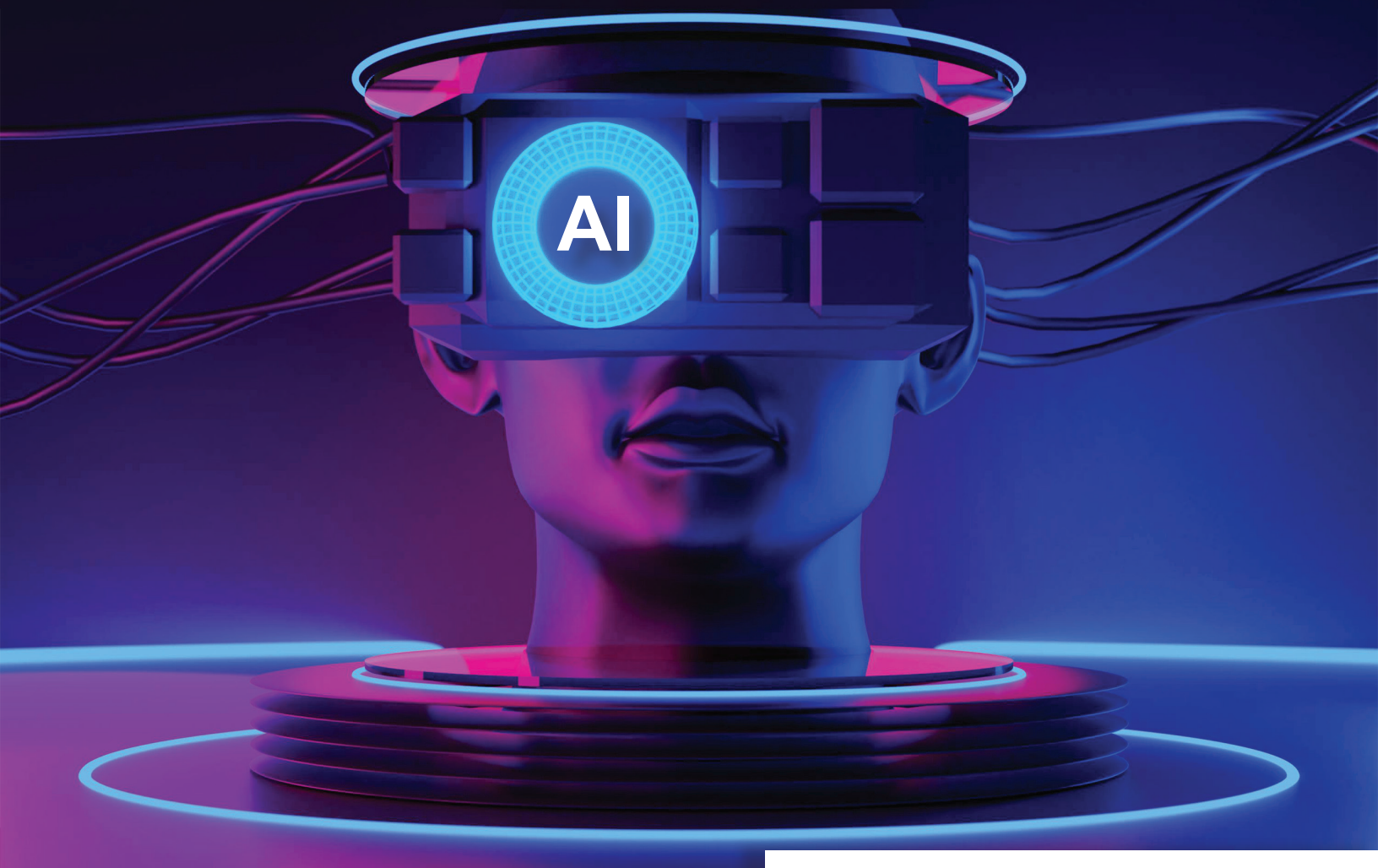


Unraveling the Mystery of **ARTIFICIAL INTELLIGENCE**

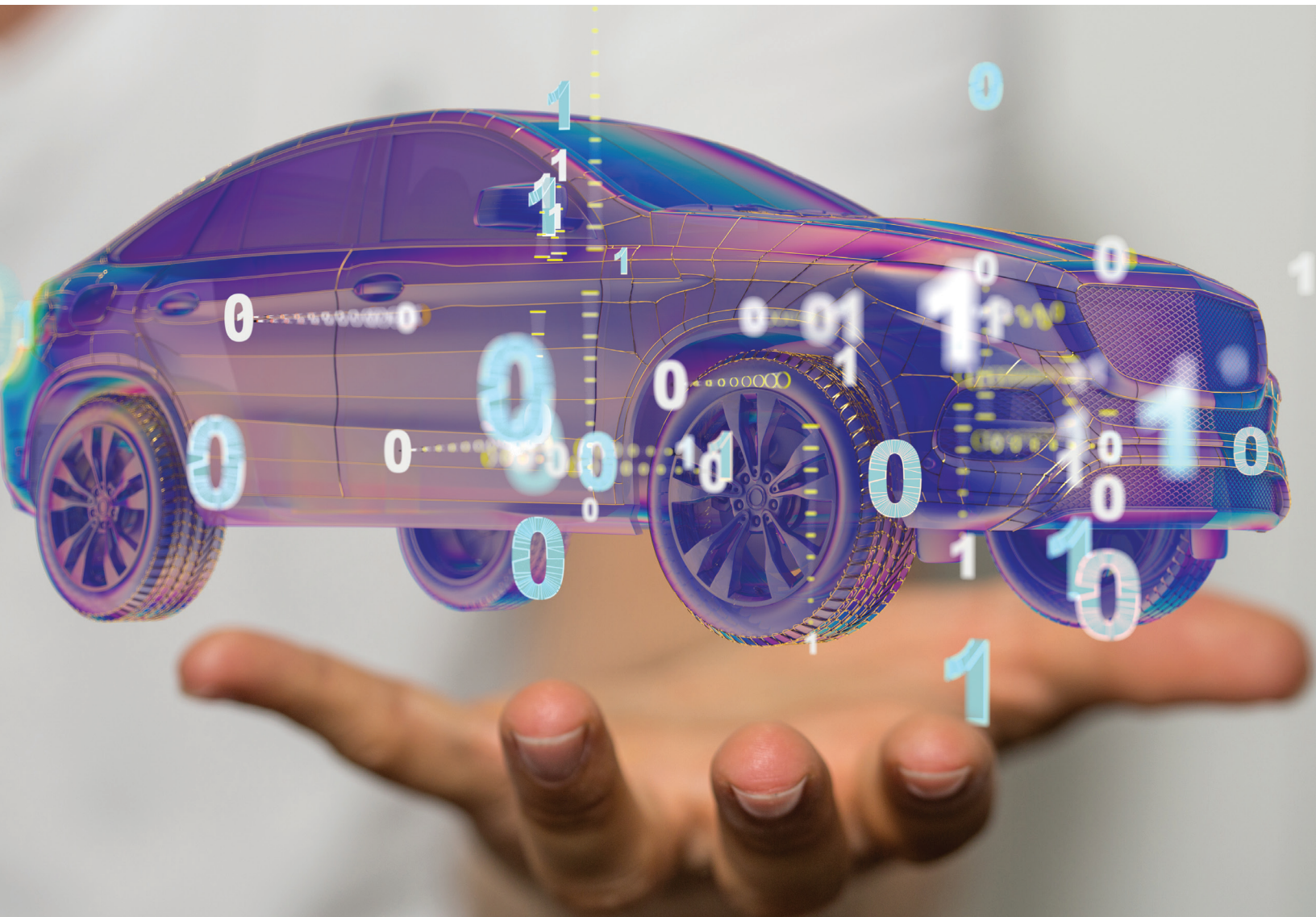
Understanding the landscape of AI-driven business solutions

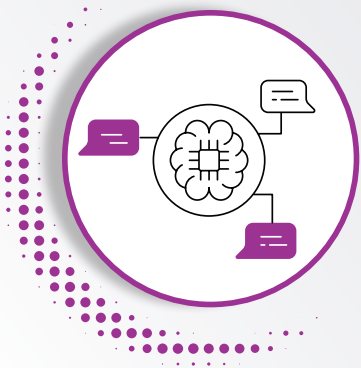


What Exactly is Artificial Intelligence?

Artificial Intelligence, commonly known as AI, refers to the ability of machines to do tasks that usually require human expertise. This can range from recognizing images, interpreting speech, making decisions, and creating new text or images. Rather than being just a single technology, AI is a fusion of software and hardware that paves the way for innovative solutions, impacting both our personal and professional lives.

