



# ML, AI & AIOps for Intelligent Observability

*The flavor of the week. The trending IT topic. A new idea that your organization needs to look at and implement as soon as possible...*

Whatever you'd like to call it, concepts like Artificial Intelligence (AI) and Machine Learning (ML) are found everywhere, and for good reason. Processing massive amounts of data to find interesting, useful, and actionable pieces of information is critical to drive better business outcomes and deliver growth opportunities for organizations. Across all industries, there's no lack of raw data available, but the value lies in doing something with it.

IT systems, applications and services generate a tremendous amount of data about their performance, availability, consumption, and use. Understanding all this data and being able to do something useful or insightful with it is a great use case. But, before talking about gaining insight from this data, it is important to start by dissect the key terms for unlocking data value and understanding how they are used (whether correctly or incorrectly) in the industry today.

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## MACHINE LEARNING

Machine Learning is defined as “a field of inquiry devoted to understanding and building methods that ‘learn’, that is, methods that leverage data to improve performance on some set of tasks. It is seen as a part of artificial intelligence.”<sup>1</sup>

In this light, this means only code or code that leverages algorithms that choose to do something different based on the data they've now processed would fit into the "machine learning" category. However, that's not how vendors and organizations are using the term. The Evolving Solutions team see the term utilized in several different ways. The most common usage of ML is as an algorithm that processes data, many times large amounts, and is able to identify some sort of pattern, trend or anomaly within the data. This differs from the definition in that it's not changing the algorithm by "learning" something from the data, but that does not mean that what it is doing is not useful.

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## ARTIFICIAL INTELLIGENCE

Artificial Intelligence is, "intelligence demonstrated by machines, as opposed to the natural intelligence displayed by animals including humans."<sup>2</sup>

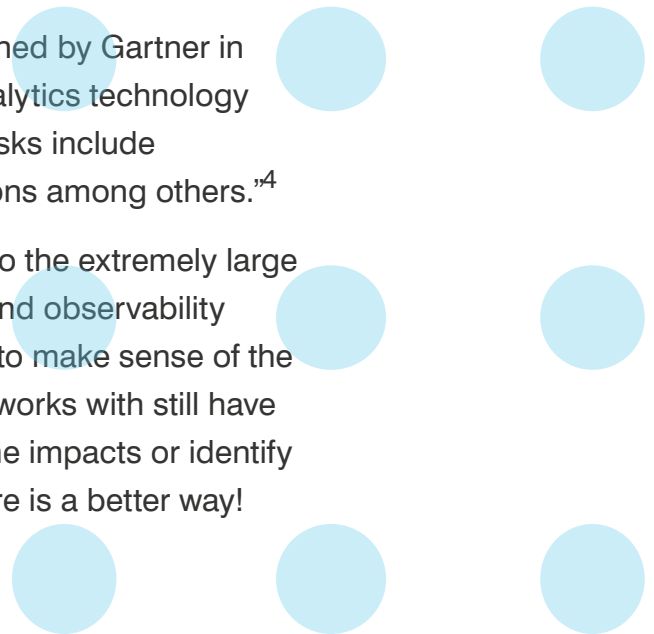
Now, obviously this quickly becomes a slippery slope. The next question then is, how do you define intelligence? While this question could drive more answers than there are grains of sand, in the end, the IT software industry is seemingly treating this very similar to how they define Machine Learning. Definitions like, "a field that combines computer science and robust datasets to enable problem-solving"<sup>3</sup> are commonplace.

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## AI Ops

AI Ops (or Artificial Intelligence for IT Operations) was coined by Gartner in 2016 as an "...industry category for machine learning analytics technology that enhances IT operations analytics. Such operation tasks include automation, performance monitoring and event correlations among others."<sup>4</sup>

Performance monitoring is specifically called out in part to the extremely large amounts of data that are being collected by monitoring and observability tools. Thus, driving the need to have a machine process to make sense of the volumes of data. Many organizations Evolving Solutions works with still have people looking at charts and graphs to come to determine impacts or identify conclusions on what may or may not be happening. There is a better way!

Several light blue circles of varying sizes are scattered in the bottom right corner of the page, serving as a decorative element.

Now with a baseline understanding of how IT software vendors are using these terms, we can begin to dig into the most common ways that AI and ML come together to form AIOps, which is a foundational tool within observability and monitoring software.

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## **BASELINE / NORMALIZATION OF DATA**

Baselining, or understanding what is normal for a particular metric value, is both one of the most common, and most necessary, uses of AI and ML within observability software. Using static thresholds for alerting does still work for metrics that don't change a lot over time. For example, it's easy to determine if a system is up or down. However, there may be more to this than meets the eye. What if the system is taken down for a restart every week on Sunday at 3:00 a.m.? A suppression rule could potentially be written to "ignore" the downtime alert. But an intelligent platform could "learn" this was a routine behavior and automatically suppress it. The latter is ideal, as there may be tasks that are happening consistently that individuals are not aware of, or tasks that constantly change and may be nearly impossible to track. In addition, metrics like usage (disk space, user traffic, etc.) lend themselves to be learned – and can vary throughout days, weeks, or months drastically – thus driving strong benefits.

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## **TREND ANALYSIS, PREDICTION & CAPACITY PLANNING**

Historically organizations have struggled to accurately identify places where additional capacity is needed within their infrastructure. This could range from the need for increased disk space to understanding when additional containers should be spun up to deal with additional load at certain times of the month. Again, static thresholds are commonly used, but are not sufficient for many reasons (small spikes aren't necessarily bad, dynamic environments change characteristics of available resources, etc.). What organizations need is a solution that helps them understand when a capacity limitation is going to impact the end-user experience or application performance or service before it actually does.

## AUTOMATED ROOT CAUSE USING HIERARCHICAL DATA

Applications and services are part of a complex, ever-changing hierarchy. They leverage processes, which may be running inside of a container, which may be running on a virtual machine, which may be running on a physical host, which may be running in a data center, etc. Understanding and leveraging this hierarchical information is critical in both suppressing alerts for downstream dependencies as well as providing automated root cause. For example, if a system, on which the front door of a service is being hosted, is having performance issues, you can rest assured there is not a database problem.

### Dynatrace

Getting started with Dynatrace is easy, start a free trial today.

## INTELLIGENT OBSERVABILITY

There are great products available that utilize the capabilities outlined above to help decrease management and increase productivity and proactiveness in today's complex, ever-changing world.

One of the platforms that Evolving Solutions commonly recommends to our clients is [Dynatrace](#). Dynatrace combines deep observability, AIOps, and application security in one open, unified platform to continuously deliver precise answers and intelligent automation from data. This allows organizations to innovate faster, with less risk; operate more efficiently and proactively; and consistently drive better business outcomes.

Since AI/ML is embedded in the [Dynatrace platform](#), it provides precise answers and enable intelligent automation.

Most organizations have the data they need to make better and quicker business decisions available within their applications and services, it just needs to be presented in a meaningful and consumable way. Observability platforms are able to collect, analyze, and help visualize this data effectively so that better business decisions can be made – more quickly than ever before.

**Evolving Solutions  
can help you leverage  
Dynatrace, let's talk**

**Contact us:**

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<sup>1</sup> Machine Learning definition, Wikipedia.

<sup>2</sup> Artificial Intelligence definition, Wikipedia.

<sup>3</sup> What is Artificial Intelligence (AI), IBM, June 2020.

<sup>4</sup> Artificial Intelligence for IT Operations definition, Wikipedia.