

EBOOK

5 STEPS TO TRAIN AND TEST YOUR AI ALGORITHM

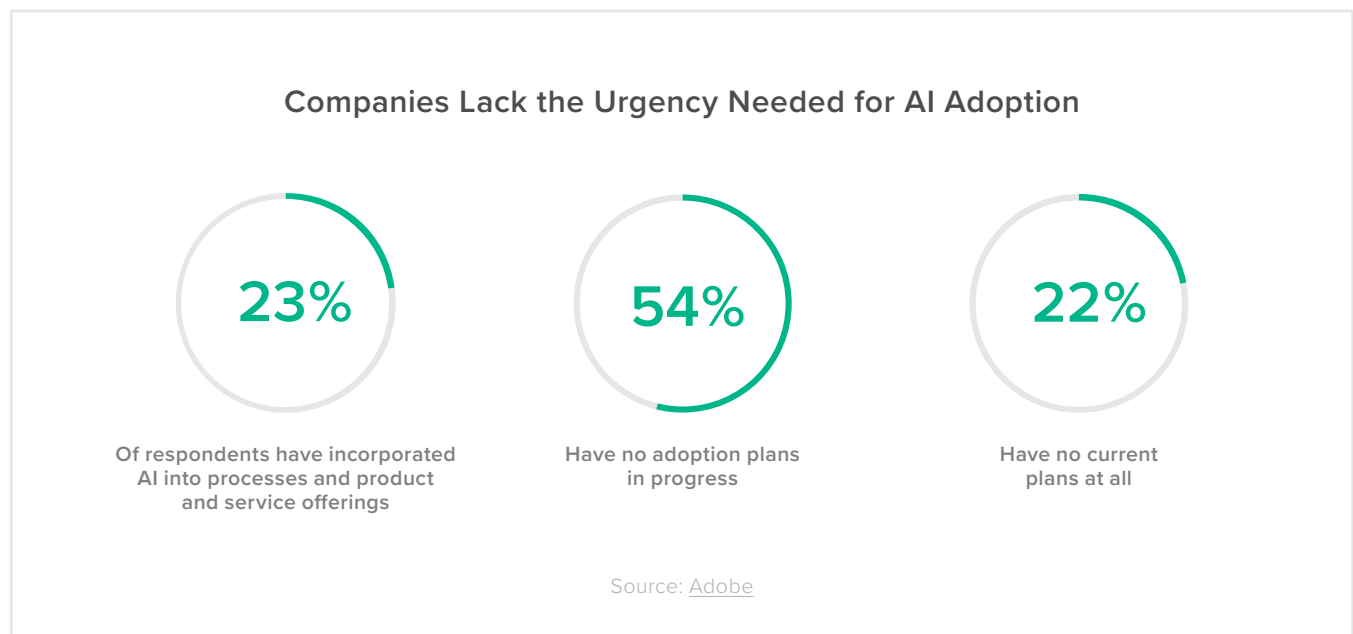


APPLAUSE^o

Experts hail artificial intelligence (AI) and machine learning (ML) as the great facilitators of smarter, more streamlined business processes. Yet, in order for the algorithms to work their magic, someone must first train and test them based on a rigorous and thoughtful plan.

There's no questioning the impact AI and ML have (and will have) on business. Per a [report by BCG and MIT Sloan Management Review](#), 85% of executives expect to gain a competitive advantage via AI/ML, with three-quarters betting the technology will steer them into new areas of business. These execs expect AI/ML to create the strongest impact on customer-facing programs — such as marketing automation, customer support, IT services and supply chain optimization — over the next five years.

Despite the rosy picture, many organizations are in a holding pattern when it comes to AI/ML implementations. An [Adobe study](#) found less than half (47%) of “advanced” organizations have an AI strategy, while only 27% of “non-mature” companies do. With AI expected to become a more significant differentiator for businesses in the near future, AI and ML laggards will suffer the consequences if they don't develop a mature AI strategy quickly.



Much of the holdup surrounding AI/ML deployment and adoption goes directly to the challenge of training and testing AI engines. AI technologies are expensive and many remain immature. Expertise is hard to come by, and most managers don't understand cognitive technologies or how they work, according to a [Deloitte study](#).

There's no doubt that implementing a sophisticated AI algorithm is a complex and time-consuming initiative. By following these key steps, your development teams can maximize the algorithm's utility and ensure it delivers on its intended goals.



5 Steps to Train and Test Your AI Algorithm

Step #1: Collect training data

You can't embark on your AI journey without first assembling a data set to train and test your model. Data types span a multitude of elements, including text, speech, images, biometrics and handwriting. To zero in on the correct inputs for you, focus on your business case — it is your North Star.

You can do data collection on your own or outsource it to a third party. It's also possible to purchase existing data sets to broaden the base pool — and with the right research, you can find plenty of free data sets that will add value. However, what ultimately helps you establish guidelines for developers and ward off bias is identifying specific rules for data selection.

Step #2: Label your data

Labeling data is another critical training step, and you can't afford to skimp on either time or resources. Data labeling generally refers to tasks such as tagging, annotating and classifying data to provide the necessary context to train, test and adjust your models. It is a tedious and laborious process, but one that demands focus from all involved.

