



SCUBA

Breaking Technology Barriers for Better

Machine Learning &
Predictive Intelligence



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Machine Learning Isn't Reaching its Full Potential

In today's digital economy, machine learning is utilized by data scientists and analysts to extract valuable insights from data. Algorithms and models have been built to discover patterns and make predictions about future events. But, as much innovation as there is, machine learning is still not living up to its true potential. Meaning, brands aren't getting everything out of machine learning that they could be.

Machine learning finds itself in a curious place. While impressive innovations continue to roll out (think ChatGBT & similar AI models), machine learning still finds itself limited and chained to bits of the past.

Legacy data stacks are a top culprit. These old systems consist of disparate data silos, storing data in different formats and locations—making it difficult to integrate and access in real-time. This fragmentation then impedes the ability to extract valuable insights from time-series data promptly.

These limitations, are now a detriment to brands, and costing them time, money, and precious insights.

Relying on a system that already provides subpar insights and data instrumentation, then, is not an environment where machine learning can truly excel. In fact, a report conducted by [Alation](#) found that a majority of respondents (87%) pegged data quality issues as the reason their organizations failed to implement AI.

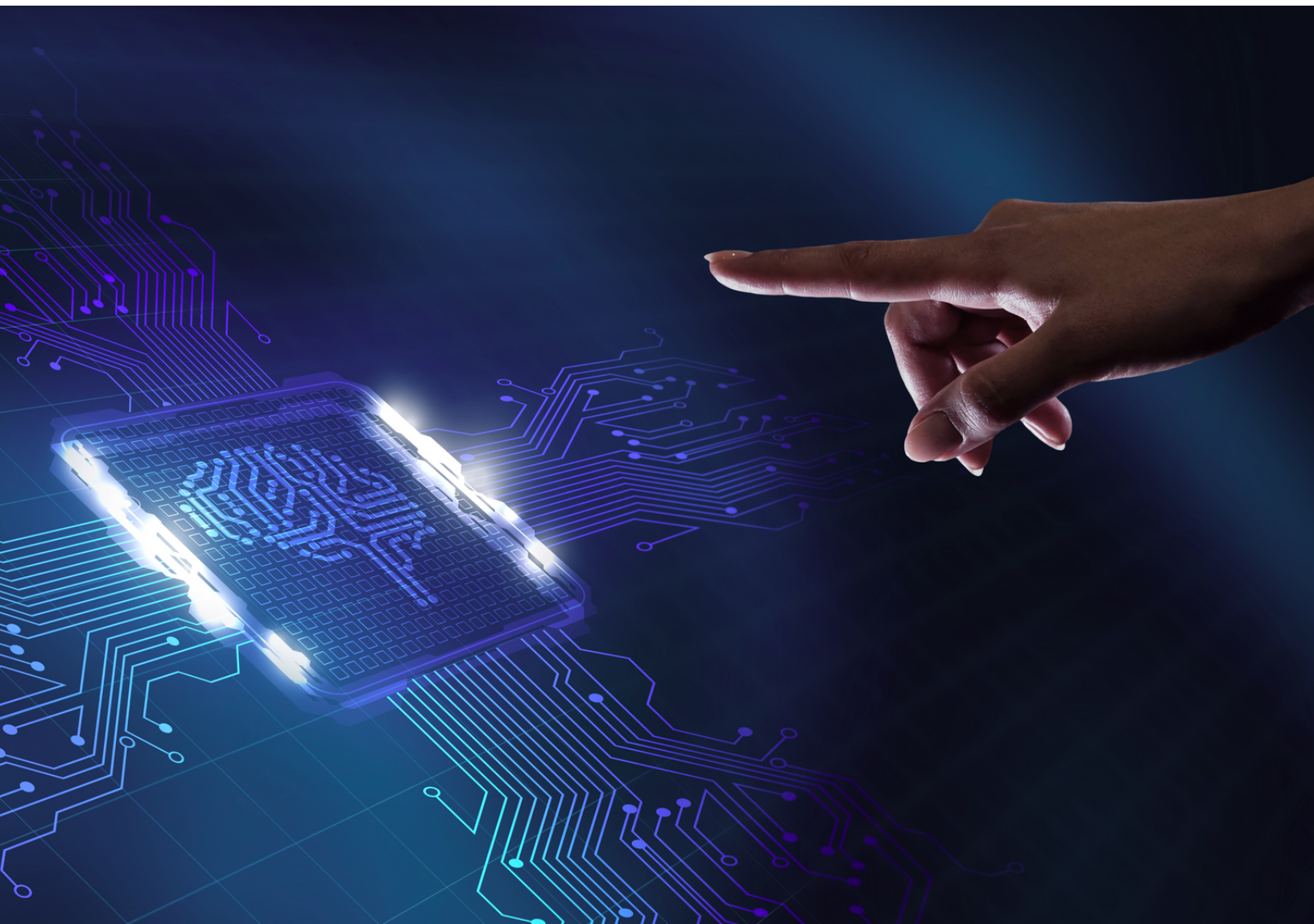


Another shift that brands struggle to adapt to is the expansion of machine learning being used across teams and departments. Machine learning is no longer solely used by technical teams. Now, marketers and product managers now want access to and rely on machine learning, too.

But how can machine learning be democratized? And how can machine learning evolve?

In short, the answer lies within disrupting existing data technology and dated architectures, and reimagining how machine learning is done from inception to completion.

In this eBook, we'll explore how the next evolution of machine learning will require a significant pivot, and dive into the powers of machine learning and predictive intelligence. We'll also explore how new approaches to implementing and leveraging machine learning will help marketing and product teams across industries can capitalize on the future of ML.



The Basics of ML & Predictive Intelligence

Before we answer the question of how can machine learning evolve, first, we need to take a look at the basics.

What is Predictive Intelligence?

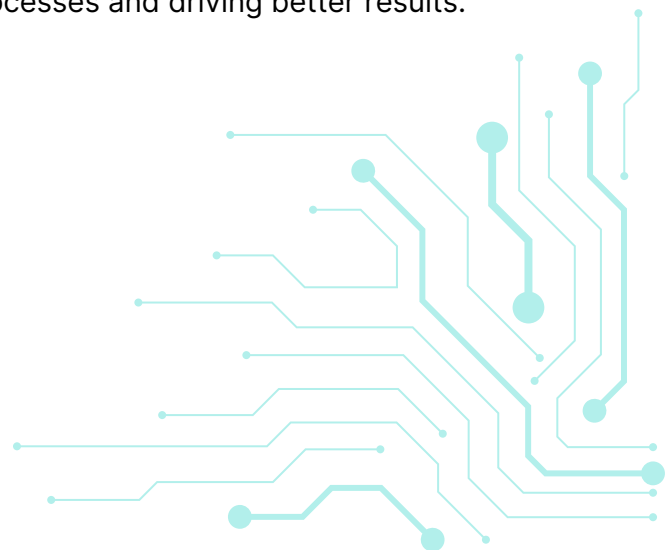
Predictive intelligence refers to the capability of a system or technology to make predictions or forecasts based on available data and past patterns or trends. It involves the use of advanced analytics, machine learning algorithms, and statistical models to analyze historical data and identify patterns or relationships that can be used to predict future outcomes.