AI solutions come in a wide range of forms and functionalities. However, at their core, they all depend on similar technological foundations. It all revolves around three critical processes - Modeling, Training, and Inferencing. To make this easier to understand, let's liken it to someone learning to drive a car.





FOUNDATION OF AI – MODELS

Imagine you are learning to drive. First, you need to understand the rules, signs and responsibilities outlined in driver's manuals. You also learn from experiences gained as a passenger, observing traffic patterns and road conditions. This is like creating an **AI Model (Modeling)**. It involves gathering, processing and merging a vast range of information. Just like driving a car is a specialized skill, AI models are designed for specific tasks such as language processing or visual recognition.



FINE-TUNING SKILLS – TRAINING

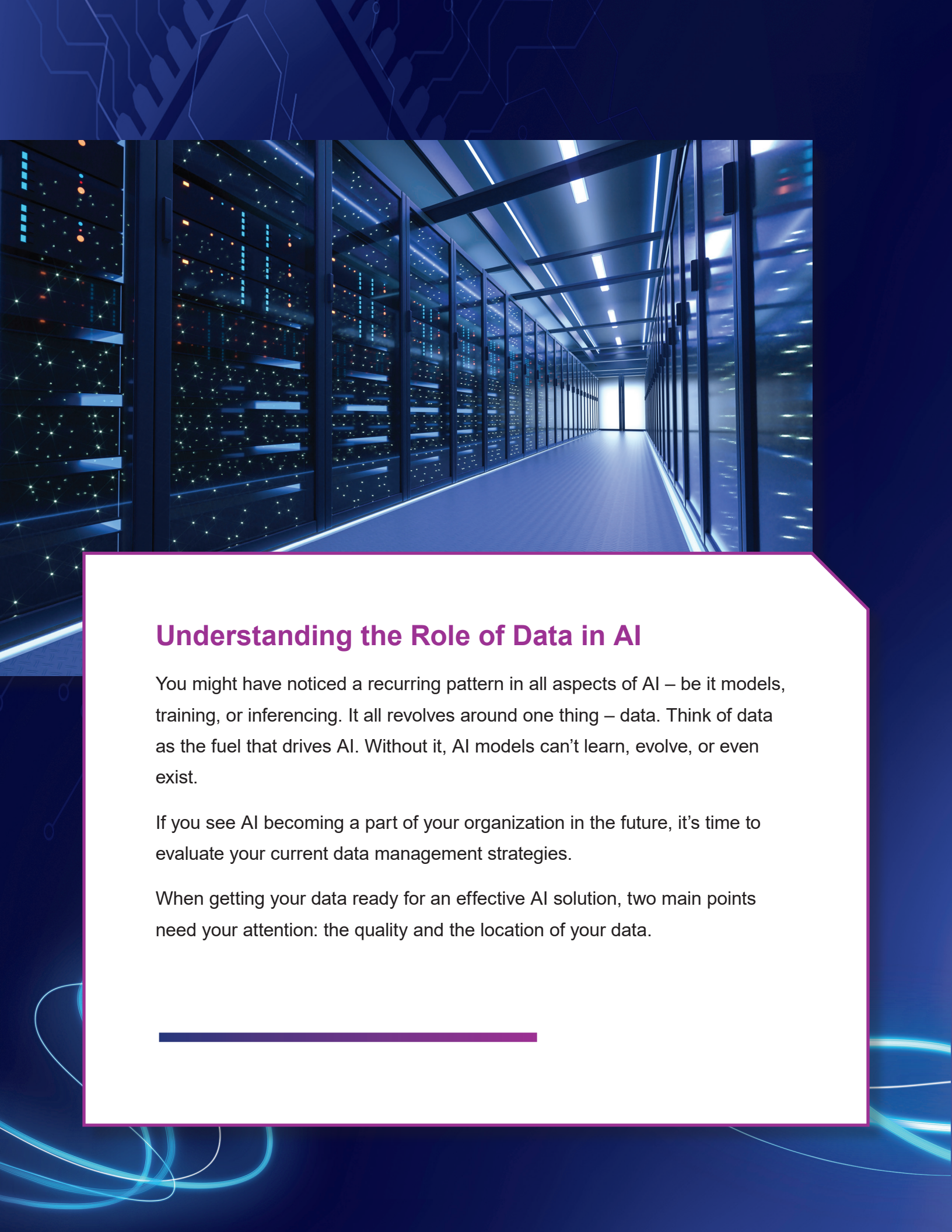
Now, picture yourself learning to drive a semi-truck or a motorcycle. A new set of rules and skills are required. Finetuning your driving skills and knowledge to be successful in these specific vehicles is similar to **AI Training**. The foundational AI model is optimized to perform specific tasks more efficiently. For instance, the GPT model can be trained towards customer support, enhancing its ability to generate useful responses to customers' questions.