The more resources you can commit to labeling your data, the better your model will be. Some organizations automate labeling, but automation can only take you so far. Data labeling may not be the most enjoyable or rewarding individual task, but any shortcomings in the labeling process will quickly set your algorithm up for failure.

Step #3: Train the algorithm

Once you collect and cleanse your data into a single unified format, use it to train your algorithm so it understands and learns the proper response to certain inputs. In addition to the training data set, you need validation data and test data, which typically come from the same pool, but are separated out so they are not familiar to the model.

In that way, you can effectively evaluate how well the algorithm performs as it's put to work on a specific use case. There's also another data set used for validation — in other words, to tune the parameters of a classifier over time. It's important not to use the exact same data set for training, validation and test purposes.

Step #4: Test outputs for accuracy and bias

Once you're comfortable with the parameters of the algorithm, it's time to test the model on the specific use case in a live setting. This is an essential step as it's the best way to get feedback on how the algorithm responds to test data and to determine if the subsequent outputs are accurate and deliver as intended. It's also critical to determine if bias exists in the outputs.

Step #5: Leverage feedback to evolve the algorithm

Implementing an algorithm is hardly a one-and-done process. Development relies on feedback collection from test inputs. This enables you to identify flaws in the experience as well as biased responses. By building this feedback loop into the development process, teams have the ability to continuously adjust algorithm parameters to eliminate potential bias or correct other flaws or issues.



The Challenges That Await and Your Ideal Solution

According to a [Dimensional Research report](#), nearly eight in 10 organizations engaged in AI and machine learning are saddled with stalled projects. The reason? The majority of respondents (96%) struggle with the volume and quality of data needed for the training process. They also face challenges with data labeling, which can erode confidence in the model.

Let's dive deeper into the thornier issues related to AI initiatives and algorithm implementations and see how Applause can help you tackle them head on:

Data collection at scale

Despite the explosion of modern-day data, sourcing enough of the right data for AI initiatives is hard and demands some creativity. For one thing, algorithms consume a lot of data. [By one estimate](#), a supervised deep learning algorithm will generally achieve acceptable performance for classification tasks when there are around 5,000 labeled data records per category. If those kinds of thresholds aren't met, an algorithm may not add any value beyond more traditional analytics.

The Applause Community can quickly collect any data set you need to properly train your AI algorithms — including inputs such as text, images, speech, handwriting, documents, intents and biometrics. All inputs from the Applause Community come from diverse data sources (e.g., varying ages, races, countries, cultures, ideologies, education levels, etc.), enabling you to achieve accurate user representation, and do so at scale.

By collecting data from a diverse set of sources, you significantly reduce the probability of bias entering your model. This, in turn, results in outputs that look, sound and feel *human* to all users.



[Gartner](#) predicts that 85% of AI projects will deliver erroneous outcomes due to bias in the data, algorithms, or the development teams working on the problems, at least through 2022.

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To match or exceed what a human is capable of, a data set should contain at least 10 million labeled examples.”

[Tech Republic](#)

Real-world testing of algorithms

Once you have sourced and labeled your data, you still need to thoroughly train and test your algorithm. When you get to this point, who are you tasking with the testing of your algorithm? Just as data can introduce bias into your algorithm, so too can the way you test it.

If you choose to test the algorithm in-house, you again run the risk of your team members introducing their own biases into their feedback. Not only that, but in-house teams are often content to take the happy path and avoid rocking the boat with critical feedback.

The Applause Community helps streamline the testing of AI/ML algorithms. Once you run the training and validation data through your model, community members can assess the viability of your pre-production build. This enables you to gauge the functionality and accuracy of the experience on any device configuration, and receive rapid and iterative feedback that reflects real end-user perspectives.

This unbiased feedback builds confidence that your algorithm is not just relevant to consumers, but also adds value to their experience. Without it, you leave your model accuracy to chance. Successful AI does not rely on chance.

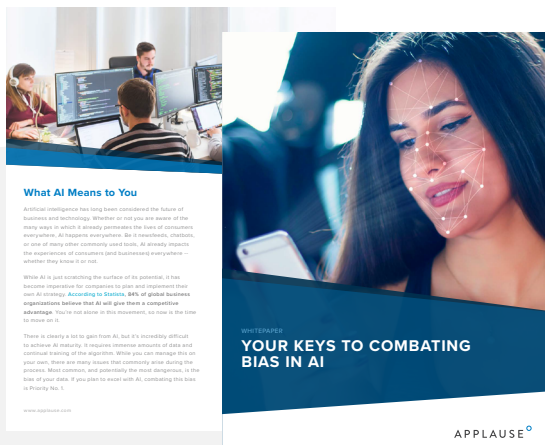
It's an exciting — and challenging — time for AI/ML development. Yet, with the right roadmap, along with access to Applause's diverse community that can streamline data set training and testing, organizations can scale the myriad hurdles and start profiting from a new era of innovation.



Internal Teams Ill-Prepared to Ensure AI Success

Only 8% of those surveyed felt their IT staff and related teams were up to the task of managing AI/ML projects.

[ZDNet and Tech Republic](#)



Your Keys to Combating Bias in AI

If you want to leverage AI, eliminating bias is priority number one

[DOWNLOAD](#)

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Thousands of leading companies — including Ford, Fox, Google, and Dow Jones — rely on Applause as a best practice to deliver high-quality digital experiences that customers love.

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