



neurothink™

neurothink wants to remove complexity from AI/ML by providing industry-leading compute and virtualization resources in a secure, customizable and automated workflow.

Industry

Technology

Strategic priorities

- Multi-Cloud

Partner

Sterling is an award-winning technology solutions provider with over two decades of helping customers solve the most complex requirements of their IT environments.

VMware footprint

- VMware® Cloud Foundation™
- VMware Tanzu® Kubernetes Grid™ Integrated Edition
- VMware Tanzu Observability™ by Wavefront
- VMware Carbon Black Cloud™
- VMware vSphere® BitFusion®

neurothink Takes Machine Learning Mainstream

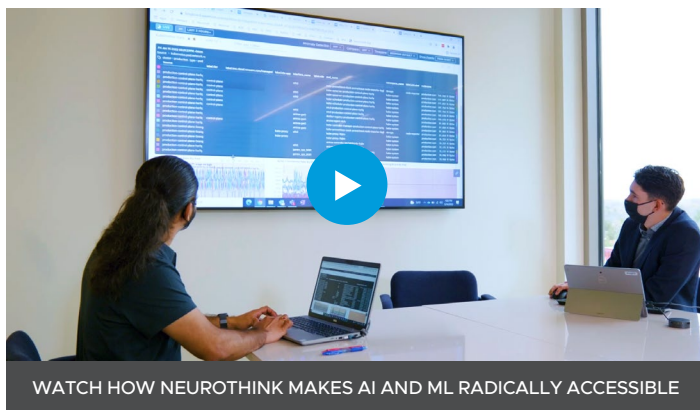
The barriers for entry into machine learning (ML) are high. Platforms that support ML are typically fragmented and access to the most powerful GPUs is scarce. Creating and training models poses a steep learning curve. neurothink is making ML “radically accessible,” starting with data scientists, and building an environment for them to do their best work. VMware Carbon Black Cloud, VMware Tanzu Kubernetes Grid Integrated Edition and VMware vSphere BitFusion enable neurothink to deliver a capable, reliable, efficient and cost-effective ML-as-a-Service product.

Expanding access to AI and machine learning

Artificial intelligence (AI) and ML have recently begun to move from the rarefied world of universities and labs onto the shop floor and into the office. But daunting challenges remain, limiting access for those who lack the engineering background to use the technology or maintain the infrastructure to support it. Recognizing these barriers were preventing a broad spectrum of visionaries from harnessing the power of AI and ML, neurothink decided to make these technologies ‘radically accessible’ to unleash the creativity of countless innovators.

“The beauty of the VMware engagement is that it gives us a one-stop-shop for everything we need for our ‘radically accessible’ platform. We can then make the platform secure, automated and fractionalized, from the hardware to the containers.”

Charles Donly, COO, neurothink



Comparing the democratization of AI/ML to the dramatic changes sparked by the advent of the assembly line, neurothink COO Charles Donly says, “The combustion engine was an amazing invention, but innovation needs reach. It was only with the arrival of Ford’s production line, and the Model T, that the automobile started to revolutionize our lives. Fundamentally, the platform is about giving everyone—including data scientists—a better experience.”

To deliver ML-as-a-Service (MLaaS) to a broad audience, neurothink created an end-to-end environment to equip users with the tools to easily build, train and deploy AI models. The solution provides a workflow that is secure, automated and customizable.

The US start-up plans to expand access to the data science discipline, transforming AI with efficient access to the most powerful compute resources for scientists and providing an everyday tool for enterprises, students and hobbyists. With lower barriers to access, machine learning can be harnessed for projects ranging from mapping the ocean floor and understanding traffic patterns to determining the ideal site to erect a windmill.

“We’ve been able to access expert resources across VMware. That has enabled us to test faster and scale with our start-up resources.”

Charles Donly, COO, neurothink

Enterprise-ready on start-up resources

To deliver on its promise to make AI/ML more accessible, neurothink needed an automated, efficient platform, delivering huge amounts of compute power in a secure environment. Seizing first-mover advantage depends on getting to market quickly, so neurothink needs a superior product. The company has one shot at getting its debut right.

“You have to have a stable, robust platform if people are to do their best work,” says Donly. The challenge is to present an enterprise-capable platform built on start-up resources. To deliver, neurothink needs automation, an agnostic approach to hardware, and simple vendor relations.