Predictive intelligence leverages various techniques, including data mining, pattern recognition, and predictive modeling, to extract insights from large volumes of data and make predictions about future events or behaviors. These predictions can help businesses and organizations make informed decisions, optimize processes, mitigate risks, and gain a competitive advantage.

By analyzing historical data and identifying patterns, predictive intelligence systems can provide forecasts, estimates, or recommendations about future customer behavior, market trends, sales opportunities, equipment failures, and more. It can be applied to various domains, such as finance, marketing, supply chain management, healthcare, and cybersecurity.

To achieve accurate predictions, predictive intelligence systems require high-quality data, relevant features, and sophisticated algorithms. These systems are often trained on historical data sets, allowing them to learn from past patterns and improve their predictions over time.

Overall, predictive intelligence enables organizations to anticipate future outcomes and take proactive actions, thereby enhancing decision-making processes and driving better results.



What is Machine Learning?

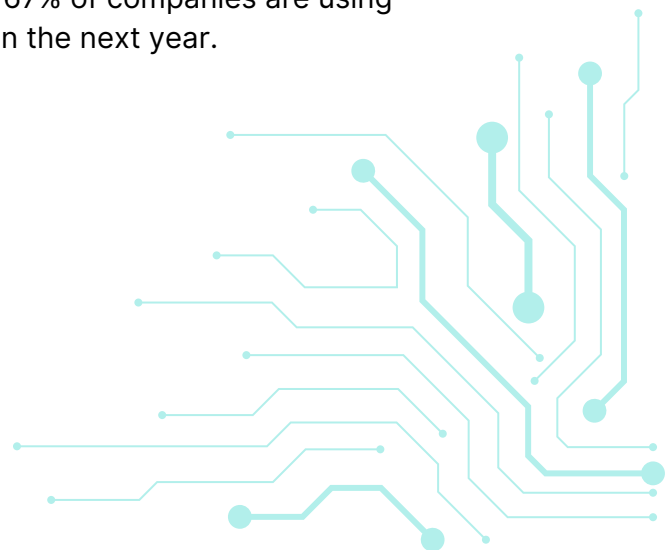
Machine learning is a subfield of artificial intelligence (AI) that focuses on the development of algorithms and models that enable computers to learn and make predictions or decisions without being explicitly programmed. It involves the study of computational systems that can automatically learn from data, identify patterns, and improve their performance over time.

In traditional programming, developers write explicit instructions for computers to follow, but in machine learning, algorithms are trained on data to automatically learn patterns and relationships. This training process allows the machine learning model to generalize and make predictions or take actions on new, unseen data.

“In just the last five or 10 years, machine learning has become a critical way, arguably the most important way, most parts of AI are done. So that's why some people use the terms AI and machine learning almost as synonymous ... most of the current advances in AI have involved machine learning.”

—[Thomas W. Malone](#), MIT Sloan Professor, Founding Director of MIT Center for Collective Intelligence

As we mentioned earlier, machine learning use cases are expanding beyond technical teams or particular industries. A 2020 [Deloitte survey](#) found that 67% of companies are using machine learning, and 97% are using or planning to use it in the next year.



Benefits of Machine Learning

1

Faster, Better Decision-Making

Machine learning enables businesses to make data-driven decisions by analyzing large volumes of complex data. Algorithms can identify patterns, trends, and correlations that might be difficult for humans to discover, leading to more accurate and informed decision-making. In tandem, ML also helps companies derive insights by being able to ingest and analyze structured and unstructured data.

2

Enhanced Efficiency & Automation

By automating repetitive and time-consuming tasks, machine learning can significantly improve efficiency. It can handle large-scale data processing, data entry, customer support, and other operational tasks—freeing up human resources for more strategic and creative work, and reducing costs.

3

Personalization & Customer Experience

Machine learning enables businesses to personalize their products, services, and marketing efforts. By analyzing customer data and behavior, ML algorithms can provide personalized recommendations, targeted advertisements, and customized experiences, leading to improved customer satisfaction and loyalty.

“Nearly two-thirds (63%) of digital marketing leaders continue to struggle with delivering personalized experiences to their customers, but only 17% are using AI/ML broadly across the marketing function.”

— [Gartner](#)

4

Fraud Detection & Risk Management

Machine learning algorithms can also detect and prevent fraudulent activities by analyzing patterns and anomalies in data. They can identify suspicious transactions, flag potential risks, and minimize financial losses for businesses. Machine learning also aids in risk assessment and management by predicting and mitigating potential risks. In an age where data privacy and compliance are more important than ever, ML can play a major role in ensuring data remains secure and protected.

5

Forecasting & Predictive Analytics

Machine learning models can make accurate predictions based on historical data and patterns. This helps businesses in demand forecasting, sales predictions, inventory management, and supply chain optimization. Predictive analytics allows proactive decision-making, reducing costs and improving overall operational efficiency.

6

Competitive Advantage

Businesses that leverage machine learning effectively can gain a competitive edge. By extracting insights and identifying opportunities from data, they can develop innovative products, tailor their offerings to customer needs, and respond quickly to market changes.

“84% of digital marketing leaders believe using AI/ML enhances the marketing function’s ability to deliver real-time, personalized experiences to customers.”

— [Gartner](#)

Under the Hood: How Machine Learning Works

There are many different machine learning models and algorithms, and there are many different ways in which they are built. Neural networks and deep learning are two important concepts to understand when learning about machine learning.

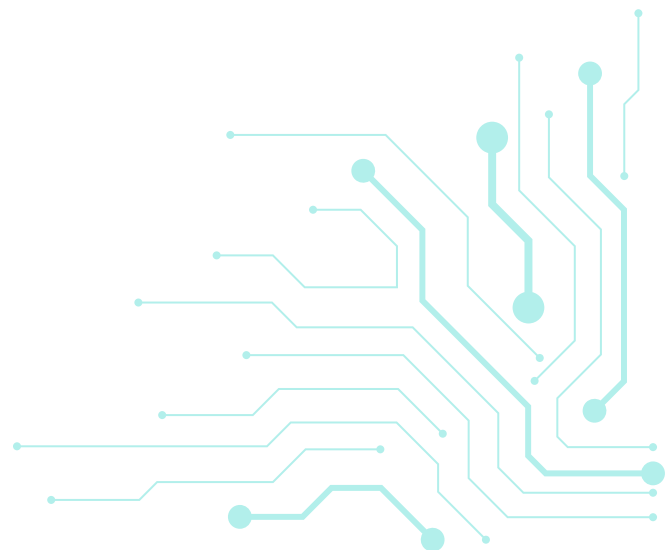
Neural Networks

Neural networks are the fundamental building blocks of deep learning and machine learning in general. Neural networks are a commonly used class of ML algorithms. They are computational models inspired by the structure and functioning of the human brain. They consist of interconnected nodes, called artificial neurons or units, organized in layers. The input layer receives data, the output layer produces the final predictions or outputs, and there can be one or more hidden layers in between.

