A Buyer's Guide To Artificial Intelligence and Machine Learning for Cybersecurity

Why Cylance Leads the Industry with Prediction and Prevention

CYLANCE™

The Death of Traditional AV

Traditional antivirus (AV) is dead. After decades of little innovation and diminishing threat protection, the industry can no longer protect in the modern threat landscape. In the wake of failed traditional software, Cylance has led an artificial intelligence (AI) and machine learning revolution in cybersecurity.

Now the industry is playing catch-up by claiming to add machine learning to their legacy offerings. To understand why **Cylance** is superior to anything in the marketplace, and why it's **the only solution that predicts and prevents** threats, you need to look at its people and innovation.

Data Science

Cylance, at its core, is **a security company dedicated to data science**. Cylance employs a large staff of world-class researchers, engineers, and data scientists focused on innovation. Rather than building traditional products and technology layers, Cylance experts are busy creating the next digital revolution in cybersecurity.

Cylance has a higher percentage of Ph.D. data scientists in its development organization than any other endpoint protection vendor.

Real Machine Learning

Legacy and '**next-gen**' providers offer limited machine learning — but they **still require** some form of **human generation of signatures**.

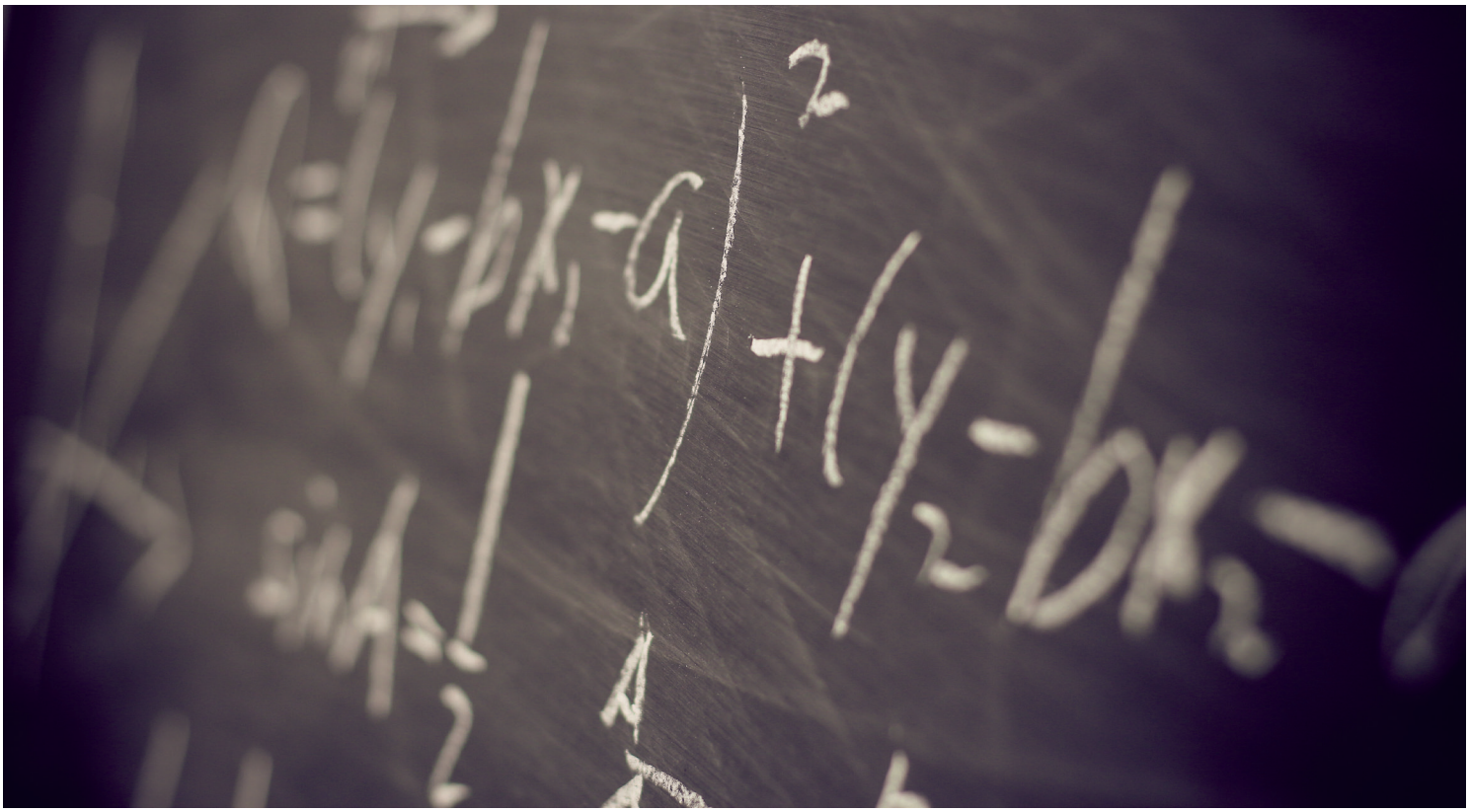
In addition, solutions from other vendors only examine a few hundred features, compared to **30 million features from Cylance**. Moreover, other vendors focus on 'in-the-wild' samples from only the most recent 30-day sample. Cylance detects mature malware as well as newly mutated samples because its machine learning does not rely on humans or signatures and examines millions of features.

