earlier study conducted by *MIT Sloan Management Review*, in collaboration with Google, similarly found a large gap between automakers’ ambition to use ML in marketing and the commitment to that ambition.

One way that automakers could close this gap is by incorporating longer-term metrics into their marketing strategy. As the Sloan study contends, successful ML adoption hinges not just on investing in ML skills and training, but also on incorporating incentives and internal functional key performance indicators (KPIs) to encourage the use of ML in marketing activities. This will require taking a longer-term view of ROI that accounts for nurturing relationships over time that promise to return higher LTV.

Automotive marketers seem to recognize this concept, with over half (57 percent) agreeing that to gain a competitive advantage using automation and ML, marketers need internal incentives and KPIs to measure their adoption.

The gap in ML ambition versus ML use is much narrower for financial services firms, which are ahead of other industries in their use of ML. BB&T’s Voorhees says financial services leaders have moved beyond understanding current client behavior and are now anticipating the needs of



Percentage of marketers in the automotive industry who believe that internal incentives and KPIs are needed to gain a competitive advantage using automation and ML

future clients, allowing strategies and programs to be developed long before the opportunity arises. Instead of focusing just on current needs, “We have a two- to three-year head start on customer actions,” Voorhees says. “By effectively using data and attribution, we can provide much more prescient and meaningful client experiences.”

Moving ahead

Analytics and ML have the potential to change not just how the marketing function uses data to optimize its messages and anticipate the needs of high-value customers—it can change the very definition of the marketing role in the organization. “When done well, you’ll know better than other parts of the company where the growth opportunities are,” Voorhees says. “It can take marketing from an operational function—a recipient of real business decisions—to an organization that leads the business forward.”

This hinges on the ability for marketing to engage the company as a whole to communicate, collaborate, and cooperate with its analytics and ML work. In the study, leaders are 60 percent more likely than laggards to believe the marketing team should own a data-driven customer strategy that supports all organizational stakeholders.

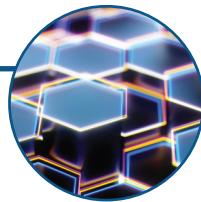
In this way, data has shifted marketing from primarily creative to increasingly analytical, and from operational to tactical and strategic. “Data is setting expectations with consumers that increase the bar

in terms of what marketers should be leveraging to create an ongoing conversation with them,” Beaudin says. “It’s not about driving short-term actions but about furthering performance goals through actions that need to be curated and feel personal to the customer.”

451 Research’s Renaud concurs with Beaudin’s assessment, noting that marketers must utilize every tool at their disposal to drive ongoing and effective customer discourse.

“Competition for customers’ minds and wallets is fierce across every vertical—no exceptions,” Renaud says. “Any marketer that doesn’t use ML or have plans to do so is missing out on using big data mining and not leveraging their data to get down to a deep level of granularity for product development, service development, customer retention, and customer expansion.” ML, Renaud says, provides context and nuance into essential elements like spending trends, spending amounts, and spending timetables by region and

“Any marketer that doesn’t use ML or have plans to do so is missing out.”



**Christian Renaud
Research Vice President, 451 Research**

demographics. “It’s a trillion-dollar total available market. No marketer who expects their business to thrive and expand should miss out on machine learning’s benefits,” he adds.

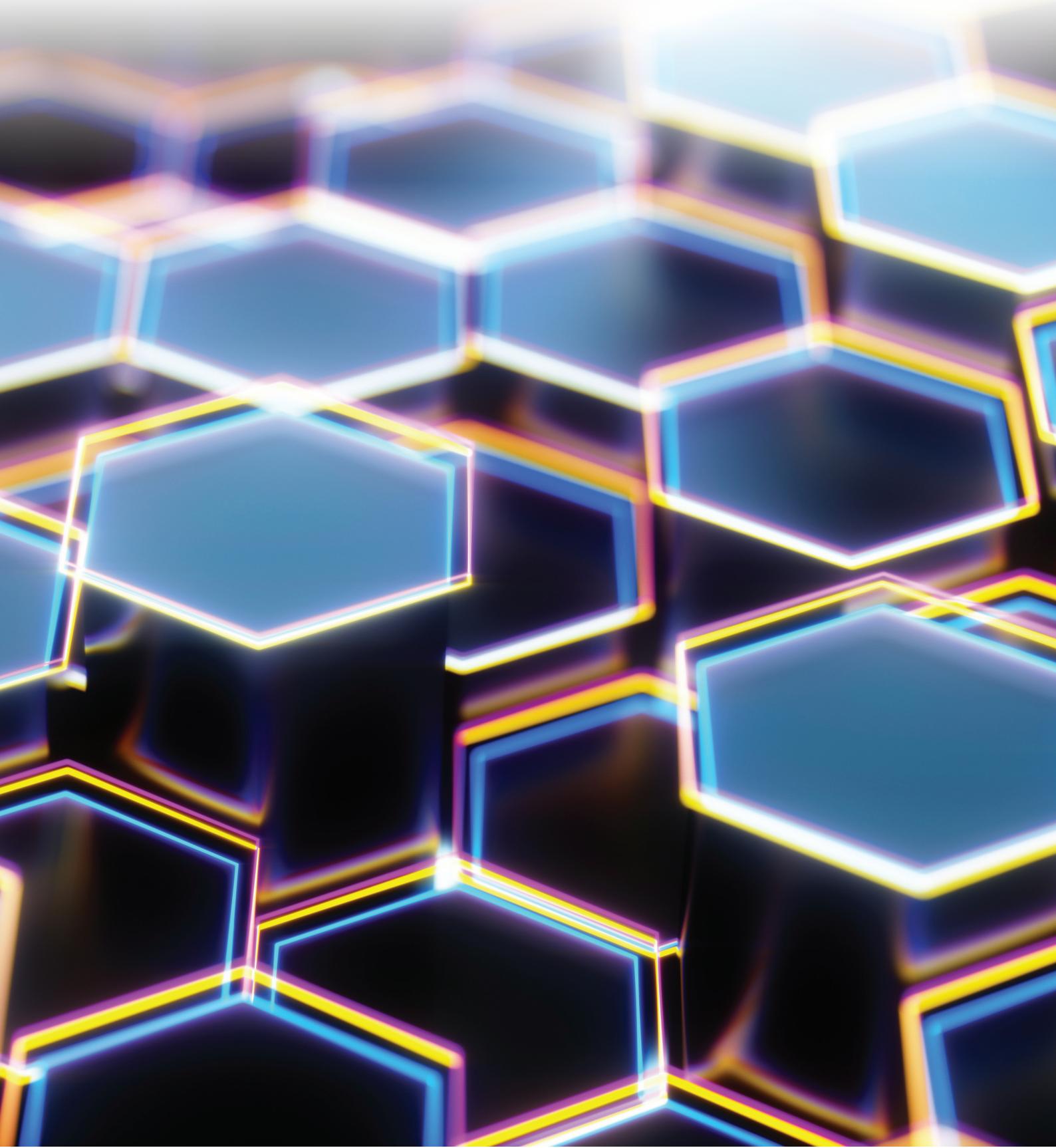
For more on machine learning, visit www.thinkwithgoogle.com.

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