Discussion 2.1: Applying Machine Learning and Deep Learning in Your Organization

**Applying Machine Learning and Deep Learning to Your Organization**

In Video 5, you learned how machine learning and deep learning are used in various industries. Reflect on your industry, or an industry of your choice. Craft a discussion post that addresses the following:

* What is one current application of machine learning or deep learning in your industry? To answer this question, do a search online and find an example. Make sure to include the link to your example, so your peers can read more if they are interested.
* **Given** this application, what is one opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization?
* **Thinking** about your chosen application, identify an opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization and share the details in the discussion board.
* To capture this opportunity, what types of data would you need to collect or create?

We encourage you to go through your peers' posts and share your feedback

## [Scott Roosa](https://student.emeritus.org/courses/3412/users/163238)

FridayLocal: Sep 17 at 12:05pm<br>Course: Sep 17 at 4:05pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

* What is one current application of machine learning or deep learning in your industry? To answer this question, do a search online and find an example. Make sure to include the link to your example, so your peers can read more if they are interested.
  + I am looking at Situational awareness (SA) as it applies to the fire fighter and machine learning plays very little in this industry.   Currently handled by 3rd party SW companies that provide incident command applications for managing the fire scene:  [Product - Intterra (intterragroup.com) (Links to an external site.)](https://www.intterragroup.com/product/).  What I am thinking about is how to utilize machine learning to help augment SA for the fire fighters on scene.   This FEMA article helps outline the problem (look at pages 29-31):  [Improving Situational Awareness to Enhance Firefighter Safety (fema.gov) (Links to an external site.)](https://nfa.usfa.fema.gov/pdf/efop/efo47030.pdf)
* Given this application, what is one opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization?
  + Utilizing machine learning would inform our business decisions around whether we go for internal or external investments, partnering with other companies, and influence our strategic portfolio vision
* To capture this opportunity, what types of data would you need to collect or create?
  + The solution would require input from many sources (temperature, IR, biometric, voice and data comms, video) and would need to be analyzed and presented real-time to generate augmented data and images to the fire fighter and incident command

## [Hassan El Houry](https://student.emeritus.org/courses/3412/users/164386)

YesterdayLocal: Sep 18 at 11:07am<br>Course: Sep 18 at 3:07pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

The security line at airports is one of the biggest choke points for passengers and regulators. It is the source of a lot of frustration to all stakeholders. However, recent breakthroughs in machine learning have the capability to triple the number of passengers per hour significantly reducing passenger wait times.

In various test cases performed across the world, computers are taught to examine a multitude of factors and assign a risk rating to passengers and their luggage. These factors consider passenger profile, biometrics, contents of the luggage, and even behavior. People who are hiding something or nervous behave differently from those who are just going about their journey innocently. These factors are not immediately obvious nor apparent to security personnel or the machines. Therefore, the machines/computers need to be 'taught' to identify these factors and make a conclusion based on these factors.

In regards to behavior, it is understood that people have 24 different parameters when they walk. Inputting data on millions of passengers (and how they walk) into computers will teach computers to identify those passengers who are considered high risk. When coupled with biometrics and other factors, the results can be a game-changer for airport security.

Taking this a step further, airport operations can be linked to security lines to predict flight delays. Airlines and airports are normally unprepared for flight delays and when a delay is announced, the entire operation for that flight is thrown into reactive mode to accommodate that delay. However, if management can be informed ahead of time of the possibility of delay, the airport and airline can be prepared and take measures to either expedite, or accommodate the delay with the least cost to the various entities.

[Collapse Subdiscussion](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)[Kenneth Kabaki](https://student.emeritus.org/courses/3412/users/145896)

## [Kenneth Kabaki](https://student.emeritus.org/courses/3412/users/145896)

1:24amLocal: Sep 19 at 1:24am<br>Course: Sep 19 at 5:24am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

What a practical and needed application of AI. I often dread flying from ATL for this very reason that you bring up. I wonder though if we can replicate fully the all-important human elements - intuition and experience. Granted that you can only have so many humans and unlimited AIs, perhaps this would actually work.

## [Jasmine Campos](https://student.emeritus.org/courses/3412/users/82697)

YesterdayLocal: Sep 18 at 12:10pm<br>Course: Sep 18 at 4:10pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

There are many potential applications of machine learning (ML) in Supply Chain.

The most common use case is in demand planning where ML is used to build sophisticated forecasting models to better understand demand patterns to improve customer experience, enhance inventory management, and minimize stock out situations. ML utilizes both internal and external data sources to make more accurate, data driven demand predictions.

With ML, there is an opportunity to remove manual forecast analysis or overrides for products with highly predictable demand patterns increasing productivity and business efficiencies. Additionally, with ML, the system can apply the best fit forecasting model for specific product use cases including new product launches, products with volatile demand patterns, and products with many alternatives/substitutes in the marketplace.

To capture this opportunity, the following structured and unstructured data types may be required depending on the business objectives:

1. Historical sales data
2. Purchase orders
3. Inventory data
4. Point of Sales (POS) data
5. Ecommerce data – sales, conversion rate, product reviews, share of search, page views, etc.
6. Weather
7. Social Media
8. Macroeconomic indicators

Here is a link to learn more: <https://www.n-ix.com/machine-learning-supply-chain-use-cases/>

[Collapse Subdiscussion](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)[Xiaodong Che](https://student.emeritus.org/courses/3412/users/154971)

## [Xiaodong Che](https://student.emeritus.org/courses/3412/users/154971)

YesterdayLocal: Sep 18 at 9:04pm<br>Course: Sep 19 at 1:04am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Jasmine, this reminds me the math models used on Wall Street to assist companies to make sell/buy decision, it started with some companies with such talent and great conviction, then it became a common practice and anyone who dose not do that, will be left behind.  One interesting question is if everyone uses AI/ML to manage supply chain, will similar algorithms of AI/ML create bigger supply chain risk and uncertainty which has been a concern on Wall Street [1]?

[1] <https://www.nytimes.com/2008/11/05/business/05risk.html>

## [Nikunj Patel](https://student.emeritus.org/courses/3412/users/145235)

YesterdayLocal: Sep 18 at 1:30pm<br>Course: Sep 18 at 5:30pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

ML and DL has tremendous amount of application in O&G and Mobile solution .