“We’re not competing with the likes of Amazon or Google,” says neurothink founder and CEO, Brian Rogers. “We are first and foremost a MLaaS platform, not a cloud service provider with an added MLaaS application, which greatly reduces the complexity of using our platform. To begin, we want to build our name with respected companies in the AI/ML community. It’s important we find the right people to partner with in the early stages.”

Akhilesh Miryala, senior cloud architect at neurothink, says partnership means more than brand status or product roadmap. With a small team, round the clock support and access to technology experts are essential. “We knew the platform would require a complex, integrated stack of technologies. We wanted to be able to reach out to a single support channel. This would increase the speed and accuracy of issue resolution.”

Creating shared resources

The VMware engagement is built on VMware Cloud Foundation, enabling neurothink to manage virtual machines and container-based workloads with ease. Specifically, the solution includes VMware Carbon Black Cloud to deliver visibility into the software stack; Tanzu Kubernetes Grid Integrated Edition for container-based workloads; and VMware vSphere BitFusion to virtualize hardware accelerators such as graphical processing units (GPUs) to provide a pool of shared, network accessible resources.

The VMware solution provides the secure compute power to enable neurothink customers to customize the environment to their needs.

“Without VMware it would have been impossible to virtualize and fractionalize our GPUs. This is incredibly important for our users,” says Rick Rodriguez, the company’s infrastructure manager. “Carbon Black is monumental. It provides visibility, from endpoint to container, giving us a clear eye on security intrusions.”

High performance is vital for neurothink, as any downtime or disruption can quickly affect the user experience and cause reputational concerns. VMware Tanzu Observability proactively monitors the company’s infrastructure servers, identifying issues quicker and enabling neurothink to resolve them before they impact performance. “VMware Tanzu Observability helps us enormously in how we deal with these issues,” explains Miryala.

The solution was deployed with support from Sterling, a VMware Partner. “They were instrumental in helping us get this off the ground so quickly,” says Rodriguez. “Sterling’s expertise with Tanzu helped us overcome several technical hurdles.”

“GPU fractionalization is the new frontier,” says Miryala. “If we are to be at the forefront of ML-as-a-Service, we need to be at the forefront of this technology. VMware vSphere BitFusion allows us to fractionalize a single GPU for multiple teams. And when they’re done using it, it comes back into the pool. VMware Cloud Foundation creates a key differentiator for us.”

“VMware Carbon Black Cloud is monumental. It provides us with visibility, from endpoint to container, giving us a clear eye on security intrusions.”

Rick Rodriguez, Infrastructure Manager, neurothink

Uncovering life-changing breakthroughs

The engagement with VMware allows neurothink to launch with a secure, scalable platform that accommodates diverse users and workloads. Users are not required to install anything on their own computers.

“The combination of VMware technologies enables us to better manage the platform,” explains Rogers. “It allows users to create their own models, or to choose a model that has already been developed. Taking ML into the mainstream will spawn further innovation.”

By empowering organizations to avoid buying and maintaining their own compute power—and seeing this capacity underutilized for most of the time—neurothink expects the platform to be transformational.

“We know that, traditionally, 85 percent of GPU resources stand idle, and only 20 percent of models make it to production. That is an overall success rate of two percent,” says Donly. “We can get that utilization up from 15 percent to more than 90 percent.

“That performance means we can bring down the cost of machine learning, and customers can increase their rate of gains in the factory or business operations. That is the benefit of building the entire platform from hardware to user experience.”

Early adopters include testers of autonomous vehicles, cancer researchers and organizations studying manufacturing processes. The breakthroughs they make will deliver world-changing benefits.

“It will certainly accelerate the use of digital twins,” says Rogers. “Where users create a digital duplicate of a real-world scenario and run new patterns on it.”

It would have been impossible to build the platform inhouse or knit together components from different vendors. This would have required hiring additional resources and created delays in launching. “The cost would have been two-to-three times the value of the overall start-up investment,” Donly says. “We’ve been able to offload this expertise to VMware.”

Looking ahead

The neurothink platform will be a key component to moving ML into the mainstream. The organization is working with universities to encourage new ways of adopting AI and ML. “We want to build a community around the subject of data science,” Rogers says. “We believe we can encourage the sharing of ideas, create a library of data sets, and demonstrate how users can build on existing models.

“VMware is the right partner for us. It brings us technology expertise in a fast-changing environment, and it welcomes our feedback. We feel our experience can help influence the next round of VMware innovation.”