Introduction

Machine learning and deep learning technologies have impacted the world in profound ways, from how we interact with technological products and with one another. These technologies are disrupting how we relate, how we work, and how we engage life in general. Today, and in the foreseeable future, intelligent machines increasingly form the core upon which sociocultural and socioeconomic relationships rest. We are indeed already in the "age of intelligence."

What Are Machine Learning and Deep Learning?

Machine learning can be described as an assortment of tools and techniques for predicting or classifying a future event based on a set of interactions between variables (also referred to as features or attributes) in a particular dataset. Deep learning, on the other hand, extends a machine learning algorithm called neural network for learning complex tasks which are incredibly difficult for a computer to perform. Examples of these tasks may include recognizing faces and understanding languages in their varied contextual meanings.

The Role of Big Data

A key ingredient that is critical to the rise and future improved performance of machine learning and deep learning is data. Since the turn of the twenty-first century, there has been a steady exponential increase in the amount of data generated and stored. The rise of humongous data is partly due to the emergence of the Internet and the miniaturization of processors that have spurned the "Internet of Things (IoT)" technologies. These vast amounts of data have made it possible to train the computer to learn complex tasks where an explicit instruction set is infeasible.