**DAILY ASSESSMENT FORMAT**

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| **Date:** | **09/07/2020** | **Name:** | **Varshini MN** |
| **Course:** | **IOT** | **USN:** | **4AL16EC089** |
| **Topic:** | **Everything needs to be secured** | **Semester & Section:** | **8thB** |
| **Github Repository:** | **varshinimn-test** |  |  |

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| **FORENOON SESSION DETAILS** | | | | | |
| **Image of session** | | | | | |
| **REPORT** **TYPES OF DATA** Has data really changed? Well technically no, data generated by computers and digital devices is still groups of 1s and 0s. That has not changed. What has changed is the quantity, volume, variety, and immediacy of the generated data.   * Historically companies would have access to our information gathered from forms, spreadsheets, applications, credit card purchases and other types of files. Much of the information was stored and analyzed at a later date * Sensitive data was still collected, stored and analyzed but, historically, hackers were more interested in hacking into systems to obtain corporate or government secrets * Today, gathered data is taking on new characteristics. The digitized world has opened the floodgates for data gathering * IoT sensor-enabled devices are collecting more and more data of a personal nature. Wearable fitness trackers, home monitoring systems, security cameras, and debit card transactions are all collecting personal data as well as business and environmental data * Data is often combined from different sources and users may be unaware of this. Combining fitness monitoring data with house monitoring data could produce data points to help map the movements or location of a homeowner * This changing type of data collection and aggregation can be used for good purposes to help the environment. It also increases the possibility of invasion of our privacy, identity theft, and corporate espionage * Personally identifiable information (PII) or sensitive personal information (SPI) is any data relating to a living individual that can be used on its own or with other information to identify, contact, or locate a specific individual * The data gathered by companies and government institutions can also contain sensitive information concerning corporate secrets, new product patents, or national security.Because we are gathering and storing exponential quantities of both sensitive and informational data, it has increased the need for extra security to protect this information from natural disasters, hackers, and misuse.  **Who Wants our Data?** **The Good Guys**  Legitimate companies have an agreement in place that gives them permission to use the collected data about you for purposes of improving their business. Remember those “Terms and Conditions” or “Terms of Service and Agreements” documents that we say yes to but do not usually read? The next time that you are presented with one, take the time to read through it. The contents might surprise you.  Other legitimate users of our data would be companies that use sensors on their own devices or vehicles. Governments that have environmental sensors, and cities who have installed sensors on trains, busses or traffic lights also have a right to the data they generate.  Some hackers, called white hat hackers, are paid by legitimate companies and governments to test the security of a device or system. Their goal is not to steal or modify data but to help to protect it.  **The Bad Guys**  Other hackers, called black hat hackers, want access to collected data for many nefarious reasons:   * To sell the information to a third party. * To modify the data or disable functionality on a device. * To disrupt or to damage the image of a legitimate company. * To access devices, web pages, and data to create political unrest or to make a political statement. * To access user IDs and passwords to steal identities. * To access data to commit a crime. * To hack into systems to prove that they can do it. | | | | | |
| **Date:** | **09/07/2020** | **Name:** | **Varshini MN** |
| **Course:** | **Coursera - AI** | **USN:** | **4AL16EC089** |
| **Topic:** | **Introduction to AI** | **Semester & Section:** | **8thB** |

