**How is artificial intelligence applied?**

https://www.innoplexus.com/blog/how-artificial-intelligence-works/

Popular misconceptions tend to place AI on an island with robots and self-driving cars. However, this approach fails to recognize artificial intelligence’s major practical application; processing the vast amounts of data generated daily.

By strategically applying AI to certain processes, insight gathering and task automation occur at an otherwise unimaginable rate and scale.

Parsing through the mountains of data created by humans, AI systems perform intelligent searches, interpreting both text and images to discover patterns in complex data, and then act on those learnings.

**What are the basic components of artificial intelligence?**

Many of AI’s revolutionary technologies are common buzzwords, like “natural language processing,” “deep learning,” and “predictive analytics.” Cutting-edge technologies that enable computer systems to understand the meaning of human language, learn from experience, and make predictions, respectively.

Understanding AI jargon is the key to facilitating discussion about the real-world applications of this technology. The technologies are disruptive, revolutionizing the way humans interact with data and make decisions, and should be understood in basic terms by all of us.

**Machine Learning | Learning from experience**

Machine learning, or ML, is an application of AI that provides computer systems with the ability to automatically learn and improve from experience without being explicitly programmed. ML focuses on the development of algorithms that can analyze data and make predictions. Beyond being used to predict what Netflix movies you might like, or the best route for your Uber, machine learning is being applied to healthcare, pharma, and life sciences industries to aid disease diagnosis, medical image interpretation, and accelerate drug development.

**Deep Learning | Self-educating machines**

Deep learning is a subset of machine learning that employs artificial neural networks that learn by processing data. Artificial neural networks mimic the biological neural networks in the human brain.

Multiple layers of artificial neural networks work together to determine a single output from many inputs, for example, identifying the image of a face from a mosaic of tiles. The machines learn through positive and negative reinforcement of the tasks they carry out, which requires constant processing and reinforcement to progress.

Another form of deep learning is speech recognition, which enables the voice assistant in phones to understand questions like, “Hey Siri, How does artificial intelligence work?”

**Neural Network | Making associations**

Neural networks enable deep learning. As mentioned, neural networks are computer systems modeled after neural connections in the human brain. The artificial equivalent of a human neuron is a perceptron. Just like bundles of neurons create neural networks in the brain, stacks of perceptrons create artificial neural networks in computer systems.

Neural networks learn by processing training examples. The best examples come in the form of large data sets, like, say, a set of 1,000 cat photos. By processing the many images (inputs) the machine is able to produce a single output, answering the question, “Is the image a cat or not?”

This process analyzes data many times to find associations and give meaning to previously undefined data. Through different learning models, like positive reinforcement, the machine is taught it has successfully identified the object.

**Cognitive Computing | Making inferences from context**

Cognitive computing is another essential component of AI. Its purpose is to imitate and improve interaction between humans and machines. Cognitive computing seeks to recreate the human thought process in a computer model, in this case, by understanding human language and the meaning of images.

Together, cognitive computing and artificial intelligence strive to endow machines with human-like behaviors and information processing abilities.

**Natural Language Processing (NLP) | Understanding the language**

Natural Language Processing or NLP, allows computers to interpret, recognize, and produce human language and speech. The ultimate goal of NLP is to enable seamless interaction with the machines we use every day by teaching systems to understand human language in context and produce logical responses.

Real-world examples of NLP include Skype Translator, which interprets the speech of multiple languages in real-time to facilitate communication.

**Computer Vision | Understanding images**

Computer vision is a technique that implements deep learning and pattern identification to interpret the content of an image; including the graphs, tables, and pictures within PDF documents, as well as, other text and video. Computer vision is an integral field of AI, enabling computers to identify, process and interpret visual data.

Applications of this technology have already begun to revolutionize industries like research & development and healthcare. Computer Vision is being used to diagnose patients faster by using Computer Vision and machine learning to evaluate patients’ x-ray scans.

**Additional Supporting technologies for Artificial Intelligence**

* + Graphical Processing Units or GPUs are a key enabler of AI, providing the massive computing power necessary to process millions of data and calculations quickly.
  + The Internet of Things, or IoT, is the cumulative network of devices that are connected to the internet. The IoT is predicted to connect over 100 billion devices in the coming years
  + Intelligent data processing is being optimized using advanced algorithms for faster multi-level analysis of data. This is the solution to predict rare events, comprehending systems and unique situations.

With the integration of Application Processing Interfaces or APIs, aspects of artificial intelligence can be plugged into existing software, augmenting its normal function with AI.

**Artificial Intelligence is a diverse topic**

As we have learned, AI is describing a set of different technologies. Each of these technologies require detailed explanation. Staying up to date and understanding the differences of these technologies is a difficult task. Keep up with the latest changes and stay tuned for our upcoming posts.