O&G :

ML and DL can be used to empower Autonomous subsea robotics , Autonomous subsea robotics systems can be use to inspect, survey , repair and operate subsea infrastructure.  For example AUV can survey the o&G pipeline, inspect the pipe and pipe crossing, detect if there is any leaks on pipe , detect if pipe is losing its wall thickness with out human intervention.

ML can be very critical to inspect and predict the system behavior and help reducing failure rate for lot of O&G applications.  System can identify potential corrosion under insulation, paint damage, strain and stress in equipment.

ML is fundamental need for our mobile solution. AGVs ( Automated guided vehicle ) handles autonomous material handling.  Where to get material , where to move material , how to lift different shape and weight of material, which AGV should perform what task are some of example were Ai can be very use full. As we developing out door AGV , which will be working in non controlled environment , ML and DL will help operating this type of equipment in several weather conditions.

[https://www.datarobot.com/solutions/oil-and-gas/ (Links to an external site.)](https://www.datarobot.com/solutions/oil-and-gas/)

<https://blogs.sjsu.edu/underwaterdrone/2018/09/29/inception-of-the-rovs-ai/>

## [Dana DeMeo](https://student.emeritus.org/courses/3412/users/163239)

YesterdayLocal: Sep 18 at 4:18pm<br>Course: Sep 18 at 8:18pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

There is tremendous potential to apply AI in Lean Manufacturing.  A quick overview of this application is found here:  [AI Approach to Lean Manufacturing (Links to an external site.)](https://www.mastercontrol.com/gxp-lifeline/the-ai-approach-to-lean-manufacturing/)

The benefits of a Lean approach in manufacturing are thoroughly established and demonstrated.  When implemented correctly, waste is significantly removed, non-value added steps are removed, employees are happier and more productive, customers are more satisfied, and businesses are more profitable.

However, Lean is extremely hard to implement correctly.  Even for managers who properly understand the concepts, a good implementation requires a lot of data.  Every solution is situation independent and will morph over time.  This is the perfect application for AI - to use this data to learn and adapt a true lean enterprise more quickly and efficiently.  Nearly every business decision around the operation of a manufacturing plant could be optimized, including physical layout, value stream maps, load leveling, standard work procedures, etc.  Data collected would be all the pieces of information already known in a lean plant, including takt time, first-pass yield, lead time, cycle time, cost of poor quality, operator engagement, etc.

[Collapse Subdiscussion](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)[Lynette David](https://student.emeritus.org/courses/3412/users/157365)

## [Lynette David](https://student.emeritus.org/courses/3412/users/157365)

6:28amLocal: Sep 19 at 6:28am<br>Course: Sep 19 at 10:28am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Hi Dana

Love the AI approach to Lean Manufacturing.  AI offers so much potential and opportunities to redefine what we do and how we do it!

I have used much of the Makigami process mapping to redefine business processes in Commerce, and AI now helps us take it to the next level and further drive value generation.  I have found over the years that the Commerce side businesses, unlike the Supply Chain, is not as well structured (engineered), often relying much on the experience and gut feel that has been built on traditional methods of selling over the last many, many years.  Now with the help of AI and ML, we can become data-driven, focused, and precise with the right value-adding actions over time.

[Collapse Subdiscussion](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)[Federico Giannangeli](https://student.emeritus.org/courses/3412/users/151424)

## [Federico Giannangeli](https://student.emeritus.org/courses/3412/users/151424)

8:03amLocal: Sep 19 at 8:03am<br>Course: Sep 19 at 12:03pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Dana, thanks for sharing this info.  The example used in the link associated to "the ability to avoid non conformances and deviations" is great.  It is interesting though that at the end, the recommendation for the starting point is to digitize the manufacture process and ensure the data is right.  Perhaps, AI unsupervised learning might be a good way to help there.  I also like the concept of how we could improve processes (and this apply to all not only lean manufacturing) with a connection to NLP (natural language processing) from user feedback.

## [Nixon Joseph](https://student.emeritus.org/courses/3412/users/155433)

YesterdayLocal: Sep 18 at 7:02pm<br>Course: Sep 18 at 11:02pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

* What is one current application of machine learning or deep learning in your industry?

Home loan origination/Refinance is a long arduous process. It takes an average 47 days to close a loan in the US. This is because there are many actors involved in the whole mortgage origination process and still involves a lot of paper work to approve and close a loan. Implementing AI/ML solution at each touch point in the loan closing process can benefit the lenders and borrowers to improve the process significantly and reduce loan closing timeline.

* Given this application, what is one opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization?

By shortening the loan origination or refinance timeline leveraging AI/Machine Learning will greatly enhance the ability to originate more loans and grow the business. Additionally, this will enhance customer/borrower experience tremendously.

* To capture this opportunity, what types of data would you need to collect or create?

To achieve this, all data pertaining to loan origination must be captured namely: Financial information of the borrower (Income and Expenses proof), Credit reports, Employment Verification (W2), Taxes, Home Insurance, Property Appraisal, Title search/Encumbrances, HOA Statement (in case of refinance)

Source:

<https://capacity.com/ai-and-automation-in-mortgage/intro/>

## [Xiaodong Che](https://student.emeritus.org/courses/3412/users/154971)

YesterdayLocal: Sep 18 at 8:41pm<br>Course: Sep 19 at 12:41am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

* What is one current application of machine learning or deep learning in your industry? To answer this question, do a search online and find an example. Make sure to include the link to your example, so your peers can read more if they are interested.

Last May, Google announced a case study of using predictive ML to transform hard disk drive maintenance at their data centers [1].

* Given this application, what is one opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization?

In this case study, machine learning is used to predict if a HDD that has shown operational glitches would fail totally.  Using petabytes of data from these HDDs in the data centers every few seconds, Google’s AutoML model was trained and eventually achieved a precision of 98%.

* Thinking about your chosen application, identify an opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization and share the details in the discussion board.

The business opportunity for using an ML-based system to predict HDD failure is very attractive. hundred millions of HDDs are currently in the data centers, accurate prediction of HDD failures not only can reduce costs but can also prevent problems before they impact end users.

* To capture this opportunity, what types of data would you need to collect or create?

In this case demo, the data collected for ML learnings are those that characterize HDD operation and performance.  The data created are the prediction and the recommendation options of HDDs in question.