Neural networks learn from data by adjusting the strengths or weights of connections between neurons. During the training process, the network receives input data, propagates it forward through the layers (forward propagation), and compares the output with the desired or expected output. Based on the difference or error, the network adjusts the weights through a process called backpropagation, which iteratively fine-tunes the model to minimize the error.

“Deep learning could account for between \$3.5 trillion and \$5.8 trillion in annual value”

— [McKinsey](#)



Deep Learning

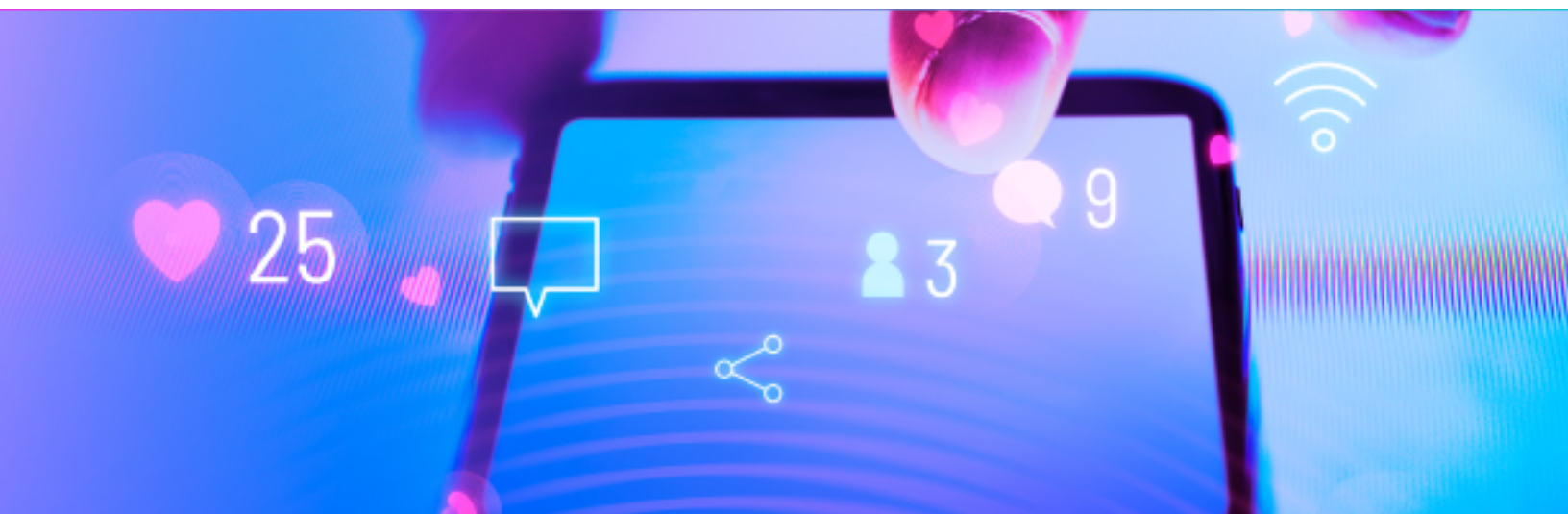
Similar to neural networks, deep learning is inspired by the functioning of the human brain and is a core concept in machine learning. [Harvard Business Review](#) estimates that 40% of all potential value created by analytics comes from AI techniques that fall under the umbrella of deep learning.

Deep learning is a subset of machine learning that focuses on training and utilizing neural networks with multiple layers. These layered networks are capable of handling large volumes of raw data and assigning significance to each connection within the network. By stacking multiple layers, deep learning models can capture and extract increasingly abstract features at each layer, enabling them to learn intricate patterns and make highly accurate predictions. For example, in an image recognition system, certain layers of the neural network can identify specific facial features like eyes, nose, or mouth, while another layer can determine if these features collectively represent a face.

The Difference Between the Two?

Deep learning and neural networks, while different, are often deeply intertwined. Deep learning is a subset of machine learning that focuses on training deep neural networks with multiple layers. Neural networks, in general, are the foundational models used in both deep learning and other machine learning approaches.

Deep learning then leverages the architecture of neural networks with many layers to learn complex patterns and representations directly from the data, while other machine learning approaches may rely on manual feature engineering and may not have as deep or complex architectures.

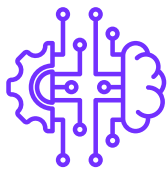


The 4 Machine Learning Methods

Not all machine learning models are the same. Nor are they a one size fits all. Instead, there are a variety of machine learning models, which each carry their own strengths and purposes.



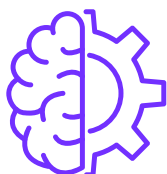
1. Supervised Machine Learning: In supervised learning, the algorithm learns from labeled training data, where each data point is associated with a known output or target value. The algorithm aims to find a mapping function that can predict the output for new, unseen inputs accurately.



2. Unsupervised Learning: In unsupervised learning, the algorithm learns from unlabeled data, where there are no predefined output values. The algorithm discovers underlying and hidden patterns, structures, or relationships in the data without explicit guidance or human intervention. Due to its capability to identify similarities and differences within data, this method is highly suitable for exploratory data analysis, cross-selling strategies, customer segmentation, as well as image and pattern recognition tasks.



3. Semi-supervised Learning: Semi-supervised learning combines elements of both supervised and unsupervised learning. It uses a small amount of labeled data along with a larger amount of unlabeled data to train the model. This approach can be useful when labeling data is costly or time-consuming.



4. Reinforcement Learning: Reinforcement learning involves training an agent to interact with an environment and learn through trial and error. Learning by trial by error, the agent receives feedback in the form of rewards or penalties based on its actions, enabling it to learn optimal behaviors or strategies.

Common Machine Learning Algorithms & Models

There are many different ways in which machine learning is used and manipulated. Each of these algorithms has its strengths, limitations, and applications. The choice of algorithm depends on the problem at hand, the characteristics of the data, interpretability requirements, and other factors.

1

Neural Networks

As mentioned above, neural networks are a class of algorithms inspired by the structure and functioning of the human brain. They consist of interconnected nodes (artificial neurons) organized in layers. Neural networks can learn complex patterns and relationships in data by adjusting the weights of connections between neurons.

