

# UC AI Glossary

## Artificial Intelligence

Technologies that aim to reproduce or exceed abilities in computational systems that would require human-like thinking to perform a wide range of tasks, from simple to sophisticated.<sup>i</sup>

- An **AI system** is a machine-based system that is capable of influencing the environment by making recommendations, predictions, or decisions for a given set of objectives. It uses machine and/or human-based inputs/data to i) perceive environments; ii) abstract these perceptions into models; and iii) interpret the models to formulate options for outcomes. AI systems are designed to operate with varying levels of autonomy.<sup>ii</sup>
- **AI-enabled tools** refer to AI systems that are implemented within a particular context (e.g., a natural language processing chatbot used by a UC campus to respond to students' inquiries about the admissions process).

## Automated Decision System (ADS)

ADS can be defined as "a computational process, including one derived from machine learning, statistics, or other data processing or artificial intelligence techniques, that makes a decision or facilitates human decision making."<sup>iii</sup>

## Automatic License Plate Readers (ALPR)

ALPRs are high-speed, computer-controlled camera systems that automatically capture all license plate numbers that come into view, along with data on location, date, and time.<sup>iv</sup>

## Computer Vision

A field of artificial intelligence that trains computers to interpret and understand the visual world.<sup>v</sup>

## Deep Learning

A form of machine learning that uses neural networks to process data. It is well suited to tackle tasks involving complex data such as images, video, sound files, and unstructured text. However, it can be difficult to explain how deep learning algorithms arrived at a decision.<sup>vi</sup>

## Explainability

Explainability of a machine learning model refers to how easy it is to understand the internal logic the model uses to make a prediction. Linear models (such as logistic regression) and small decision trees are on the more explainable end of the spectrum; neural nets and decision forests are on the less explainable end (often referred to as "black box").

## Facial Recognition

A method of biometric identification to verify the identity of a person through facial patterns.<sup>vii</sup>

## Machine Learning (ML)

ML is a method of data analysis that automates analytical model building. It is a branch of artificial intelligence based on the idea that systems can learn from data, identify patterns, and make decisions with minimal human intervention.<sup>viii</sup>

## Natural Language Processing (NLP)

A computer's attempt to understand, interpret, and manipulate spoken or written language, which often involves machine learning. It must parse vocabulary, grammar, and intent, and allow for variation in language use.<sup>ix</sup>

## Neural Networks

Interconnected layers of software-based calculators known as "neurons" form a neural network. In a neural network, a set of units receives pieces of data, for example pixels in a photo, performs simple computations on them, and passes the results on to the next layer of units, eventually reaching the answer in the final layer. Neural networks are a part of deep learning.<sup>x</sup>

## Robotic Process Automation (RPA) Bots

RPA is software "robots" that can automate rules-based tasks. The bots automate tasks such as processing transactions, manipulating data, responding to queries, and communicating with other systems. Not all RPA bots use AI. AI can be implemented into RPA to process and gather insights from semi- and unstructured data to structure RPA processes.<sup>xi</sup>

## Supervised Learning

Supervised learning occurs when the given output and input variables are provided to the algorithm and the algorithm uses training data combined with human guidance to learn the relationship between the given inputs and the given output.<sup>xii</sup>

## Unsupervised Learning

Unsupervised learning is when an algorithm explores and identifies patterns in the given input data without being provided an explicit input or output variable.

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<sup>i</sup> ["AI Procurement in a Box: AI Government Procurement Guidelines,"](#) World Economic Forum, June 2020.

<sup>ii</sup> Karine Perset et al., ["A first look at the OECD's Framework for the Classification of AI Systems, designed to give policymakers clarity,"](#) The AI Wonk (blog), OECD, AI Policy Observatory, November 24, 2020.

<sup>iii</sup> ["Personal Rights: Automated Decision Systems, A.B. 2269, 2019-2020 Reg. Sess."](#) (Cal. 2020).

<sup>iv</sup> ["Automated License Plate Readers \(ALPRs\),"](#) Electronic Frontier Foundation, Aug. 28, 2017,

<sup>v</sup> ["An Executive's Guide To Real-World AI: Lessons from the Front Lines of Business,"](#) Harvard Business Review Analytic Services, 2019.

<sup>vi</sup> Ben Dickson, ["What is Deep Learning?"](#) PCMag, last modified August 8, 2019.

<sup>vii</sup> ["Facial Recognition: How it Works and its Safety,"](#) Electronic Identification, July 2021,

<sup>viii</sup> ["Machine Learning: What it is and Why It Matters,"](#) SAS, accessed October 30, 2020.

<sup>ix</sup> Matthew Hutson, ["AI Glossary: Artificial Intelligence, in So Many Words,"](#) Science 357, no. 6346 (July 2017):19.

<sup>x</sup> ["An Executive's Guide to AI,"](#) McKinsey & Company, accessed October 30, 2020.

<sup>xi</sup> ["An Executive's Guide To Real-World AI: Lessons from the Front Lines of Business,"](#) Harvard Business Review Analytic Services, 2019.

<sup>xii</sup> ["An Executive's Guide to AI,"](#) McKinsey & Company, accessed October 30, 2020.