[1]<https://cloud.google.com/blog/products/ai-machine-learning/seagate-and-google-predict-hard-disk-drive-failures-with-ml>

## [Kenneth Kabaki](https://student.emeritus.org/courses/3412/users/145896)

1:17amLocal: Sep 19 at 1:17am<br>Course: Sep 19 at 5:17am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

I live in Atlanta not too far from the headquarters of Colonial Pipeline, who in 2020, were the victims of a ransomware attack. This case, prompted several calls from our customers pleading with us to support their efforts to ensure that they are protected from such attacks. As we mostly deal with companies that handle critical infrastructure, prevention of ransomware and similar attacks is what keeps CIOs up at night. These attacks, as complex as they might seem, often sneak into an organization through an innocuous email with a malicious link.

Protecting an organization from malware attacks is an area that is well suited to leverage machine learning through,  1) deep analysis of the the vast emails that an organization receives, 2) observation of patterns and flagging of anomalies 3) querying external sources for metadata  that could be attributed to malware.

Implementation  of a technique such as the [Random Forest (Links to an external site.)](https://www.sciencedirect.com/science/article/pii/S2405959520304756) within an organization's email servers would perhaps ensure that a potentially destructive email never makes it through.

## [Lynette David](https://student.emeritus.org/courses/3412/users/157365)

6:12amLocal: Sep 19 at 6:12am<br>Course: Sep 19 at 10:12am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

There are many uses cases in the FMCG space now available, and due to the onset of E-Commerce sites, AI and ML are helping take online and offline selling to the next level.  PWC informs that AI has an adoption rate of 54% in the Consumer Goods / Retail space, and that is in the Near term or future (0-3yr).

In our industry, the following are common uses cases that are now being tested and further built on:

1. Inventory optimization through SKU assortment and machine learning - helping us ensure Customer shelves are appropriately stocked and the right product/assortment is always available for Consumer purchase

2. Recommendation Engine - considering the use case mentioned in Point 1, we take it to the next step and with the use of an engine, use the data to provide a "suggested basket" for Customers, to replenish out-of-stocks, the right promotional offerings, right product mix and profitability, etc.   There are many different factors and variables of data that are used, but this all leads to generating incremental revenue.

To enable the above use cases, some of the data inputs that are required include:

1. Customer Master data

2. Customer Segmentation

3. Order history

4. Planograms

5. Customer Price / Promotion Lists

6. Model stock levels

7. Weather forecast

With this approach, we will be able to not only sell more appropriately, to consumer demand, but it will also have a ripple effect on demand and supply planning, and help us achieve efficiencies and reduced costs across the value chain, fully transforming the current traditional ways of working and managing business.

[https://www.pwc.com/gx/en/issues/analytics/assets/pwc-ai-analysis-sizing-the-prize-report.pdf (Links to an external site.)](https://www.pwc.com/gx/en/issues/analytics/assets/pwc-ai-analysis-sizing-the-prize-report.pdf)

[https://azure.microsoft.com/en-in/blog/current-use-cases-for-machine-learning-in-retail-and-consumer-goods/ (Links to an external site.)](https://azure.microsoft.com/en-in/blog/current-use-cases-for-machine-learning-in-retail-and-consumer-goods/)

[https://richrelevance.com/customers#content-section3 (Links to an external site.)](https://richrelevance.com/customers#content-section3)

## [Federico Giannangeli](https://student.emeritus.org/courses/3412/users/151424)

7:47amLocal: Sep 19 at 7:47am<br>Course: Sep 19 at 11:47am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

* The Global Oil & Gas Industry is one of the major primary sources of methane emissions.  Just for reference, Methane (CH4) has ~36 times more negative effect than CO2 in a window of 100 years.  According to the IEA, 75% of this methane could be managed (source IEA).  This has awakened the R&D in this domain.   To date, multiple solutions that combines or use Satellite Images, Infrared cameras, direct measurement, drones, sensors, etc with AI/ML trained algorithm, has resulted in dozens of companies that has off the shelf products.  **An example of this is Kayrros** ([https://www.kayrros.com/methane-watch/ (Links to an external site.)](https://www.kayrros.com/methane-watch/))
* Kayrros is a product that offers methane risk management opportunities to the Oil & Gas industry/others.     The technology uses proprietary algorithm that convert, in near real time,  satellite images (captured from the Copernicus network of satellites) into methane hotspots and emissions measurement (rephrased from tKayrros website).   This product could offers an opportunity to compare current emissions reports in our producing assets and in addition to this, we could tie historical operating and permitting information that has resulted in inspection of pipeline, valves and/or flaring systems due to leaks and create predictive AI/ML that support operators to deploy new maintenance protocol and be more effective when deciding in capital improvements aimed to GHG reduction.
* The above will require a combination of data that is captured by Kayrros and the key operating data of the field (e.g. pipeline networks, valves locations, flare locations, emissions reports to agencies, leak events reported and reasons, inspection reports, etc) that could provide insights.

Other source of info associated to this topic:

* <https://www.linkedin.com/pulse/using-ai-methane-emissions-detection-markus-cozowicz>

## [Shailendra Singh](https://student.emeritus.org/courses/3412/users/156591)

1:44pmLocal: Sep 19 at 1:44pm<br>Course: Sep 19 at 5:44pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Federico,

This is a good application. I was engaged in drone based solution for methane 64 other gas detections.

## [Rosalind Beasley](https://student.emeritus.org/courses/3412/users/162600)

12:44pmLocal: Sep 19 at 12:44pm<br>Course: Sep 19 at 4:44pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

An application of machine learning and natural language processing in the life sciences industry is in the pharmacovigilance process.   However, the entire value chain can reap the benefits of AI and machine learning from a productivity and decision-making perspective.

Our software digitizes the process of collecting information related to the quality and safety of pharmaceutical and medical device products and making decisions as to how to deal with issues found in the manufacturing process or product throughout its lifecycle.  Pharmacovigilance is the process of maintaining the quality and safety of pharmaceuticals and medical devices after release into the market.  This process includes critical decisions that can impact patients using the products.  It also includes many route tasks that can be automated.

Machine learning can inform safety decisions in pharmacovigilance, such as whether to health threats to the FDA.  These decisions are time-sensitive and, depending on the severity of the issue, may require reporting to the FDA immediately per federal regulation.

