Introduction to Machine Learning

Here are some use cases of Machine Learning at Infosys.

Example 1 - Clustering of Trade Promotions to find anomalies in execution for an Alcoholic Beverages company

Problem Statement: Sales and Promotional data for sales through dealers are available but insights are focused on execution. Analytics not available for the way the promotions are structured.

Solution: Applying machine learning to cluster abnormal pricing/promotional anomalies. Anomalies could be in price/pack combination, multi brand tiered pricing or in non-performing continuous promotions.

Results: Identified clusters for

1. Smaller packs selling at a lower avg price/unit due to promotions.

2. Non volume related promotional discounts on premium brands

3. Artificial RRP established by distributors.

In order to cluster abnormal pricing/promotional anomalies, clustering techniques of machine learning have been used. We will discuss clustering techniques later in this course.

Example 2 – Improving Service levels for an ATM Manufacturing company.

Problem Statement: A leading ATM manufacturing and service company wants to reduce its cost in maintaining ATMs and also provide better customer service and SLAs. This required predicting which ATMs are going to fail and what kind of failure is going to happen.

Solution: Applying machine learning to data from about 8500 ATMs/4M records. Models were generated to predict failures with 80% accuracy

Results:

1. 14.3% efficiency increase [from 3.5 -> 4 service calls per technician per day]

2. 18% cost reduction from increasing mix to 40% staged calls

3. From weeks to days/hours for chronic/defect identification

In order to predict which ATM would fail, classification techniques of machine learning were used. We will discuss various classification algorithms as part of this course.

Example 3 – Monitoring and Analytics of Chillers at Infosys campuses

Problem Statement: Infosys has 131 chillers in its campus across various locations managed by the facilities team. Chillers are used to provide air-conditioning in the campus for the buildings. The chillers are monitored with the OEM application to oversee day to day operations. The data is used only for monitoring and no insights derived for further useful analysis.

Solution: Infosys is developing an IIOT (Industrial internet of things) solution for monitoring and analytics of the chillers to address the shortcomings of the present application.

An application has been developed focusing on achieving the following objectives:

1. Development of parameter thresholds for various operational parameters of the chiller. Customization of the parameters for each chiller based on the operational history of the chiller.

2. Future event detection based on the operational history of the chillers.

3. Ticketing system for converting the present manual system to computer based ticketing system.

Results:

1. Threshold limits for the key operational parameters for each chiller has been established.

2. Failure prediction based on data is being deduced.

3. Event detection based on the operational parameters has been established.

Example 4 - Predictive costing for retail client

Problem Statement: Without BOM(Bill of Materials), yield and factory information predict the cost of garment with pattern, fabrics, colors, trims and products briefing. Algorithm should improve over time and increase accuracy. In addition, algorithm should be able to show how the accuracy changes depending on various parameters (e.g. If we add factory what is the accuracy improvement)