2

Linear Regression

Linear regression is a simple and widely used algorithm for regression analysis. It models the relationship between a dependent variable and one or more independent variables by fitting a linear equation to the data. It seeks to find the best-fit line that minimizes the difference between the predicted values and the actual values. Linear regression is used when the relationship between variables is linear.

3

Logistic Regression

A supervised learning algorithm, logistic regression is a binary classification algorithm used when the dependent variable is categorical. For example, yes or no answers to questions. It estimates the probability of an instance belonging to a particular class by fitting a logistic function to the input variables. Logistic regression is widely used in various applications, such as spam detection, disease diagnosis, and customer churn prediction.

4

Clustering

As mentioned above, neural networks are a class of algorithms inspired by the structure and functioning of the human brain. They consist of interconnected nodes (artificial neurons) organized in layers. Neural networks can learn complex patterns and relationships in data by adjusting the weights of connections between neurons.

5

Decision Trees

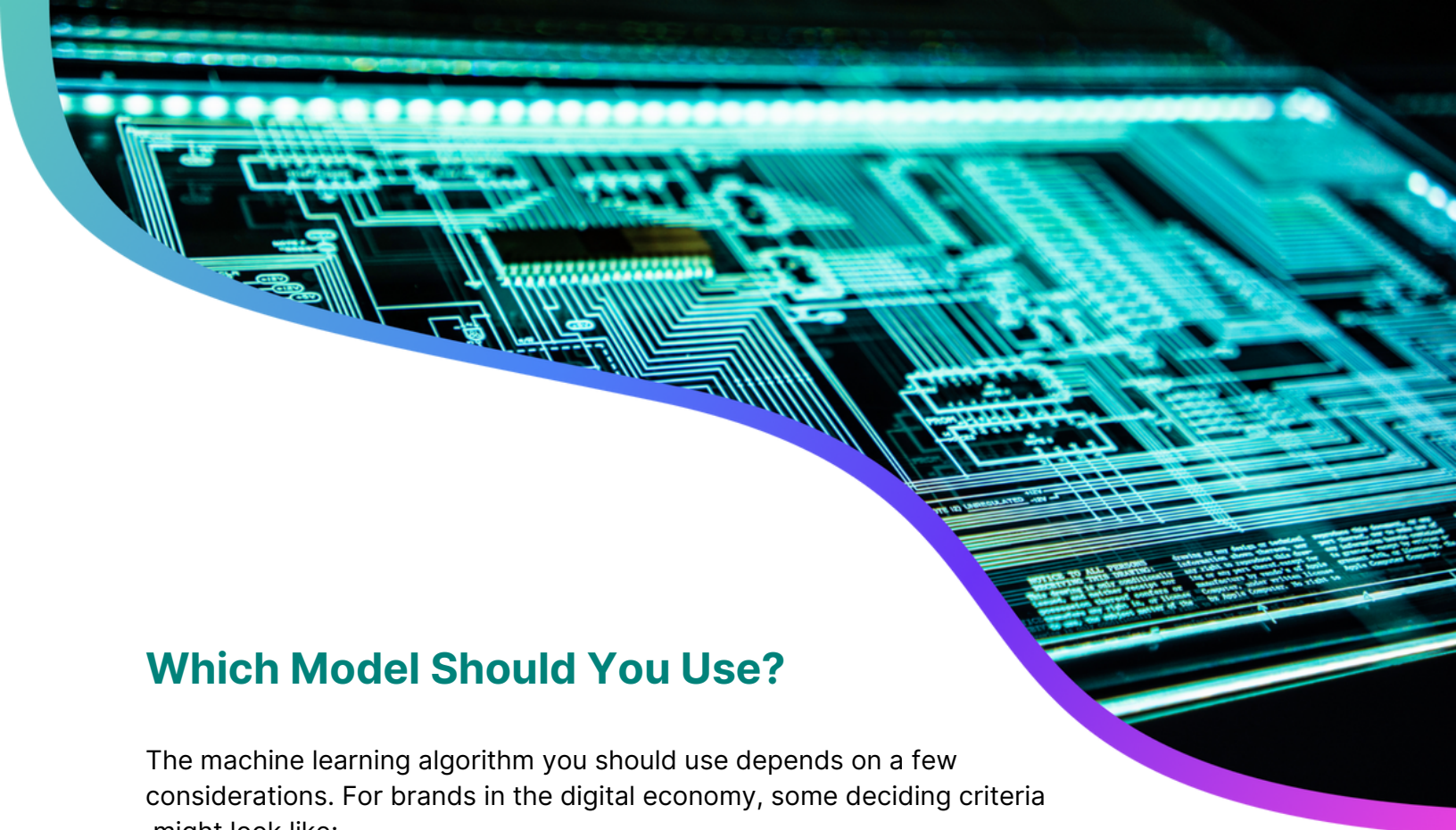
Decision trees are versatile algorithms that can be used for both classification and regression tasks. They create a tree-like model where each internal node represents a test on a feature, each branch represents an outcome of the test, and each leaf node represents a class or a predicted value. Decision trees are interpretable and can handle both categorical and numerical data.

6

Random Forests

Random forests are an ensemble learning method that combines multiple decision trees to make predictions. Each tree is trained on a random subset of the data, and the final prediction is determined by aggregating the predictions of individual trees. Random forests are known for their ability to handle high-dimensional data, provide robust predictions, and avoid overfitting.





Which Model Should You Use?

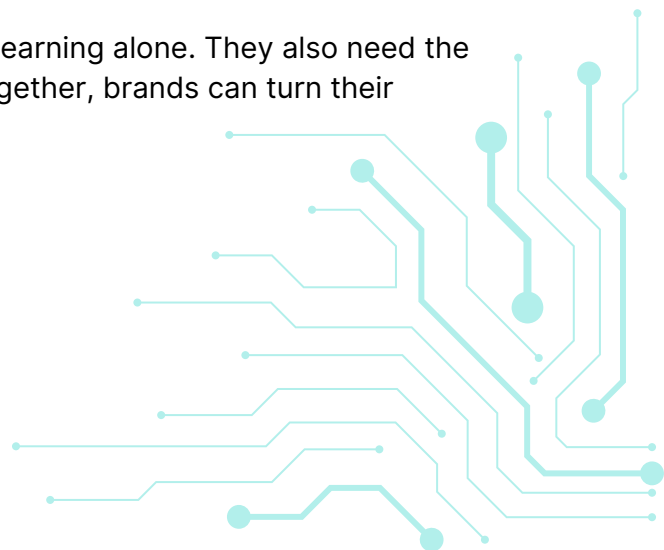
The machine learning algorithm you should use depends on a few considerations. For brands in the digital economy, some deciding criteria might look like:

- Are you looking at current brand audience, sample audiences, or unsampled audiences?
- What kind of analysis do you want to conduct?
- What data do you want to look at?
- What is your goal with using machine learning?