Our software already captures much of the data.  The challenge is that the data is vast and in different formats, including structured data capture from product complaints via customer service, social media, portals, and unstructured data in the form of images, medical device logs, and scanned documents.

Deloitte gives their perspective in the site link below dedicated to "AI in Pharma and Life Sciences.  
<https://www2.deloitte.com/us/en/pages/life-sciences-and-health-care/articles/ai-in-pharma-and-life-sciences.html>

## [Jinmi](https://student.emeritus.org/courses/3412/users/163394)

1:21pmLocal: Sep 19 at 1:21pm<br>Course: Sep 19 at 5:21pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Machine learning and deep learning can be used to in the drug discovery to identify novel drug candidates, optimize the formulation to enhance their stability in transportation and storage, as well as in designing better manufacturing processes.

One example in gene therapy research application is recently published in Nature Biotechnology, that machine learning is used for deep diversification of AAV casid protein, used for delivering functional genes to specific tissue and cell type of patients suffering genetic disease. The article concludes “The deep neural network models accurately predict capsid viability across diverse variants. This approach unlocks vast areas of functional but previously unreachable sequence space, with many potential applications for the generation of improved viral vectors and protein therapeutics”.  To capture this opportunity, data sets of existing natural and engineered capsid sequences and their functions revealed in non-clinical and clinical studies are important to be collected and analyzed, and iterative cycles of design, analysis and model validation will make the model more accurate.

This is just one example of many that machine learning and deep neural network can be used in research and development of better therapeutics, and enable biopharmaceutical companies to bring new medicine to markets faster.

<https://www.nature.com/articles/s41587-020-00793-4>

## [Shailendra Singh](https://student.emeritus.org/courses/3412/users/156591)

1:42pmLocal: Sep 19 at 1:42pm<br>Course: Sep 19 at 5:42pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Drones are being used in the industrial sectors (oil-gas, power distribution etc) to inspect the structures or power-lines. During the first wave of drone based inspections, pictures and videos were taken. These pictures and videos were reviewed by experts and decisions were made. Since then some companies have started using Machine learning based algorithms (supervised learning).  
Identification of external and internal corrosion in a refinery is one examples of the application of supervised Machine Learning example. Identifying the external and internal corrosion in the pipelines is labor intensive and manual process. A drone can fly a pre-determined path and capture pictures of piping and this ML algorithm can identify the corrosion.   
To fully capture this opportunity, organizations needs to capture and label data which is representative of 1. corrosion exist but is insignificant 2. corrosions exists and needs to be watched for future 3. corrosion exists and an action needs to be taken

This ML application offers oil-gas (or any industry where corrosion is an issue) significant opportunity for preventive maintenance efficiency (reduced cost, increased speed of inspections, higher quality of inspections) and predictive maintenance.  The entire corrosion detection process can become highly efficient where drones can launch automatically at given intervals, collect and transmit the data, ML or deep learning algorithms can identify and predict the corrosion location and severity and then system can launch instructions for actions to right people with right information. ,

[U.S. Navy Develops Corrosion Detection Drone (maritime-executive.com) (Links to an external site.)](https://maritime-executive.com/article/u-s-navy-develops-corrosion-detection-drone)

[A Complete Guide to Corrosion Monitoring (flyability.com)](https://www.flyability.com/corrosion-monitoring)

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* What is one current application of machine learning or deep learning in your industry? To answer this question, do a search online and find an example. Make sure to include the link to your example, so your peers can read more if they are interested.

As recently Deluxe Inc acquires First American Bank into its portfolio, I want to go from the banking point of view. One of the most useful areas that we are applying machine learning efforts is process automation in finance.

* Given this application, what is one opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization?

One opportunity will be reducing the call center costs with call center automation along with Chatbots, paperwork automation. Those applications will reduce the costs and enhance customer satisfaction and help us better decisions making. Especially customer segmentation is extremely important in credit cards applications. On the other hand, a credit score is specifically important when assessing a loan application. Machine learning supports our teams while making decisions on these transactions.

* Thinking about your chosen application, identify an opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization and share the details in the discussion board.

Generating new revenue for the sake of profit is one of the most exciting AI opportunities. With greater customer insights and automation, banks can deepen customer relationships, provide more support to bankers and sales teams, execute stronger marketing efforts, and even launch new products timely. You can find below how the banks can use the ML in various parts of their processes with real examples.

“It starts by using data to make customer relationships more personal. Banks and credit card issuers, for example, are using AI to enhance their loyalty programs. Offers are based on each cardholder’s behaviors, spending habits, and even travel locations, rather than generic points or rewards. In marketing, AI enables customer segmentation with far greater precision. Outcomes may be upsell/cross-sell recommendations or even financial guidance from “Robo-advisors.”

FIs can also harness AI to provide early warning when high-value customers are at risk, helping to stem attrition. These tools monitor numerous variables, from decreased usage of the bank portal to fluctuating transaction levels, then alert the banker to take action.

Leveraging AI-powered products to enhance other in-demand solutions is the final opportunity for growth. For example, next-generation Integrated Receivables (IR) solutions now feature sophisticated algorithms and machine learning technologies to match customer invoices with electronic remittances. This technology solves a common issue for businesses that receive high volumes of ACH receivables. When AI pairs with IR, banks can offer a compelling product that adds value to their relationships with corporate customers, demonstrates the bank’s commitment to innovation, and introduces an entirely new revenue stream.”

* To capture this opportunity, what types of data would you need to collect or create?

These data are created within the company by daily interactions and transactions with our clients.

Resources:

<https://www.deluxe.com/blog/bankers-guide-artificial-intelligence/>

<https://www.n-ix.com/machine-learning-in-finance-why-what-how/>

# Digital transformation for banking in 2021: In-depth guide

<https://research.aimultiple.com/banking-dx/>

## [Rosalind Beasley](https://student.emeritus.org/courses/3412/users/162600)

Sep 19, 2021Local: Sep 19 at 12:44pm<br>Course: Sep 19 at 4:44pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

An application of machine learning and natural language processing in the life sciences industry is in the pharmacovigilance process.   However, the entire value chain can reap the benefits of AI and machine learning from a productivity and decision-making perspective.