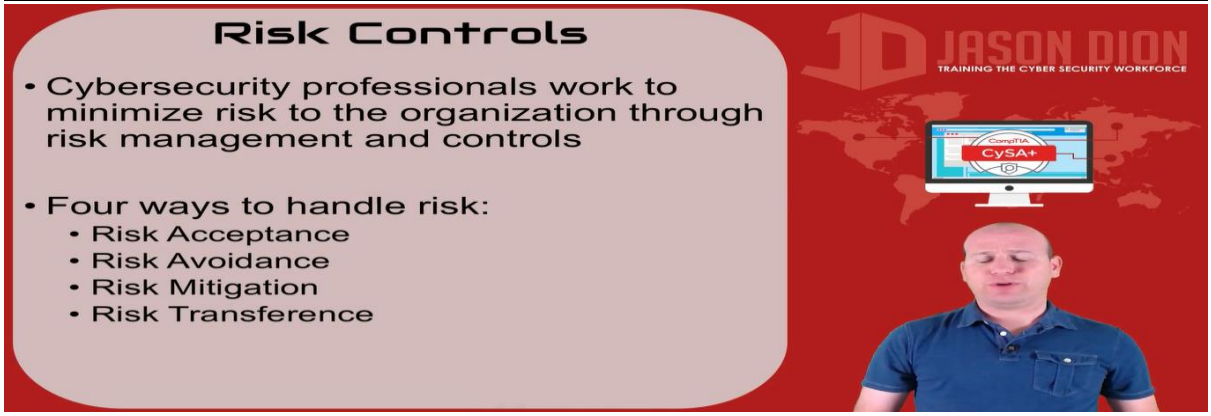
Solution: Currently being built

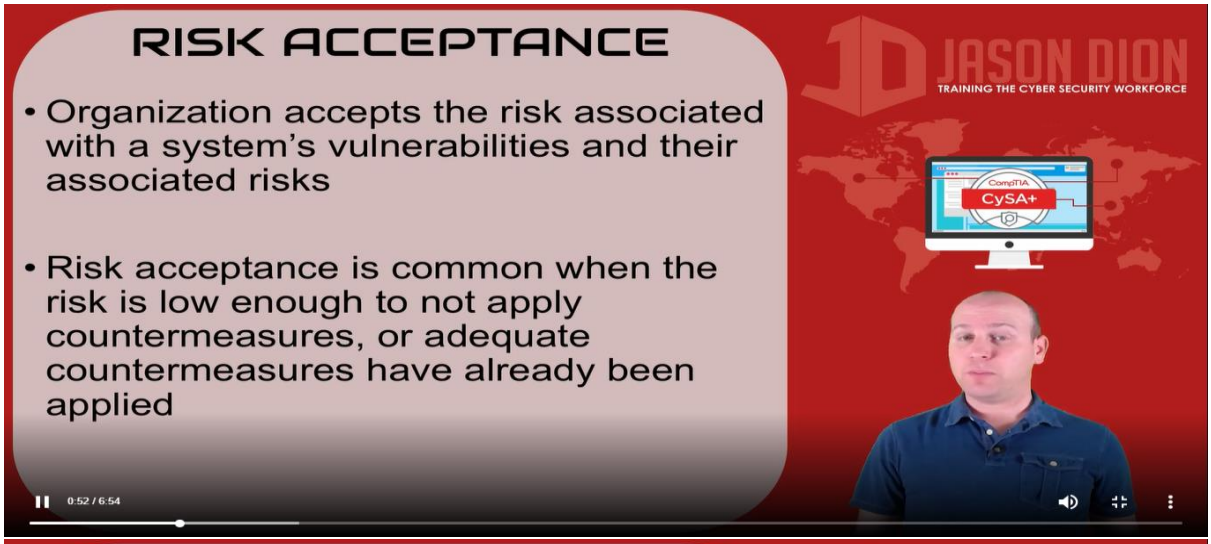
Note: You may also get in touch with Machine Learning and AI practitioners across Infosys by joining the following Yammer Groups:

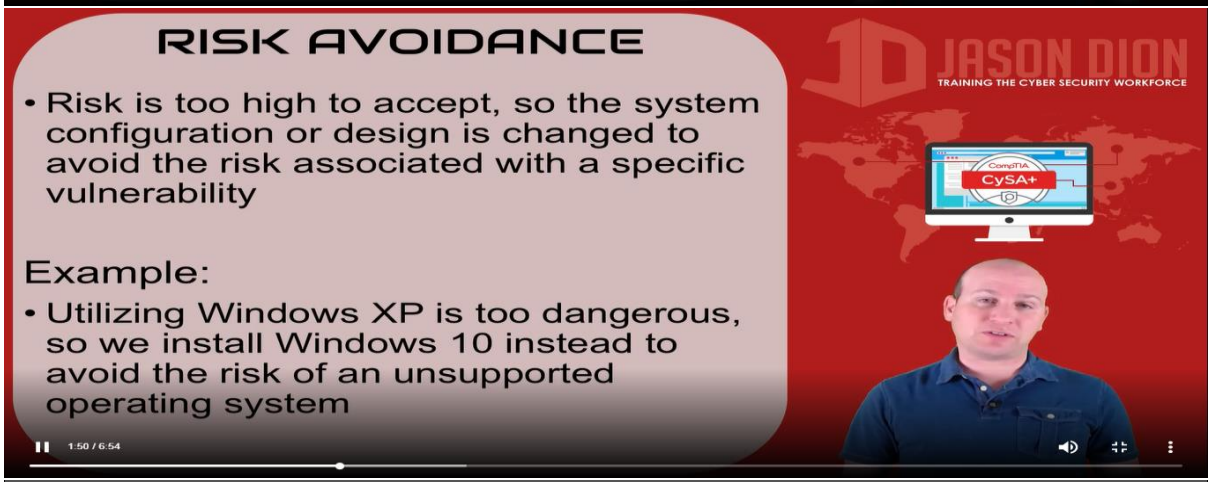
1. Artificial Intelligence - Official: https://www.yammer.com/infosys.com/#/threads/inGroup?type=in_group&feedId=5857481&view=all

2. Machine Learning - R and More: https://www.yammer.com/infosys.com/#/threads/inGroup?type=in_

group&feedId=5888388&view=all




RISK ACCEPTANCE
• Organization accepts the risk associated with a system's vulnerabilities and their associated risks
• Risk acceptance is common when the risk is low enough to not apply countermeasures, or adequate countermeasures have already been applied
JASON DION
TRAINING THE CYBER SECURITY WORKFORCE
CompTIA
CySA+
0:52 / 6:54


RISK AVOIDANCE
• Risk is too high to accept, so the system configuration or design is changed to avoid the risk associated with a specific vulnerability
Example:
• Utilizing Windows XP is too dangerous, so we install Windows 10 instead to avoid the risk of an unsupported operating system
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Supervised Learning - Georgia Tech - Machine Learning
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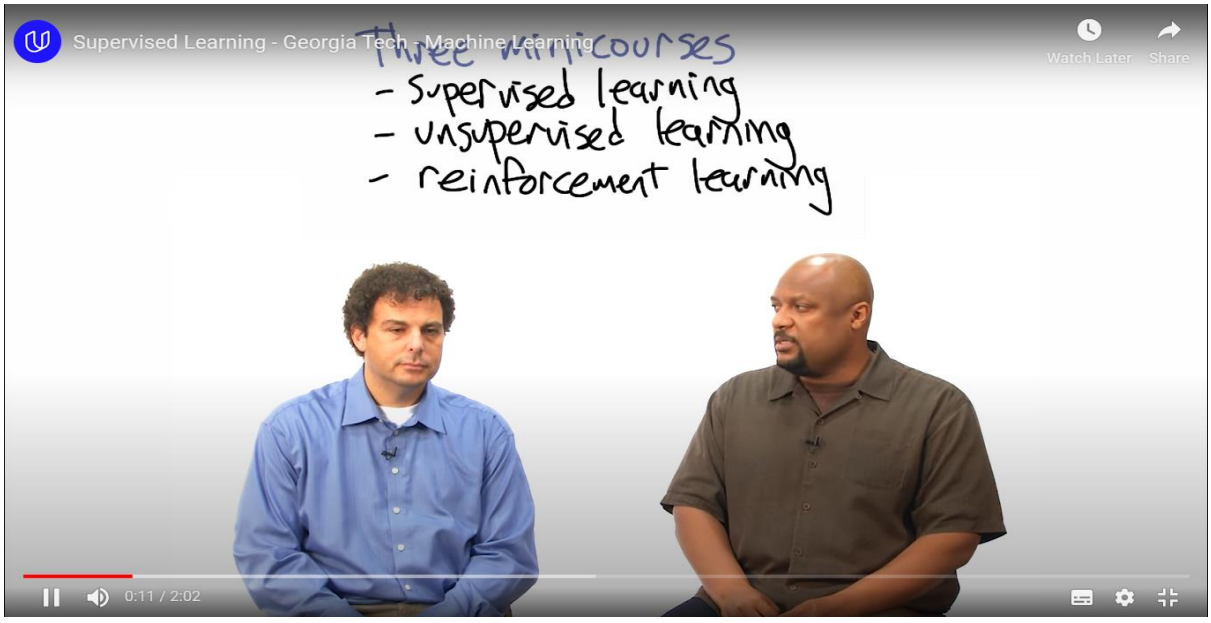