REAL TIME DECISION MAKING – INFERENCE

Finally, you're on the road, making real-time decisions based on the weather, road conditions, other drivers and more. This is what we call **Inferencing** in AI. It's about using new data to make predictions based on the trained model. It's the point where the customer support AI bot understands the customer's question and gives a suitable answer.

In a nutshell, the journey of AI goes through modeling, training, and inferencing just like learning to drive, mastering a new vehicle and finally taking the wheel.



Understanding the Role of Data in AI

You might have noticed a recurring pattern in all aspects of AI – be it models, training, or inferencing. It all revolves around one thing – data. Think of data as the fuel that drives AI. Without it, AI models can't learn, evolve, or even exist.

If you see AI becoming a part of your organization in the future, it's time to evaluate your current data management strategies.

When getting your data ready for an effective AI solution, two main points need your attention: the quality and the location of your data.

Understanding Data Quality

The quality of data used for an AI solution can have a profound impact on training, speed, and accuracy of outcomes.

To assess your data quality, a few essential characteristics should be considered:



Relevance: It is imperative that your data aligns with your AI solution. For instance, if you're working on a facial recognition AI, your data should consist of face images, not pictures of cars or animals.



Variety: A diverse data set that encompasses numerous scenarios and circumstances the model might encounter is crucial. Using our facial recognition AI example, your data set should include faces of diverse age groups, genders, races, expressions, and under different lighting conditions.



Accuracy: Data integrity is key. It should be error-free, noise-reduced, and unbiased. In case your data is labeled, these labels must accurately reflect the actual content, avoiding any misleading or incorrect information.



Value: It's not just about having data; it's about having valuable data. The data's usefulness and pertinence determine its value to both the AI model and the organization. For instance, data that propagates customer satisfaction, increases revenue or enhances efficiency is more prized than data that merely provides insights or feedback.

Understanding Your Data's Location



The location where you store your data can have a profound impact on how well your AI system performs. Whether your organization uses on-premises, cloud, or a combination of the two (hybrid) for data storage, some AI solutions are more flexible regarding data location.

Here are some data location characteristics you need to keep in mind:



Quantity: Successful AI training and inference heavily rely on the volume of data at disposal. Usually, the more the data, the better the outcomes, as the model can learn from a multitude of examples and get better at generalizing. However, having more data also necessitates more storage, bandwidth, and processing power, which may inflate costs for cloud or hybrid AI solutions.



Speed: The velocity at which your data is generated and consumed by the model matter. Certain applications require instant or near-instant data, such as autonomous vehicles or video streaming. On the other hand, other applications like email filters or recommendation systems can work with delayed or batch processing. Your AI solution's velocity needs will be a key determinant of the best place to store and process your data.



Security: Data protection is a critical aspect of AI model usage. Your organization's data, used to train and inference, needs to be secure. Bear in mind that the security of your data is only as strong as the weakest link in your model. This is why professional guidance is essential when considering any AI implementations.

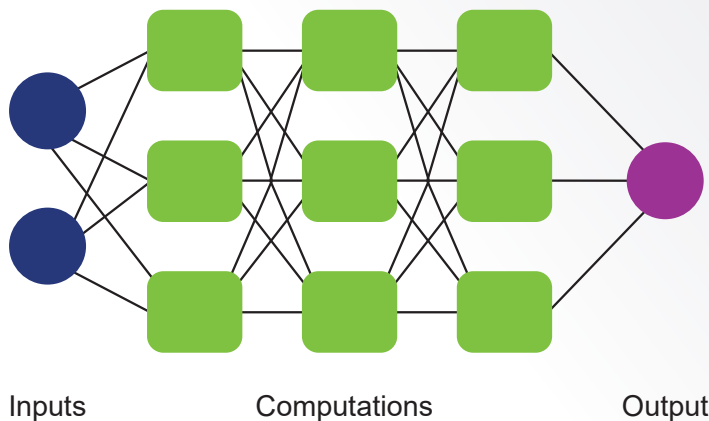
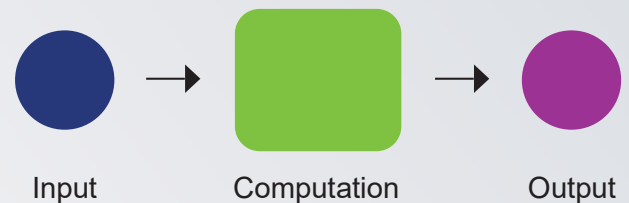
If you would like to discuss your organization's data with one of our experts, please contact us!