Our software digitizes the process of collecting information related to the quality and safety of pharmaceutical and medical device products and making decisions as to how to deal with issues found in the manufacturing process or product throughout its lifecycle.  Pharmacovigilance is the process of maintaining the quality and safety of pharmaceuticals and medical devices after release into the market.  This process includes critical decisions that can impact patients using the products.  It also includes many route tasks that can be automated.

Machine learning can inform safety decisions in pharmacovigilance, such as whether to health threats to the FDA.  These decisions are time-sensitive and, depending on the severity of the issue, may require reporting to the FDA immediately per federal regulation.

Our software already captures much of the data.  The challenge is that the data is vast and in different formats, including structured data capture from product complaints via customer service, social media, portals, and unstructured data in the form of images, medical device logs, and scanned documents.

Deloitte gives their perspective in the site link below dedicated to "AI in Pharma and Life Sciences.  
<https://www2.deloitte.com/us/en/pages/life-sciences-and-health-care/articles/ai-in-pharma-and-life-sciences.html>

## [Jinmi](https://student.emeritus.org/courses/3412/users/163394)

Sep 19, 2021Local: Sep 19 at 1:21pm<br>Course: Sep 19 at 5:21pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Machine learning and deep learning can be used to in the drug discovery to identify novel drug candidates, optimize the formulation to enhance their stability in transportation and storage, as well as in designing better manufacturing processes.

One example in gene therapy research application is recently published in Nature Biotechnology, that machine learning is used for deep diversification of AAV casid protein, used for delivering functional genes to specific tissue and cell type of patients suffering genetic disease. The article concludes “The deep neural network models accurately predict capsid viability across diverse variants. This approach unlocks vast areas of functional but previously unreachable sequence space, with many potential applications for the generation of improved viral vectors and protein therapeutics”.  To capture this opportunity, data sets of existing natural and engineered capsid sequences and their functions revealed in non-clinical and clinical studies are important to be collected and analyzed, and iterative cycles of design, analysis and model validation will make the model more accurate.

This is just one example of many that machine learning and deep neural network can be used in research and development of better therapeutics, and enable biopharmaceutical companies to bring new medicine to markets faster.

https://www.nature.com/articles/s41587-020-00793-4

## [Shailendra Singh](https://student.emeritus.org/courses/3412/users/156591)

Sep 19, 2021Local: Sep 19 at 1:42pm<br>Course: Sep 19 at 5:42pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Drones are being used in the industrial sectors (oil-gas, power distribution etc) to inspect the structures or power-lines. During the first wave of drone based inspections, pictures and videos were taken. These pictures and videos were reviewed by experts and decisions were made. Since then some companies have started using Machine learning based algorithms (supervised learning).  
Identification of external and internal corrosion in a refinery is one examples of the application of supervised Machine Learning example. Identifying the external and internal corrosion in the pipelines is labor intensive and manual process. A drone can fly a pre-determined path and capture pictures of piping and this ML algorithm can identify the corrosion.   
To fully capture this opportunity, organizations needs to capture and label data which is representative of 1. corrosion exist but is insignificant 2. corrosions exists and needs to be watched for future 3. corrosion exists and an action needs to be taken

This ML application offers oil-gas (or any industry where corrosion is an issue) significant opportunity for preventive maintenance efficiency (reduced cost, increased speed of inspections, higher quality of inspections) and predictive maintenance.  The entire corrosion detection process can become highly efficient where drones can launch automatically at given intervals, collect and transmit the data, ML or deep learning algorithms can identify and predict the corrosion location and severity and then system can launch instructions for actions to right people with right information. ,

[U.S. Navy Develops Corrosion Detection Drone (maritime-executive.com) (Links to an external site.)](https://maritime-executive.com/article/u-s-navy-develops-corrosion-detection-drone)

[A Complete Guide to Corrosion Monitoring (flyability.com)](https://www.flyability.com/corrosion-monitoring)

[Collapse Subdiscussion](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)[Mosongo Moukwa](https://student.emeritus.org/courses/3412/users/86918)

## [Mosongo Moukwa](https://student.emeritus.org/courses/3412/users/86918)

WednesdayLocal: Sep 22 at 1:58am<br>Course: Sep 22 at 5:58am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Thank you, Shailendra.

Maybe this article would be useful

 Azadeh, A., Saberi, M., Kazem, A., Ebrahimipour, V., Nourmohammadzadeh, A., & Saberi, Z. (2013). A flexible algorithm for fault diagnosis in a centrifugal pump with corrupted data and noise based on ANN and support vector machine with hyper-parameters optimization. Applied Soft Computing, 13, 1478–1485. doi:http://dx.doi.org/10.1016/j.asoc.2012.06.020

## [Luis Silvestre Jr.](https://student.emeritus.org/courses/3412/users/161362)

Sep 20, 2021Local: Sep 20 at 5am<br>Course: Sep 20 at 9am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

For this post, I will focus on Construction as it is related to my organization's goal of digitalizing home-building. There are in fact various uses of Machine Learning and AI in construction as discussed in [1] and [2]. For instance, Machine learning improves quality designs and specifically for a more efficient Building Information Modeling. Reinforcement Learning helps as well with better project planning, and Machine learning helps develop safety precautions and monitor possible developing problems post-construction.

Given all these applications specifically "making spaces better for human end users", we can definitely leverage on the use of machine learning for everything we do as we are digitalizing the entire process of home-building. This is an evidence that so far, we are on the right track and that our goal is indeed achievable. Now, we are sure that we must invest on AI. Before, we thought of "manually programming" everything and of course it is no easy job. However, we decided to go with AI and today proves that that decision is indeed the correct one to take.

Recently, we can digitally generate the structure of a house and is now currently enclosing it. The data we have used/need are data on lot areas, construction limitations of the vicinity, and we have represented everything as data points on the Cartesian plane so far. In the future, we are trying to make it democratic in such a way that people will get an input on telling which designs are "correct" by using AI. We are still brainstorming on how to turn people's opinions into quantitative data yet.

Sources:

[1] https://constructionblog.autodesk.com/machine-learning-construction/

[2] https://constructible.trimble.com/construction-industry/the-benefits-of-ai-in-construction

[Sonal Shah](https://student.emeritus.org/courses/3412/users/156539)

## [Sonal Shah](https://student.emeritus.org/courses/3412/users/156539)

Sep 20, 2021Local: Sep 20 at 8:54am<br>Course: Sep 20 at 12:54pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

I work for a secondary mortgage company, so in my organization, machine and deep learning can be leveraged to create models that can be used in underwriting, processing, and closing mortgages in a short time. This process currently is very manual and requires review of several documents/data that originate from different sources and third party organizations. This unstructured data can be fed into an AI/ML model and help speed up the close process from days to hours. One such company that is into building models that assist in risk assessment is [https://www.zest.ai/ (Links to an external site.)](https://www.zest.ai/).