input	1	2	3	4	5	6	7	10
output	1	4	9	16	25	36	49	100

output ← input^2


Unsupervised Learning - Georgia Tech - Machine Learning
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Supervised learning ≡ Approximation
Unsupervised learning ≡ Description
Pause (k)
1:11 / 4:23


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Pixels
Not a professor
Ceci n'est pas une professor
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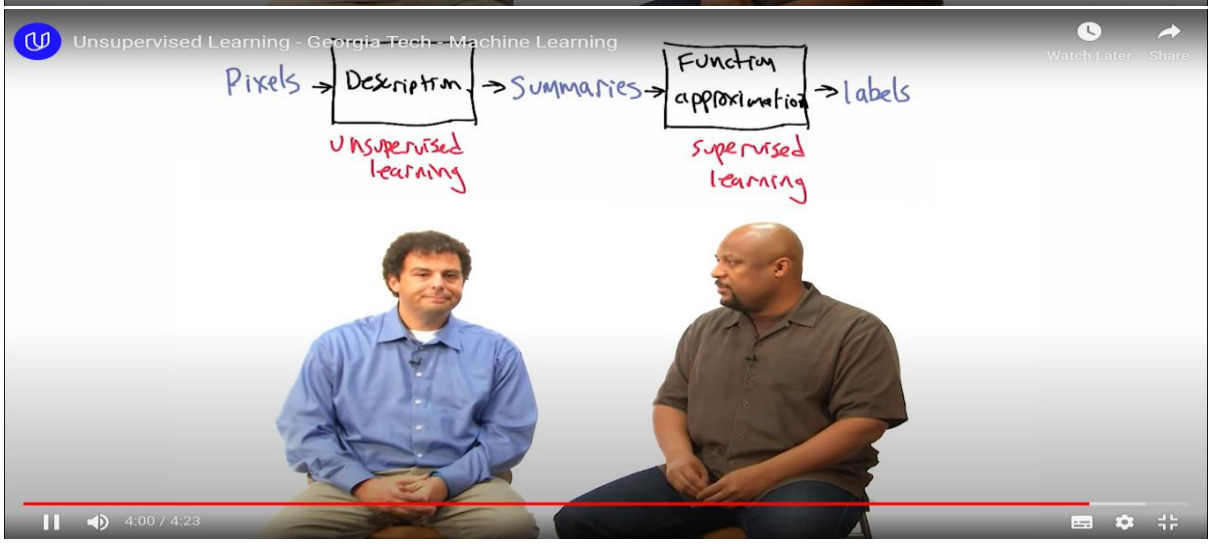
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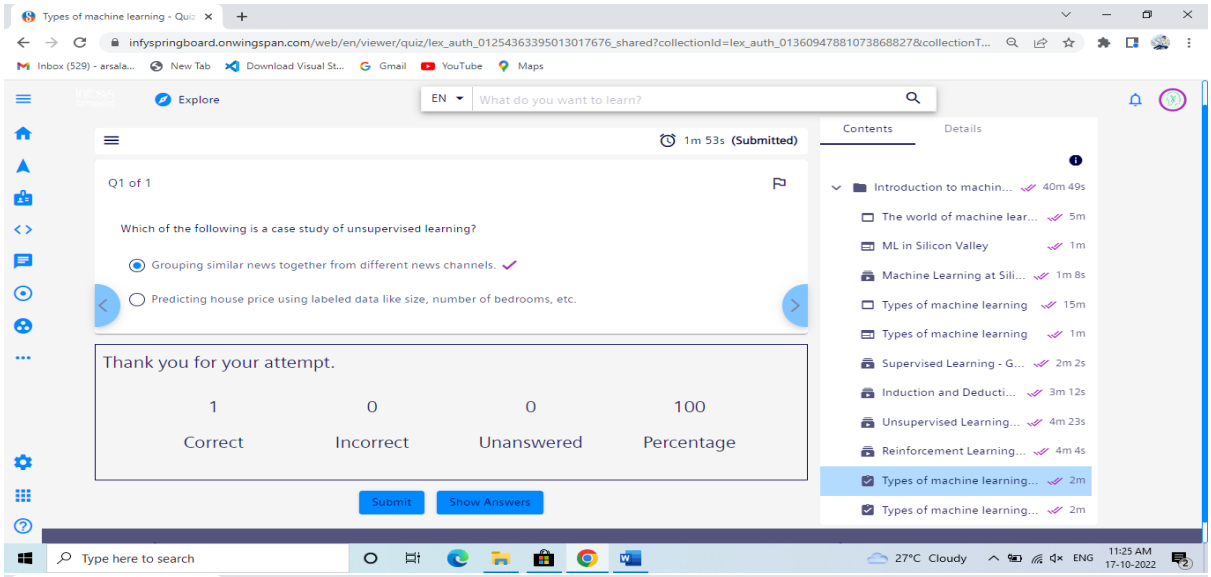
Types of machine learning - Quiz
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Explore
What do you want to learn?
1m 53s (Submitted)
Q1 of 1
Which of the following is a case study of unsupervised learning?