Hardware Behind AI

Playing with an AI chat program or image generator on your phone or computer is instant. But did you know, that's not your device doing all the work? Your AI prompt was sent to a server to do the processing. If your device was left to handle it all, you'd be waiting a lot longer - we're talking several minutes per request here!

Traditional CPU Computation

AI calculations work in a completely different way to your usual software calculations. Most software today gives direct instructions to the CPU. This is where a CPU excels - it takes an input, performs a computation, and creates an output.



Neural Network Computation

AI computations utilize a structure known as a neural network. At a very high level, this method of calculation takes multiple inputs and bounces them against different nodes that contain information that helps decipher the inputs and “solve” for the best answers.

GPUs introduced the idea of efficient parallel processing – processing mostly identical, simultaneous operations across multiple data points. That makes them better suited to computing AI tasks than CPUs. This increased speed comes at a cost – GPUs are generally more expensive than CPUs and require significantly more electricity to run. More recently, CPU manufacturers such as AMD, Intel, and Qualcomm have integrated Neural Processing Units (NPUs) into their CPU architecture. NPUs were designed from the ground up to be ultra-efficient at AI calculations. They use less electricity for AI tasks and free up your computer's CPU and GPU to tackle the tasks they are most efficient at.



What Types of Devices Can Enable AI?

End User Devices: AI-enabled laptops, tablets and desktops are being released by most major computer manufacturers like Dell, HP and Asus. These devices will be called AI PCs or Copilot+ PCs. This means they have hardware that is designed to run AI workloads efficiently directly on the device without excessive battery drain. These AI workloads will generally be inferencing workloads – using an existing trained model to provide you with an output – like a chat assistant or image generation.

Workstations: Workstations are high-performance computers used by professionals such as data scientists, engineers, and designers. AI workloads here are more intensive and may involve training smaller machine learning models, running simulations, or analyzing large datasets. These machines offer more power and flexibility than standard end-user devices, making them ideal for development and experimentation.

Servers: Servers handle the most demanding AI workloads, such as training large-scale models, processing massive amounts of data, and supporting AI-powered services for many users at once. These are typically located in data centers and provide the backbone for cloud-based AI applications like chatbots, recommendation engines, and fraud detection systems.

Edge Devices: Edge devices are located close to where data is generated—such as cameras, sensors, or industrial machines—and run AI models locally to make quick decisions without needing to send data to the cloud. This is especially useful in environments where speed, privacy, or connectivity is a concern, such as in manufacturing, healthcare, or autonomous vehicles. For example, Lexmark's Optra devices can be trained to perform a variety of AI functions at a very reasonable cost.



AI Software

Imagine a future where your daily tasks are streamlined and enhanced by Artificial Intelligence (AI). This future is happening right now. Many familiar applications are quietly embedding AI features into their software. A notable example is Microsoft's inclusion of Copilot, their AI assistant, in recent Windows releases.

Even so, remember to stay vigilant. When new updates roll out, always check the revised security and data processing agreements. It's crucial to know how these apps will use, and more importantly, safeguard, your data.

But AI's benefits extend far beyond enhancing existing software. Many companies are now turning to bespoke AI solutions. These custom-made implementations target specific challenges within an organization, offering improved utility, efficiency, security, and integration.

Who brings these AI innovations to life? Independent Software Vendors (ISVs). ISVs design unique software solutions. They specialize in creating software that functions across different hardware and software environments, focusing on solutions or industries.

To learn more about the practical and industry use cases for AI software solutions, we've compiled some unique use-cases.