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| **AFTERNOON SESSION DETAILS** |
| **REPORT**  **Machine learning** (**ML**)  It is the study of computer algorithms that improve automatically through experience.[[1]](https://en.wikipedia.org/wiki/Machine_learning#cite_note-1)[[2]](https://en.wikipedia.org/wiki/Machine_learning#cite_note-2) It is seen as a subset of [artificial intelligence](https://en.wikipedia.org/wiki/Artificial_intelligence). Machine learning algorithms build a [mathematical model](https://en.wikipedia.org/wiki/Mathematical_model) based on sample data, known as "[training data](https://en.wikipedia.org/wiki/Training_data)", in order to make predictions or decisions without being explicitly programmed to do so.[[3]](https://en.wikipedia.org/wiki/Machine_learning#cite_note-3) Machine learning algorithms are used in a wide variety of applications, such as [email filtering](https://en.wikipedia.org/wiki/Email_filtering) and [computer vision](https://en.wikipedia.org/wiki/Computer_vision), where it is difficult or infeasible to develop conventional algorithms to perform the needed tasks.  Machine learning is closely related to [computational statistics](https://en.wikipedia.org/wiki/Computational_statistics), which focuses on making predictions using computers. The study of [mathematical optimization](https://en.wikipedia.org/wiki/Mathematical_optimization) delivers methods, theory and application domains to the field of machine learning. [Data mining](https://en.wikipedia.org/wiki/Data_mining) is a related field of study, focusing on [exploratory data analysis](https://en.wikipedia.org/wiki/Exploratory_data_analysis) through [unsupervised learning](https://en.wikipedia.org/wiki/Unsupervised_learning).[[5]](https://en.wikipedia.org/wiki/Machine_learning#cite_note-5)[[6]](https://en.wikipedia.org/wiki/Machine_learning#cite_note-6) In its application across business problems, machine learning is also referred to as [predictive analytics](https://en.wikipedia.org/wiki/Predictive_analytics). Machine learning approaches Machine learning approaches are traditionally divided into three broad categories, depending on the nature of the "signal" or "feedback" available to the learning system:   * [Supervised learning](https://en.wikipedia.org/wiki/Supervised_learning): The computer is presented with example inputs and their desired outputs, given by a "teacher", and the goal is to learn a general rule that [maps](https://en.wikipedia.org/wiki/Map_(mathematics)) inputs to outputs. * [Unsupervised learning](https://en.wikipedia.org/wiki/Unsupervised_learning): No labels are given to the learning algorithm, leaving it on its own to find structure in its input. Unsupervised learning can be a goal in itself (discovering hidden patterns in data) or a means towards an end ([feature learning](https://en.wikipedia.org/wiki/Feature_learning)). * [Reinforcement learning](https://en.wikipedia.org/wiki/Reinforcement_learning): A computer program interacts with a dynamic environment in which it must perform a certain goal (such as [driving a vehicle](https://en.wikipedia.org/wiki/Autonomous_car) or playing a game against an opponent). As it navigates its problem space, the program is provided feedback that's analogous to rewards, which it tries to maximise.   Other approaches have been developed which don't fit neatly into this three-fold categorisation, and sometimes more than one is used by the same machine learning system. For example [topic modeling](https://en.wikipedia.org/wiki/Topic_modeling), [dimensionality reduction](https://en.wikipedia.org/wiki/Dimensionality_reduction) or [meta learning](https://en.wikipedia.org/wiki/Meta_learning_(computer_science)).  As of 2020, [deep learning](https://en.wikipedia.org/wiki/Deep_learning) has become the dominant approach for much ongoing work in the field of machine learning.  Supervised learning algorithms build a mathematical model of a set of data that contains both the inputs and the desired outputs. The data is known as [training data](https://en.wikipedia.org/wiki/Training_data), and consists of a set of training examples. Each training example has one or more inputs and the desired output, also known as a supervisory signal. In the mathematical model, each training example is represented by an [array](https://en.wikipedia.org/wiki/Array_data_structure) or vector, sometimes called a feature vector, and the training data is represented by a [matrix](https://en.wikipedia.org/wiki/Matrix_(mathematics)). Through iterative optimization of an [objective function](https://en.wikipedia.org/wiki/Loss_function), supervised learning algorithms learn a function that can be used to predict the output associated with new inputs. An optimal function will allow the algorithm to correctly determine the output for inputs that were not a part of the training data. An algorithm that improves the accuracy of its outputs or predictions over time is said to have learned to perform that task.  Types of supervised learning algorithms include [Active learning](https://en.wikipedia.org/wiki/Active_learning_(machine_learning)), [classification](https://en.wikipedia.org/wiki/Statistical_classification) and [regression](https://en.wikipedia.org/wiki/Regression_analysis). Classification algorithms are used when the outputs are restricted to a limited set of values, and regression algorithms are used when the outputs may have any numerical value within a range. As an example, for a classification algorithm that filters emails, the input would be an incoming email, and the output would be the name of the folder in which to file the email.  [Similarity learning](https://en.wikipedia.org/wiki/Similarity_learning) is an area of supervised machine learning closely related to regression and classification, but the goal is to learn from examples using a similarity function that measures how similar or related two objects are. It has applications in [ranking](https://en.wikipedia.org/wiki/Ranking), [recommendation systems](https://en.wikipedia.org/wiki/Recommendation_systems), visual identity tracking, face verification, and speaker verification. |