More Training, Testing, and Validation

Cylance invests up to **six months to train and validate each model**. Cylance builds and refines data and models that outperform their predecessors.

Cylance uses more:

1. **Data —** Cylance trains petabytes of good and bad files on orders of magnitude more than anyone else
2. **Features —** Cylance employs **over 30 million** features and concentrates on five to seven million that are highly relevant
3. **Training —** Cylance trains models until only the highest quality remain
4. **Validation —** Cylance runs rigorous testing to measure prediction capability and field operational characteristics
5. **Feedback —** Cylance applies multiple feedback loops to the cycle



Below are a few examples of types of machine learning, citing some of the pros and cons of each.

Machine Learning Type	Pros	Cons
Decision tree learning	▪ Fast ▪ Stands up well against 'noise' and missing values ▪ Accurate	▪ Can be highly complex
K-Nearest neighbors	▪ Simple ▪ No training required ▪ Handles multi-class classification and regression	▪ Slow to predict new instances ▪ Requires definition ▪ Expensive computational costs ▪ High-dimensional data ▪ Training data must ship with model
Artificial neural networks	▪ Extremely powerful and flexible ▪ Can model very complex relationships	▪ Requires long training times ▪ Significant computer power required
Support vector machines	▪ Complex model ▪ Non-linear Relationships ▪ Robust to noise, (clear mathematical interpretation)	▪ Requires a good kernel provided by a human expert
Linear regression	▪ Very fast ▪ Model is easy to understand	▪ Unable to handle complex relationships in low dimension

Cylance vs. Other Methods

Cylance's technology is based on a neural network algorithm because of its ability to mimic the structure and functional aspects of biological neural networks. Essentially, it works like a human security expert's brain. The neural networks built and used by **Cylance are designed to self-learn**.

The Cylance AI Difference

Cylance customers, around the world and in every industry, have proven that Cylance AI and machine learning work. Every day they **save time, money, and resources**. They use Cylance machine learning, not signatures and humans, to dissect malware down to its DNA-code level. Cylance AI then determines if the code is safe to run.

Cylance AI is:

1. **Field portable —** runs entirely on the endpoint (no "cloud" required)
2. **Fully autonomous —** decision making is completely done through machine learning
3. **Light weight —** uses only a fraction of system resources, unlike the competition
4. **Simple —** elegant innovation, yet easily configured and deployed

+1-844-CYLANCE
sales@cylance.com
www.cylance.com
18201 Von Karman Avenue, Suite 700, Irvine, CA 92612

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