Grouping similar news together from different news channels.
Predicting house price using labeled data like size, number of bedrooms, etc.
Thank you for your attempt.
1 Correct
0 Incorrect
0 Unanswered
100 Percentage
Submit
Show Answers
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Reinforcement Learning... 4m 4s
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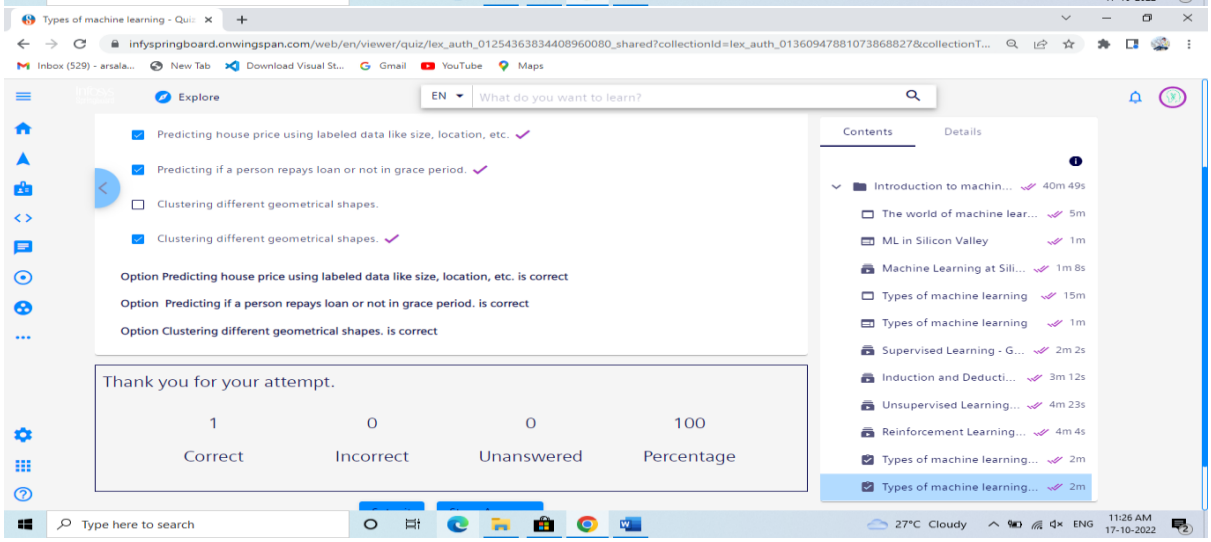
Types of machine learning - Quiz
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Explore
What do you want to learn?
Predicting house price using labeled data like size, location, etc.
Predicting if a person repays loan or not in grace period.
Clustering different geometrical shapes.
Clustering different geometrical shapes.