Several data points are required to assist in speeding up the mortgage lending cycle such as, credit scores, property assessment value, loan valuation data, likelihood of prepayments and appraisal data.

## [Rene Felder](https://student.emeritus.org/courses/3412/users/138032)

Sep 20, 2021Local: Sep 20 at 2:19pm<br>Course: Sep 20 at 6:19pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

In the financial industry Robo-Advisors are a new gadget. Robo-Advisors are automated Bot which help costumers to make their choices for investments.

Wiki defines Robo-advisor as: "a class of financial adviser that provide financial advice or investment management online with moderate to minimal human intervention. They provide digital financial advice based on mathematical rules or algorithms. These algorithms are designed by financial advisors, investment managers and data scientists, and coded in software by programmers. These algorithms are executed by software and do not require a human advisor to impart financial advice to a client. The software utilizes its algorithms to automatically allocate, manage and optimize clients' assets for either short-run or long-run investment. Robo-advisors are categorized based on the extent of personalization, discretion, involvement, and human interaction."

They can be a next killer application in the financial industry and also be an enabler for financial inclusion around the globe.

See also Forbes article: [How AI Is Expanding The Applications Of Robo Advisory (forbes.com)](https://www.forbes.com/sites/ilkerkoksal/2020/04/18/how-ai-is-expanding-the-applications-of-robo-advisory/?sh=3ac8df55c326)

## [Alfred Selvarajah](https://student.emeritus.org/courses/3412/users/161402)

Sep 20, 2021Local: Sep 20 at 2:40pm<br>Course: Sep 20 at 6:40pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

I am passionate about how AI/ML can help organizations drive revenue through enhanced customer engagement and so I have picked ML/DL applications in customer experience strategies.

Reading reference: [4 Real-Life Examples of Using Machine Learning and Artificial Intelligence to Revolutionise Your Customer Experience | Contino | Global Transformation Consultancy (Links to an external site.)](https://www.contino.io/insights/machine-learning-customer-experience)

I work with a technology services firm as a sales/revenue leader/contributor. So, I am continuously looking for new ways in which we can acquire customers. One of the areas that has been interesting is helping sales individuals through coaching that is based on actual data. Therefore a couple of key applications could be:

**1) Conversational Intelligence**

The ability to gather insights based on all the phone/email touchpoints that salespeople are having with potential customers is crucial to understanding what they are doing right and wrong. For e.g. understanding keywords they are using in conversations and how that correlates to customers’ overall sentiment and/or satisfaction is a good data point to understand if salespeople are having good conversations. This can be applied to customer service folks as well. This can help us make decisions on how to better train salespeople, how we should change our messaging when speaking to customers, how customers perceive us etc.

**2) Analytics/Reporting**

Salespeople don’t like doing administrative tasks and want to spend more time that helps them close more deals. But, leadership expects them to report back effectively about various KPIs and Metrics. AI/ML can help salespeople gather data automatically from emails/phone conversations they are having with customers and automatically integrate that with a CRM platform that helps put together various analytics/reports that management wishes thereby helping salespeople save time and effort in complex, cumbersome reporting.

Data points that would be needed are the number of phone/email conversations salespeople are having, names of accounts being called upon, call transcripts, video recordings, etc.

## [Jesse Oman](https://student.emeritus.org/courses/3412/users/161721)

Sep 20, 2021Local: Sep 20 at 5:03pm<br>Course: Sep 20 at 9:03pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Currently, Flueid is one of a number of companies looking to leverage ML to be able to accelerate the title decisions process:

[Flueid Awarded Patent for Its Leading Real Estate Transaction Technology | Business Wire (Links to an external site.)](https://www.businesswire.com/news/home/20210819005534/en/Flueid-Awarded-Patent-for-Its-Leading-Real-Estate-Transaction-Technology)

Right now, while sounding all encompassing, the hit rate of these types of decisions engines needs to improve to truly unlock the potential.  However, being able to increase the hit rate would prove immediately value, especially in the refinance arena where the property isn’t changing ownership from the prior search (which limits what types of data is required to verify the title).

You would need to have the prior history and results from the original title examination and, then be able to match it up to any public records that showed a change in local property plots, personal changes for the current title holder (marriage, death, births, etc) and any changes in the current holders’ financial picture.  By leveraging these, and learning by patterns, this could dramatically cut time and money out of the process.

## [Muralidhar Gowda](https://student.emeritus.org/courses/3412/users/145255)

Sep 20, 2021Local: Sep 20 at 10:22pm<br>Course: Sep 21 at 2:22am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

**What is one current application of machine learning or deep learning in your industry? To answer this question, do a search online and find an example. Make sure to include the link to your example, so your peers can read more if they are interested.**

Application specially interests me is Machine learning  of  asset failures in utility Industry .

Links of a recent  Machine Learning pilot  from our Transmission & Distribution Operations .

[https://toumetis.com/machine-learning-for-industrial-applications/ (Links to an external site.)](https://toumetis.com/machine-learning-for-industrial-applications/)

**Given this application, what is one opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization?**

Most of the utilities are  more than 100 years old, 70% of transmission and distribution lines are more than 25 years old, according to the Department of Energy[1]. Machine learning  of  utility asset failures  helps in preventing outages by giving operators advance warning of equipment failure, enabling them to improve maintenance planning, avoid unnecessary premature replacement, reduce risk of costly unplanned downtime and improve safety.