You may then end up asking these models more specific questions, like:

- What do you want to know about your customer, or potential customers?
- What behavior do you want to predict or discover?
- How to increase your retention, engagement, and ROI?
- How to get faster time-to-insights for faster business decisions?

To answer these questions, brands can't rely on machine learning alone. They also need the help of predictive analytics to pull those insights. Then, together, brands can turn their insights into actionable decisions.



The Power of Predictive Intelligence & Machine Learning

A powerful duo, machine learning and predictive analytics almost always work together in some form. Predictive analytics is an advanced analytical field that utilizes machine learning, historical data, statistical modeling, and data mining techniques to help make predictions about future outcomes. Its primary purpose is to identify patterns in data, enabling companies to recognize potential risks and opportunities.

Simply put: Predictive analytics shows you things, and ML helps you act and make decisions based on those insights.

Predictive analytics, like ML, has grown exponentially in popularity, with a global market size of \$12.49 billion in 2022, according to a [research study published by The Insight Partners](#). The report projects the market will reach \$38 billion by 2028, growing at a compound annual growth rate of about 20.4% from 2022 to 2028.



A Glimpse Into the Future: Why Brands Need Predictive Analytics

While the analytics mentioned above have their strengths, predictive analytics offers a forward-looking perspective—a glimpse into the future. It provides brands with fast actionable insights, and the ability to mitigate risks, optimize resources, and drive targeted marketing efforts.

By leveraging predictive analytics, businesses can go from simply looking at a snapshot of the past, to viewing the possible future—and acting in the now.



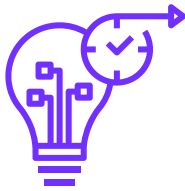
1. Faster, Actionable Insights: Predictive analytics goes beyond descriptive or diagnostic analytics by offering actionable insights. Instead of merely summarizing or explaining past events, predictive models provide actionable recommendations based on future predictions. These insights can guide strategic planning, resource allocation, risk mitigation, and marketing campaigns, helping businesses to optimize processes, reduce costs, increase efficiency, and drive growth.

Example: By running an analysis on a customer's intent to purchase at a point in their journey, a brand can optimize that step with better call to actions, promotional offers—to increase purchase.



2. Targeted Marketing & Personalization: Predictive analytics enables businesses to enhance their marketing efforts by segmenting customers, predicting their behavior, and delivering targeted campaigns. By analyzing customer data, preferences, and past interactions, predictive models can identify customer segments with higher conversion probabilities or lifetime value. This helps optimize marketing strategies, personalize recommendations, improve customer satisfaction, and increase marketing ROI.

Example: A predictive model can help brands gain insight into how many conversions a targeted ad will generate on channels and platforms. Based on those insights, brands can see which channel/platform performs the best, and invest more ad dollars there, for more conversions.



3. Future-Focused: Predictive analytics is specifically designed to make predictions about future outcomes. Unlike descriptive or diagnostic analytics which primarily focus on analyzing historical data, predictive analytics utilizes historical data, statistical modeling, and machine learning algorithms to forecast future events or behaviors. This forward-looking approach enables businesses to anticipate trends, identify potential risks or opportunities, and make proactive decisions.

Example: Say a major OKR for your marketing team is to increase the amount of sales qualified leads (SQLs) and opportunities by 25%. A predictive analysis could help your team see how likely you are to hit that OKR—which can then help dictate your efforts and strategies to achieve that goal.



4. Business Decision Support: Predictive analytics provides valuable insights and recommendations to support decision-making. By leveraging patterns, correlations, and trends in data, predictive models can guide businesses in making informed choices. These models help identify the factors that influence specific outcomes and provide quantitative estimates or probabilities, allowing organizations to assess the potential impact of different scenarios and make optimal decisions.

Example: Say your brand wants to expand its advertising to a new platform or market. A predictive model can help you see the potential success, or lack thereof, before you invest a high amount of money.



5. Risk Assessment & Mitigation: Predictive analytics excels in assessing and managing risks. By analyzing historical data and identifying patterns, predictive models can identify potential risks, anomalies, or outliers. This enables businesses to take proactive measures to mitigate risks, prevent fraudulent activities, ensure compliance, and enhance security. Predictive analytics is particularly valuable in industries such as finance, insurance, healthcare, and cybersecurity, where risk assessment and management are critical.



6. Optimization & Cost Reduction: Predictive analytics can optimize resource allocation and utilization and drastically help in cost reduction. By analyzing historical data and demand patterns, predictive models can forecast future demand, optimize inventory levels, streamline supply chain operations, and enhance production planning. This leads to cost savings, reduced waste, improved efficiency, and better customer service.

Choose Your Adventure: 7 Types of Predictive Analytics

1

Regression Analysis

This is the most commonly utilized model in statistical analysis. Regression analysis is used to predict numerical values or continuous outcomes. It identifies the relationship between a dependent variable and one or more independent variables by fitting a regression model to the data. Regression models can provide insights into how changes in independent variables impact the dependent variable and allow for the prediction of future values.

It is employed when there is a need to identify patterns within extensive datasets and when there exists a linear correlation between the inputs. This approach involves deriving a formula that represents the relationship among the various inputs present in the dataset.

Benefits: *Data-driven decision-making, forecast opportunities and risk, predicting sales, optimizing business processes, understanding supply and demand.*

2

Decision Trees

If you want to understand what leads to someone's decisions, then you may find decision trees useful. This type of model places data into different sections based on certain variables, such as price or market capitalization. Just as the name implies, it looks like a tree with individual branches and leaves. Branches indicate the choices available while individual leaves represent a particular decision.

Benefits: *Outcome prediction of different scenarios, decision optimization, assessing risk and business impact, financial forecasting, and data-driven decision-making.*

3

Neural Networks

Neural networks, as previously mentioned, emerged as a predictive analytics tool by simulating the functioning of the human brain. This model harnesses AI and pattern recognition to handle intricate data relationships. It proves beneficial in situations where multiple challenges need to be addressed, such as when dealing with voluminous data, lacking a definitive formula to establish relationships between inputs and outputs in the dataset, or when the focus is on making predictions rather than providing explanations.

Benefits: *Data-driven decision-making, pattern recognition, sequence recognition, and modeling customer behavior.*

4

Classification

Classification techniques are used to predict categorical or discrete outcomes. They assign instances to predefined classes based on features or attributes. Common classification algorithms include logistic regression, decision trees, random forests, and support vector machines. Classification is widely used in applications such as sentiment analysis, spam detection, and customer churn prediction.

Benefits: *Outcome predictions, spam, and security breach detection, customer churn prediction.*

5

Cluster Modeling

Clustering techniques aggregate similar instances together based on their inherent similarities or distances in the feature space. Clustering is an unsupervised learning technique, meaning it does not require predefined classes. It helps identify hidden patterns or structures in the data.

