

Friends, Romans, Countrymen

What's the Difference?

2017 will shape up to be a big year for machine intelligence. As exciting as the hype has been in 2016, the commercial potential of machine intelligence will start to be realized as non-technical executives understanding of machine intelligence converges with the entrepreneurs and data scientists' ability to clearly communicate the business value of their tools. And the first step to communicating clearly is to define an industry standard vocabulary that can be used as a platform for business exchange.

The History:

Machine Learning efforts date back to 1954. The concept, if you don't know how to program a computer to do something see if it can figure it out itself. Initial efforts focused on learning Checkers by having a computer playing against itself several thousand times.

The Differences:

Artificial Intelligence – Machines that have all our senses, all our reason, and can think just like we do. Think of C-3PO and The Terminator. For now, Artificial Intelligence is still Science Fiction.

Machine Intelligence – sub-set of Artificial Intelligence. An emerging field. Machine Intelligence does not need to know what it is looking for and can model 'normal' patterns from data streams instead of data sets. This allows it to learn continuously as data changes to provide outputs that represent predictions, anomalies, detections and classifications.

Machine Learning – sub-set of Machine Intelligence. Machine Learning needs to know what it is looking for and learns from large labelled data sets. The machine is 'trained' not by a human expert hand-coding software routines but through the use of algorithms to parse large amounts of data that give it the ability to learn, and then make a determination or prediction about something in the world¹.

Deep Learning – sub-set of Machine Learning. Uses artificial neural networks, inspired by our understanding of the biology of our brains, to come up with a 'probability vector' on how correct the output is. Deep Learning requires massive amounts of data to run through the system for it to extract complex patterns to learn from. Deep learning has successfully addressed problems such as image classification (e.g. face recognition on Facebook) and language translation.

Big Data – data that refers to large volumes and variety of information, including images, text, transactions, mapping data, voice etc. Big Data is typically differentiated from traditional enterprise sets of data by the volume of its structured and unstructured data, the velocity by which it changes and the processing capacity it requires.

Robotic Process Automation (RPA) – Use of software with Machine Learning capabilities to perform repeatable tasks that previously required a human to perform. What distinguishes RPA from traditional Rules-Based IT Automation is RPA software's ability to be aware and adapt to changing circumstances,

¹ Michael Copeland, Nvidia <https://blogs.nvidia.com>

exceptions and new situations. Once RPA software has been trained to capture and interpret the actions of specific processes in existing software applications, it can then manipulate data, trigger responses, initiate new actions and communicate with other systems autonomously².

Rules-Based Automation (RBA) – Rules-Based Automation requires upfront programming and configuration by IT and works well if the underlying business process and data sources never change. When the process or sources change, IT must re-write the rules. Scrapers, optical character recognition (OCR), and parsers are common rules-based automation (RBA) point solutions. Since change is the only constant in business, it's virtually impossible to program every potential variable in a data process or account for variations in the formats of PDFs, websites, and other unstructured sources.

Workforce Automation – server based software that oversees a hybrid workforce of humans and machines to achieve an outcome.

Autonomic Computing – is a self-managing computing model that controls the functioning of distributed computer applications and systems (i.e. the network infrastructure) without input from the user. In general, autonomic systems may be considered as monitor-analyze-plan-execute loops where machine learning can be used in the analyze and plan stages. As an example, autonomic computing is used in Peer to Peer systems used for social networking (e.g. Facebook) and telephony (e.g. Skype) to deliver acceptable Quality-of-Service and enable nodes to arbitrarily join and leave the system.

Cognitive Automation – refers to a strategy that leverages the co-existence of human employees and the range of technology solutions that fall under the umbrella of Artificial Intelligence to enhance operational workflow and enable more rapid innovation.

The above definitions were developed and intended for a business audience rather than a technical audience, so they are simplified somewhat from what a technical expert in this field may nuance.

Where to Start:

As an organization begins its journey towards Cognitive Automation it must first develop a clear understanding of the disruptive impact to its business processes, people and culture. What are the cognitive opportunities across functions? What are the benefits of digital labor in these opportunity areas? What impact will the automation opportunity have on the people (skill) and process of the functional area? What type of change will the organization have to go through to realize the full automation opportunity?

Many organizations are developing Cognitive Automation strategies on the fly – through selection of platforms and development of proof of concepts. But cognitive software is really multiple point solutions that need to be stitched together to develop an overarching automation strategy. The journey the organization charts will determine how and when it reaches a 'smart' organization. Without an overall understanding of the opportunity available and the steps required to capitalize on them, proceeding with tactical proofs of concept is just – human error.

² Margaret Rouse, Editorial Director and Author, Whatis.com

How Our Advisory Team Can Help

Paramita partners with companies worldwide to develop, implement and monitor their Global Sourcing and Process Automation strategies. Our capabilities extend through the entire life cycle of these initiatives, and our offerings consist of several interrelated solutions that help organizations source, remediate, repatriate and automate their services.

Our practitioners come from a variety of backgrounds and generally bring advisory as well as operational experience to each engagement. This enables Paramita to bring experience and insight to each of our engagements.

For additional information about the issues reviewed in this white paper or Paramita's advisory services, please contact:

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