**Thinking about your chosen application, identify an opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization and share the details in the discussion board.**

Utility Companies are faced with a situation where  utility’s underground assets are aging, In the last 10 years, T-splices were responsible for more than one-third of the utility’s asset failures. Simple electrical components that join mainline underground cables, T-splices are like other assets in that they can fail routinely, causing unplanned outages. It can be hard to locate the outages immediately because T-splices are underground and not directly monitored by the control center, as they are considered minor assets. In an era of digital transformation, it may seem astonishing an electrical part costing less than US$60 can trigger outages that impact customers’ daily lives and cause utilities tens of thousands of dollars to resolve.[1] .The utility need a better way to predict which of these assets would fail next. [1]

**To capture this opportunity, what types of data would you need to collect or create?**

Data is at the heart of all utilities. integration of operational data sets —  outage management system (OMS), supervisory control and data acquisition (SCADA) system and geographic information system (GIS) .Comprehensive integration can be helpful for use cases such as identifying outage causes, diagnosing unhealthy assets and setting up alarms for operational staff to analyze [1]

Detailed Case study and benefits of Machine learning can be see in the article below [1}

 Reference :

[1] [https://www.sdgenews.com/article/discovery-and-innovation-machine-learning (Links to an external site.)](https://www.sdgenews.com/article/discovery-and-innovation-machine-learning)

[[2] https://toumetis.com/machine-learning-for-industrial-applications/ (Links to an external site.)](https://toumetis.com/machine-learning-for-industrial-applications/)

[[3] https://deloitte.wsj.com/articles/how-predictive-analytics-can-help-power-utility-companies-detect-risks-01546912934](https://deloitte.wsj.com/articles/how-predictive-analytics-can-help-power-utility-companies-detect-risks-01546912934)

[Collapse Subdiscussion](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)[Mosongo Moukwa](https://student.emeritus.org/courses/3412/users/86918)

## [Mosongo Moukwa](https://student.emeritus.org/courses/3412/users/86918)

WednesdayLocal: Sep 22 at 1:54am<br>Course: Sep 22 at 5:54am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Muralidhar, thank you for sharing. AS i was reading your write up, I remember having read this paper awhile back from Deloitte on predictive maintenance.

Deloitte: Predictive maintenance and the smart factory <https://www2.deloitte.com/content/dam/Deloitte/us/Documents/process-and-operations/us-cons-predictive-maintenance.pdf>

## [Farid BOUTAGHANE](https://student.emeritus.org/courses/3412/users/164234)

Sep 21, 2021Local: Sep 21 at 3:03am<br>Course: Sep 21 at 7:03am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

An industry-changing use of AI and DS is about innovating and shortening drug&medical device development  with concepts such as Real-World Data and Real-World Evidence (RWD/RWE). Using health/patient-related data sets and applying AI techniques such as natural language processing, new patterns and findings can be discovered in a fraction of the time usually needed -going from years to weeks- and in a way so reliable those findings are recognized by health authorities such as the FDA. A good explanation of that trend can be found here [Why big pharma sees a remedy in data and AI | Financial Times (ft.com) (Links to an external site.)](https://www.ft.com/content/4743d76c-af9b-11e9-8030-530adfa879c2)

The applications to make business decisions are manifold. One of the most impactful ones is managing the development portfolio more efficiently. Pharma-type investments are usually very high – in the billions- and happen over long periods of time. Using AI and ML, early decisions can be made on what to invest vs what to drop, having more targeted investments and shorter times to market. As the pandemic has shown, speed is more and more of the essence, while keeping safety high is an imperative.

The required sources of data are varied and can be combined in almost endless ways : anonymized data from existing and past clinical trials, unstructured data such as anonymized patient records, actual data collected from trial medical devices themselves etc.

## [Tom Gol](https://student.emeritus.org/courses/3412/users/164325)

Sep 21, 2021Local: Sep 21 at 10:14am<br>Course: Sep 21 at 2:14pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

One application of deep learning used in the counter-drones industry today is **image recognition**. Neural networks can be trained to classify images and determine if a drone appears in them. This way a system can detect and track a drone autonomously, using only a video camera as a sensor, as indicated in this article: [https://arxiv.org/pdf/2103.13933.pdf (Links to an external site.)](https://arxiv.org/pdf/2103.13933.pdf)

[(Links to an external site.)](https://arxiv.org/pdf/2103.13933.pdf)  
This application can be further extended to classify specific models of drones. Statistics on drone models that are commonly used and seen around protected sites can be leveraged to make more informed business decisions when it comes to R&D efforts. In the Cyber RF domain, implementing mitigation for a specific drone model is a costly effort. By knowing which drone models are more common a business can decide in which projects to put its efforts.

In order to capture this opportunity a neural network should be trained with images and videos of drones tagged with their model. This data can be collected from retail websites and even from YouTube videos.

## [Abhishek kumar](https://student.emeritus.org/courses/3412/users/161758)

Sep 21, 2021Local: Sep 21 at 1:40pm<br>Course: Sep 21 at 5:40pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

 What is one current application of machine learning or deep learning in your industry? To answer this question, search online and find an example.

I am part of the Paint industry. As part of the Finance transformation project, our department has been piloting robotic process automation (RPA) to improve specific tasks' speed, efficiency, and accuracy. Our Target is to make the finance S2P cycle (Source to Pay) digitally enabled and generated advanced analytics using some intelligent tool. This will help us to automate end-to-end processes. Its adherence limits RPA to rigid rules, and it can’t execute decision-oriented tasks. Machine learning (ML) uses past data to make predictions. Companies are looking to ML to complement RPA because it can address some limitations and derive more value. We are using Ceolins (Process Mining tool) with RPA to achieve these requirements.

[https://www.celonis.com/resources/collection/rpa-automation/ (Links to an external site.)](https://www.celonis.com/resources/collection/rpa-automation/)

Given this application, what is one opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization?

**Business Value # Achieve higher  Productivity**

1.**1 Key Objective**: Which steps in a process can we speed up or eliminate?

1.2 **RPA Role**: Consolidates data from specific systems or documents to reduce manual work

1.**3 RPA with ML System**: Decides what data a human needs to make a decision and pulls it.

Thinking about your chosen application, identify an opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization and share the details in the discussion board.

**Business Value:  Improve DSO**

**Opportunity:** Reduced daily unapplied cash by automating the cash application process

**RPA**: Automate the electronic transfer of Bank remittance data to Oracle Receivables applications through Lockbox

**RPA with ML**: will help to identify exceptions/errors in this process and automate that process.

 To capture this opportunity, what types of data would you need to collect or create?

Our team captures bank remittance files from different sources, customer invoices, and customer payments to capture this opportunity.

We are sending all remittance file to the High Radius Cash applications tool, which is helping to automate the Cash application process using OCR engines.