Let's take the example of an online retailer such as Walmart. To gain insights from their sales data, Walmart can apply clustering techniques based on different criteria. They can cluster sales data based on the quantity purchased or group sales based on the average account age of their consumers. By categorizing the data into distinct groups with similar characteristics, analysts can potentially uncover additional traits that define future customer behavior.

Benefits: *Pattern recognition and identification, market segmentation, customer profiling, and anomaly detection.*

Time-Series Modeling

Time-series analysis is employed when the data is collected over regular time intervals. It aims to forecast future values based on patterns and trends observed in historical data.

6

Sometimes, data relates to time, and specific predictive analytics rely on the relationship between what happens when. These types of models assess inputs at specific frequencies such as daily, weekly, or monthly iterations. Then, analytical models seek seasonality, trends, or behavioral patterns based on timing. This type of predictive model can be useful to predict when peak customer service periods are needed or when specific sales will be made.

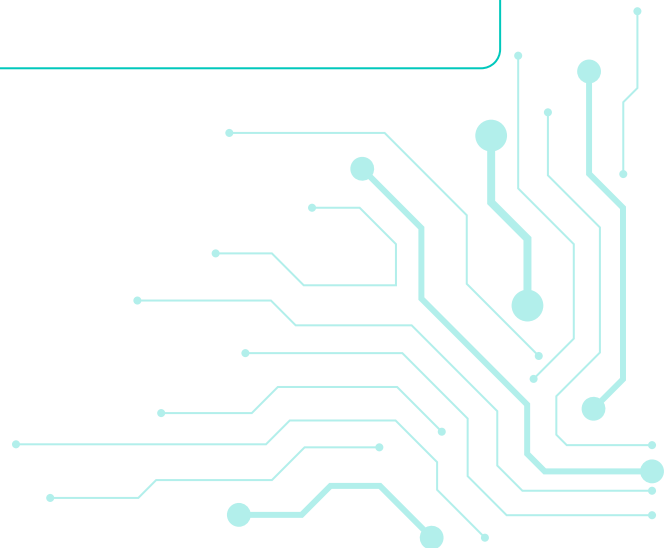
Benefits: *Forecasting (sales, conversion, churn, etc.), identifying and understanding causes of patterns over time, seasonal trends, and data-informed business decisions.*

Recommendation Systems

Recommendation systems use predictive analytics to provide personalized recommendations to users. They analyze user behavior, preferences, and historical data to predict and suggest items or content that are likely to be of interest. Collaborative filtering, content-based filtering, and hybrid approaches are commonly employed in recommendation systems.

7

Benefits: *Hyper-personalization, content engagement prediction, identifying and understanding user behavior, and data-informed business decisions.*

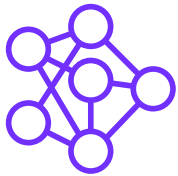


How to Conduct a Predictive Analysis in 6 Steps

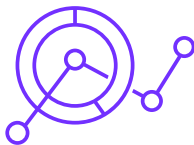
When embarking on the implementation of predictive analytics in your organization, it can be overwhelming to navigate through the various models and applications. To help you get started, follow these six essential steps:



1. Define the business objective: What do you want to predict? What answers do you want? Begin by clearly articulating the specific question or questions you aim to address with predictive analytics. Generate a comprehensive list of inquiries and prioritize them based on their significance to your organization



2. Select the appropriate algorithm or machine learning technique: Depending on the nature of your data and the problem you're trying to solve, select an appropriate algorithm or machine learning technique. This could involve regression models, decision trees, neural networks, or other advanced algorithms. The chosen algorithm should be capable of effectively capturing the underlying patterns and relationships within the data.



3. Assess & determine available datasets: Once you have established your objectives, evaluate whether you possess the necessary data to answer your questions. Ensure that the datasets you have are relevant, complete, and sufficiently large for effective predictive modeling.



4. Train and test: During the training phase, the model is constructed and fine-tuned using a training subset. By running the model on this subset, it learns from the patterns and relationships within the data. This step is vital in building a robust and accurate predictive analysis model. The model begins to learn the patterns and relationships within the data. Through an iterative process, the model adjusts its parameters to minimize the difference between its predictions and the actual outcomes in the training data.