The following chart reviews AI capabilities by industry:

Healthcare

- Enhanced Diagnostics
- Patient Care Experience
- Enhanced HIPAA Compliance

Education

- Teacher Assistance
- ESL/Real Time Translations
- Curriculum and Lesson Planning
- Security

Finance

- Algorithmic Trading
- Customer Support
- Risk Assessment
- Fraud Monitoring

Retail

- Customer Experience
- Supply Chain
- Shrinkage Protection
- Loyalty Programs
- Marketing

Government

- Military Applications
- Smart City Design
- Data Analysis
- Resident Outreach

Energy

- Smart Grids
- Operational Improvement
- Conservation Efforts

Automotive

- Autonomous Cars & Trucks
- Supply Chain
- Safety

Manufacturing

- Automation
- Quality Assurance
- Maintenance
- Materials Planning

Communications

- Customer Service
- Performance Optimization
- Automate Maintenance
- Threat Monitoring

The following chart reviews AI capabilities by functionality:

Machine Learning (ML)

- Analyze data and make predictions
 - » Sales trends
 - » Customer behavior
 - » Equipment health
- Algorithms for personalizing recommendations
 - » Sales recommendations
 - » Content preferences
 - » Experiences

Natural Language Processing (NLP)

- Chatbots
 - » Customer Support
 - » Lead Prospecting
 - » Written or Verbal
- Virtual Assistants
 - » Automate responses
 - » Summarize content
 - » Suggest Action Items
- Sentiment Analysis

Computer Vision

- Image recognition
 - » Inventory management
 - » Quality Control
 - » Facial Recognition
- Crowd Management & Planning
- Security

Generative AI

- Content Creation
 - » Text
 - » Images
 - » Video
 - » Music
- Data Augmentation
 - » Synthetic Data for training or testing AI models



Concerns About AI

Embarking on your journey towards implementing AI might trigger some concerns for you and your business. This is not uncommon, but we are here to tackle some of the most common worries head-on.

First, the Resources.

We understand that implementing AI might seem like a hefty investment, especially for small to medium-sized businesses. There are costs associated with acquiring technology, training staff, and maintaining systems. But, when you consider the potential benefits of an AI solution, it's more an investment than an expense. The long-term savings and improved performance resulting from AI can far outweigh the initial costs. We believe in starting small with pilot projects and scaling up as you see the value. Many AI solutions offer scalable pricing models, letting you grow at your own pace. Our experts are ready to help you plan a realistic course for deploying AI.

Next, Let's Talk About Security.

Obviously, with AI handling sensitive data, security is a top priority. In addition to data breaches and cyber-attacks, some AI solutions use provided data to train their models which could be a vector for leaking sensitive information. Ensure your data safety is paramount. Implementing robust security measures and working with trusted AI providers can help mitigate these risks. As your trusted IT partner, we will help you identify potential vulnerabilities and provide alternate solutions. Regular audits, encryption, and compliance with industry standards are essential in ensuring a successful AI implementation.



Finally, the Complexity and Integration of AI Can Seem Daunting.

The fear of disrupting current operations is real. However, our experts can help you start with achievable goals and guide you through the process. Many AI solutions are designed to work smoothly with existing systems. Training and support for your team will ensure they are well-prepared and confident in using new tools.

Would You Benefit From AI?

Are you considering the power of AI for your business? It's worth noting, AI isn't a one-size-fits-all solution. The first step is deciphering which business hurdles you hope to conquer. Whether your team is overwhelmed with monotonous tasks, customer service isn't up to par, or you're drowning in data, AI could be a transformative solution. But how will you measure this success? Time saved, heightened customer satisfaction, less mistakes - these are all potential indicators of a well-attended hurdle.

However, every AI solution comes with its own set of demands - time, resources, and training are all part of the package. That might mean updating your existing tech, examining your data quality, or upskilling your team. Assessing these needs can carve a clear path to implementing AI. You might not be ready for implementation right now, but this year could be the perfect time to phase in some foundational changes, like enhancing data storage or quality.

Preferred AI Solutions from:

AMD

ASUS

DELL
Technologies



intel

logitech

Microsoft

optra
edge

Qualcomm

VERTIV

The journey to AI is manageable with the right partner at your side. We work with the industry leaders in developing AI solutions. Contact us today to set up a free consultation and tech readiness assessment.

Let's unlock the potential of AI for your business, together.