Option Predicting house price using labeled data like size, location, etc. is correct
Option Predicting if a person repays loan or not in grace period. is correct
Option Clustering different geometrical shapes. is correct
Thank you for your attempt.
1 Correct
0 Incorrect
0 Unanswered
100 Percentage
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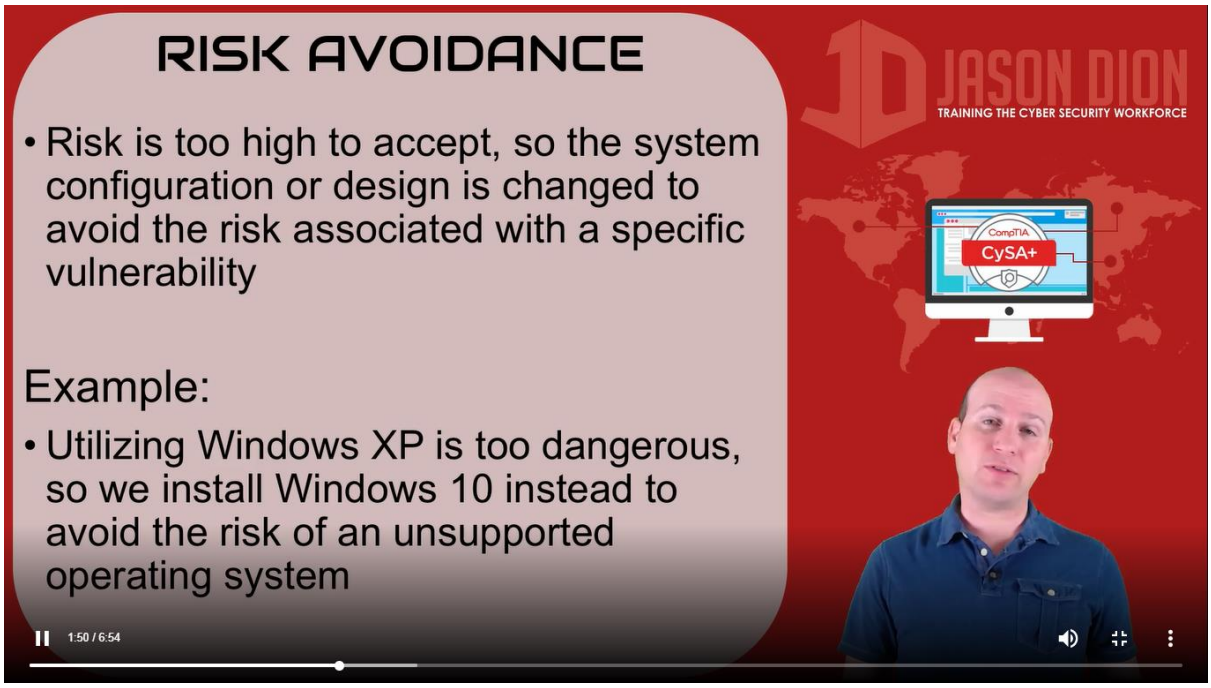
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RISK MITIGATION
• Main goal of security is to minimize risk to a level acceptable to the organization
• Our goal is not necessarily to eliminate all risks…
• By adding risk controls, we can mitigate the risk down to an acceptable level
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