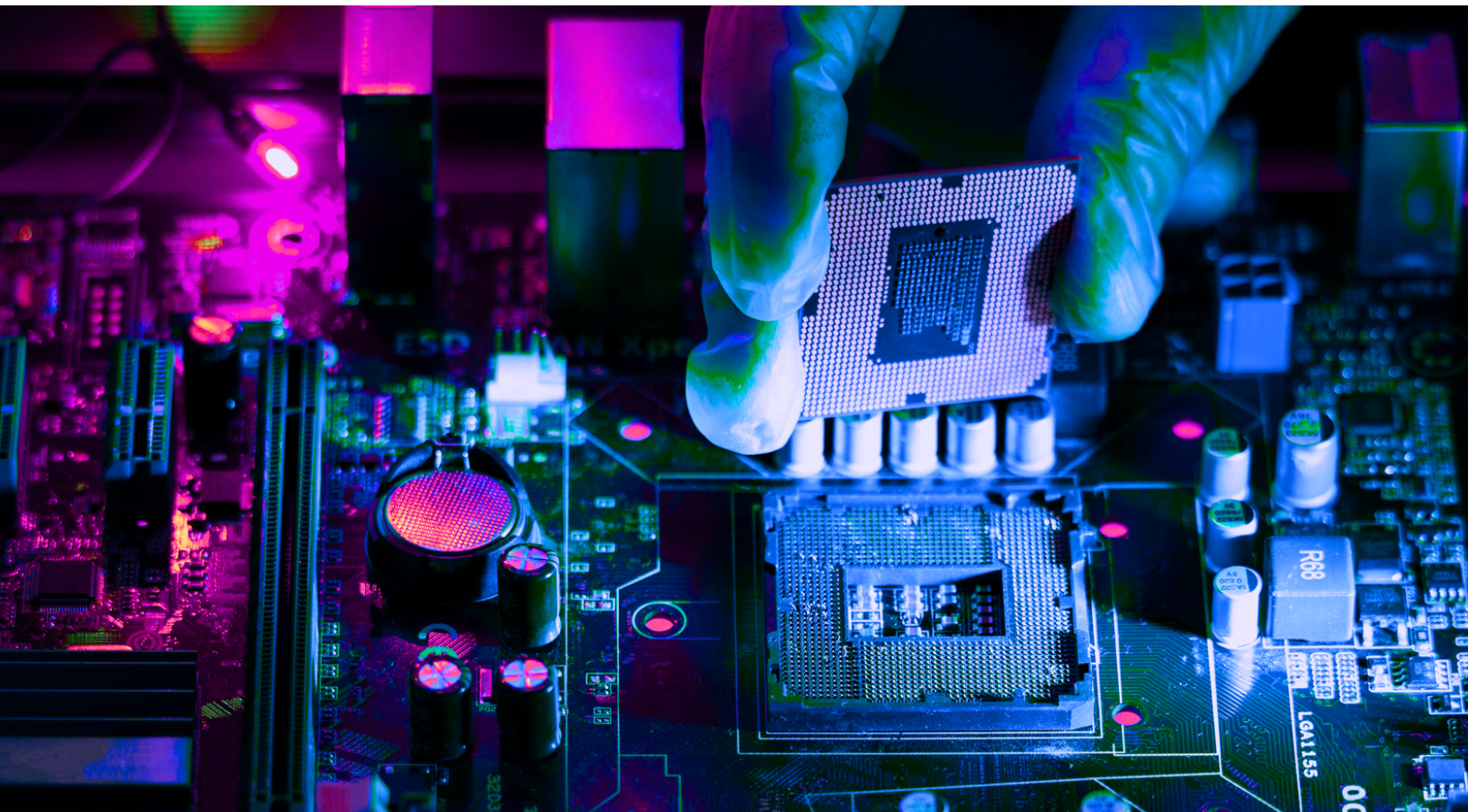


5. Establish predictive drivers: Establishing predictive drivers involves identifying the key factors that significantly influence the predictions made by the model. Through feature importance analysis and validation, analysts determine which variables have the most impact on the predicted outcomes. This knowledge provides valuable insights and helps stakeholders focus on the crucial factors when making informed decisions based on the model's predictions.



6. Establish processes for sharing and utilizing insights: Merely uncovering opportunities or threats through predictive analytics is insufficient if there is no mechanism in place to act upon these findings. Establish effective communication channels to ensure that valuable predictions reach the appropriate individuals who can take action based on the insights.

By leveraging these examples, methods, and initial steps in predictive analytics, you can foster a forward-thinking organization that embraces data-driven decision-making with confidence.



It's Time to Break the Wheel of Machine Learning

The current method of deploying machine learning no longer works, and cannot operate in a fast-paced digital economy. In other words: it's time to break the wheel of machine learning.

Machine learning has a vast amount of untapped potential for organizations in the B2B and B2C world. But, without overhauling some major barriers, machine learning can never reach that potential.

The Legacy Data Stack Problem

The primary obstacle hindering the evolution of machine learning lies in the outdated data stack architectures and collection systems of the past. These legacy solutions were originally designed to cater to static insights, rendering them ill-suited for handling modern machine learning models and the rapid influx of time-series data. This presents a host of technical and business challenges:

1

Mismatch With Current Reality

Legacy solutions were created to handle status data and insights, a scenario that no longer aligns with our dynamic data landscape.

2

Complex Data Preparation and ETL Delays

Integrating legacy systems necessitates intricate data preparation processes that are inherently inflexible, time-consuming, laborious, and costly. Lengthy ETL data processing pipelines hinder the timely utilization of valuable data and the machine learning insights derived from it.

3

Lack of ML Integration

These dated stems were not purpose-built to seamlessly incorporate machine learning modeling and analysis, leading to inefficiencies.

4

Inadequate Scalability

Legacy solutions struggle to keep up with the demands of high-velocity event data, impeding their ability to scale effectively.

5

Database Limitations

Relational databases face difficulties in handling the growing volume of activity data, resulting in resource-intensive storage and querying processes.

6

Technical Friction

Managing data catalogs, implementing coding changes, and securing engineering resources can be cumbersome, leading to potential resource misallocation.

7

Big Data Challenges

Working with big data entails extensive data wrangling efforts, involving the integration of data from internal and external sources, demanding substantial time and resources to render the data usable.

These interconnected challenges collectively hinder the effective delivery of real-time data for sub-second data exploration, machine learning, and activation within our dynamic, data-driven landscape.



A Perfect Marriage: Scuba's ML & Predictive Intelligence

Scuba reimagines the wheel of machine learning, and brings it into the future—with no limitations or architectural restrictions. With Scuba, brands can eliminate the headaches of dated legacy systems and complex data instrumentation—saving time and money to focus on business goals.

Scuba powers decision intelligence across all audience interactions and media sources within a unified platform that does not require layers of integration, and provides 100% data control and managed service within your private cloud. This gives users the power and freedom to implement machine learning and predictive analytics like never before.

Connect:

Connecting data sources with and to Scuba

- Configuration-driven data pipelines
- Support for preferred data sources and platforms
- Schema discovery and data model registration
- Data transformations as query-time metadata - i.e. ingest once, then flexibly combine, transform, analyze, recalculate, playback
- Data dictionary, lineage documentation and access control

Discover:

Discovering insights through querying

- No-code UI
- Sub-second query response
- Visualization tools
- Self-service dashboarding
- Flexible time-series querying features
- Pre-configured analytics templates for retention analysis, journey flows, A/B testing and data distributions
- Composable analytics artifacts to build up any dashboard

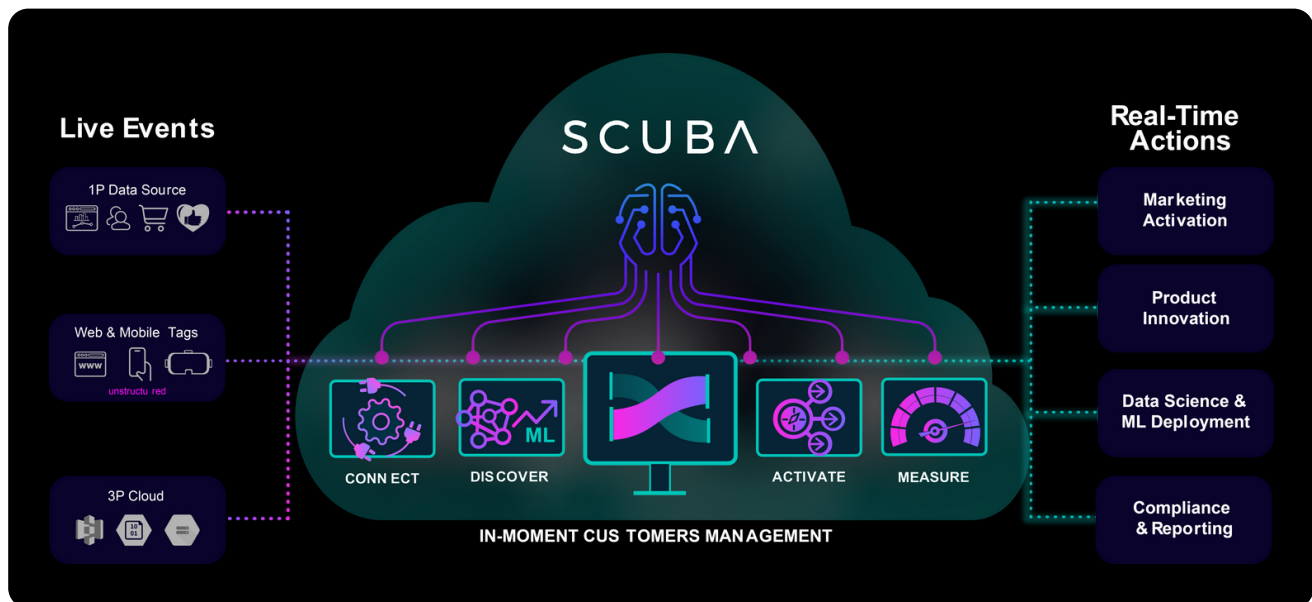
Activate:

Activating insights into actionable business decisions

- Build your own ML models using popular frameworks
- AutoML UI and In-DB ML interfaces for model activation
- ML output represented natively as event and actor properties
- Easy dashboarding for ML monitoring and performance tracking

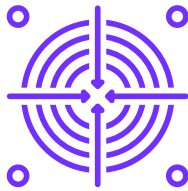
Activate Predictive Audiences

- Activate insights in preferred execution channels
- Data ingest pipelines from execution channels to track performance of activated insights
- Make any ML and query insight actionable through custom webhooks from within the UI
- Query access and activation controls



Use Cases with Scuba's ML & Predictive Intelligence

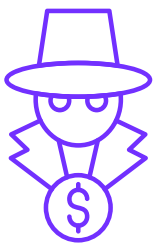
Machine learning and predictive intelligence have revolutionized the way businesses operate by offering a wide range of applications across various industries. With Scuba, brands can seamlessly execute on the following:



1. Predict customer intent & prevent churn in real-time: Scuba's machine learning capabilities can take analyze vast amounts of customer data, including past interactions, purchase history, and behavior patterns, to predict the likelihood of customer purchase intent and churn. By identifying early warning signs in real-time, such as decreased engagement or changes in purchasing patterns, businesses can proactively intervene and implement targeted retention strategies to prevent customer churn. This helps in building long-term customer relationships and maximizing customer lifetime value.



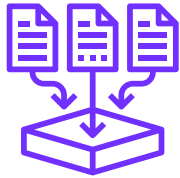
2. Drive hyper-personalization & customer experience: Scuba's machine learning enables businesses to enhance the customer experience by personalizing interactions and recommendations. By analyzing customer data, preferences, and feedback, predictive models can provide personalized product recommendations, tailored content, and customized offers. These personalized experiences not only increase customer satisfaction but also boost engagement, retention, and overall loyalty.



3. Detect & prevent fraud: Fraudulent activities pose a significant threat to businesses across various sectors. Machine learning algorithms can analyze historical transaction data and detect patterns that indicate fraudulent behavior. By continuously learning from new data, these algorithms can adapt to evolving fraud patterns, enabling real-time detection and prevention of fraudulent activities. This helps businesses safeguard their assets, protect customers, and reduce financial losses.



4. Assess & minimize risk: Scuba's machine learning models can assess and mitigate risks across different domains. For example, in insurance, predictive intelligence can analyze historical data, customer profiles, and external factors to estimate risks accurately. This helps insurance companies optimize pricing, underwriting decisions, and claims processing. By leveraging machine learning algorithms, businesses can make data-driven decisions and effectively manage risks.



5. Implement data compliance & privacy: As data privacy regulations become more stringent, businesses need to ensure compliance with legal requirements. Machine learning algorithms can assist in data compliance by automating data classification, identification of sensitive information, and implementing data protection measures. By leveraging predictive intelligence, businesses can identify potential privacy risks, ensure data privacy, and implement appropriate security measures, thereby maintaining regulatory compliance.

Industry Use Cases: Driving Success with ML & Predictive Intelligence

Machine learning and predictive intelligence have emerged as powerful tools across various industries, transforming the way businesses operate and enabling them to unlock new opportunities. Scuba supports ML and predictive intelligence across industries:

Ad Tech

In the dynamic world of advertising technology, machine learning plays a crucial role in optimizing ad targeting, ad placement, and campaign management. Predictive models can analyze vast amounts of user data, including browsing history, demographics, and online behavior to deliver personalized and relevant ads to the right audience at the right time. This not only enhances ad performance but also improves user engagement and increases conversion rates. Machine learning also enables fraud detection, helping ensure ad budgets are utilized efficiently and effectively.

Online Gaming

Machine learning and predictive intelligence have revolutionized the gaming industry, offering personalized gaming experiences and enhancing player engagement. Predictive models can analyze player behavior, preferences, and in-game interactions to dynamically adjust game difficulty, customize gameplay elements, and offer tailored recommendations. This leads to immersive gaming experiences, increased player retention, and improved monetization. Machine learning algorithms can also assist in game testing and quality assurance, identifying bugs, glitches, and balancing game mechanics.

Media & Entertainment

Machine learning and predictive intelligence are reshaping the media and entertainment industry by enabling content personalization, recommendation systems, and content optimization. These technologies can analyze user data, content preferences, viewing patterns, and social interactions to deliver personalized content recommendations across various channels. This not only improves user satisfaction but also drives content discovery and engagement. Predictive models can also assist in content optimization by predicting audience response and feedback, helping creators tailor their content to maximize its impact.

Marketing

In the realm of marketing, machine learning and predictive intelligence are transforming the way businesses understand their customers, optimize campaigns, and drive conversions. Predictive models can analyze customer data, purchase history, browsing behavior, and social media interactions to identify patterns and predict customer preferences. This enables businesses to deliver targeted marketing campaigns, personalized offers, and customized experiences, increasing engagement and ROI. Machine learning also facilitates marketing automation, enabling automated lead scoring, customer segmentation, and real-time campaign optimization.

- Promote cross-sell opps
- Optimize ad campaigns & channel recs
- Predict audience behavior/user engagement
- Identify best channels/platforms/types of content users will engage with
- Generate customer purchase (revenue & ROI)
- Help attract, retain, and nurture customers/users



In each of these industries, machine learning and predictive intelligence offer tremendous value by enhancing targeting precision, personalization, and decision-making. But brands won't get far if they're relying on outdated data systems, which were never built for the evolving world of machine learning.

Brands need a solution that brings their business and machine learning into the future.

Scuba gives you that power. With Scuba, brands can truly leverage machine learning and predictive intelligence to stay ahead of the competition, drive growth, and create meaningful connections with their customers. Stepping into the future with Scuba means not only unparalleled machine learning and predictive analysis capabilities, but brands can be at the forefront of unlocking new opportunities, driving innovation, and thriving in today's digital ecosystem.

Ready to take your machine learning and predictive intelligence to the next level? [Get started with Scuba](#) today.

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