<https://www.highradius.com/software/integrated-receivables/cash-application/>

## [ABHISHEK LALL](https://student.emeritus.org/courses/3412/users/163982)

Sep 21, 2021Local: Sep 21 at 3:53pm<br>Course: Sep 21 at 7:53pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

I work in the insurance domain and my team is responsible for enabling the next generation of capabilities leveraging advanced analytics.  One of the applications that is on our radar is to harness the dense datasets created by wearables for a more proactive prediction of injuries and more efficient claims settlement especially in the case of Workers Compensation.

With unprecedented growth in the development & adoption of wearable devices, there is a phenomenal opportunity on the horizon for driving operational efficiencies of insurance claims processing and more importantly providing better healthcare to employees.

As the sensors on wearable devices become more sophisticated, there is an opportunity to capture data that describe the physical movement patterns, stress levels, locations, etc to name a few which can be then analyzed over a period of time to build machine learning models that are capable of predicting injury risks while controlling for other factors such as demographics. This not only protects employees but also results in significant claims cost savings for the corporations.

[https://www.insurancebusinessmag.com/us/news/workers-comp/wearables-market-expected-to-boom-with-benefits-for-workers-comp-226328.aspx (Links to an external site.)](https://www.insurancebusinessmag.com/us/news/workers-comp/wearables-market-expected-to-boom-with-benefits-for-workers-comp-226328.aspx)

Another potential benefit to the insurance carriers is that of identifying and mitigating suspicious workers' compensation claims where a typical fraudulent claim usually involves soft tissue injuries/misrepresentation of original injury circumstances etc. A machine learning model trained on relevant detailed data can go a long way in predicting suspicious claim risk scores. This could very well fit into overall claims processing automation.

[https://www.verisk.com/insurance/visualize/all-or-nothing-automation-incremental-change-is-a-winning-proposition/ (Links to an external site.)](https://www.verisk.com/insurance/visualize/all-or-nothing-automation-incremental-change-is-a-winning-proposition/)

## [Yavuz Kurt](https://student.emeritus.org/courses/3412/users/164312)

Sep 21, 2021Local: Sep 21 at 7:27pm<br>Course: Sep 21 at 11:27pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

* What is one current application of machine learning or deep learning in your industry? To answer this question, do a search online and find an example. Make sure to include the link to your example, so your peers can read more if they are interested.

As recently Deluxe Inc acquires First American Bank into its portfolio, I want to go from the banking point of view. One of the most useful areas that we are applying machine learning efforts is process automation in finance.

* Given this application, what is one opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization?

One opportunity will be reducing the call center costs with call center automation along with Chatbots, paperwork automation. Those applications will reduce the costs and enhance customer satisfaction and help us better decisions making. Especially customer segmentation is extremely important in credit cards applications. On the other hand, a credit score is specifically important when assessing a loan application. Machine learning supports our teams while making decisions on these transactions.

* Thinking about your chosen application, identify an opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization and share the details in the discussion board.

Generating new revenue for the sake of profit is one of the most exciting AI opportunities. With greater customer insights and automation, banks can deepen customer relationships, provide more support to bankers and sales teams, execute stronger marketing efforts, and even launch new products timely. You can find below how the banks can use the ML in various parts of their processes with real examples.

“It starts by using data to make customer relationships more personal. Banks and credit card issuers, for example, are using AI to enhance their loyalty programs. Offers are based on each cardholder’s behaviors, spending habits, and even travel locations, rather than generic points or rewards. In marketing, AI enables customer segmentation with far greater precision. Outcomes may be upsell/cross-sell recommendations or even financial guidance from “Robo-advisors.”

FIs can also harness AI to provide early warning when high-value customers are at risk, helping to stem attrition. These tools monitor numerous variables, from decreased usage of the bank portal to fluctuating transaction levels, then alert the banker to take action.

Leveraging AI-powered products to enhance other in-demand solutions is the final opportunity for growth. For example, next-generation Integrated Receivables (IR) solutions now feature sophisticated algorithms and machine learning technologies to match customer invoices with electronic remittances. This technology solves a common issue for businesses that receive high volumes of ACH receivables. When AI pairs with IR, banks can offer a compelling product that adds value to their relationships with corporate customers, demonstrates the bank’s commitment to innovation, and introduces an entirely new revenue stream.”

* To capture this opportunity, what types of data would you need to collect or create?

These data are created within the company by daily interactions and transactions with our clients.

Resources:

[https://www.deluxe.com/blog/bankers-guide-artificial-intelligence/ (Links to an external site.)](https://www.deluxe.com/blog/bankers-guide-artificial-intelligence/)

[https://www.n-ix.com/machine-learning-in-finance-why-what-how/ (Links to an external site.)](https://www.n-ix.com/machine-learning-in-finance-why-what-how/)

# Digital transformation for banking in 2021: In-depth guide

<https://research.aimultiple.com/banking-dx/>

## [Mosongo Moukwa](https://student.emeritus.org/courses/3412/users/86918)

WednesdayLocal: Sep 22 at 1:49am<br>Course: Sep 22 at 5:49am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

I have been working in the materials and chemicals industries for several years. One current application is in the prediction of materials that could have certain properties. For example, from several properties of polymers and chemical reactions routes, it is possible to discover new polymers with specific properties. Polymers are what is being used to make plastics This has been applied to polymers with high thermal conductivity. This type of approach has the potential to accelerate the discovery of innovative materials.

Before Machine Learning, scientists would approach such problems with trials and errors as a source of evidence. This is time consuming. Another approach was to rely upon experience as a source of knowledge, but this does not always yield accurate results. Machine Learning does not replace those sources of knowledge, but instead it augments them, arming scientists and engineers with new knowledge. Research is accelerated and development times can be cut considerably.

The data came from PoLyInfo, a database of one hundred kinds of polymeric properties of chemical structures in terms of the constitutional repeat units. Machine learning models were generated that describe a set of properties as a function of the chemical structures.

This paper below maybe technical, but the abstract suffices.

Wu, S., Kondo, Y., Kakimoto, Ma. et al. Machine-learning-assisted discovery of polymers with high thermal conductivity using a molecular design algorithm. npj Comput Mater 5, 66 (2019).

<https://www.nature.com/articles/s41524-019-0203-2>

## [SADATAKA HORIE](https://student.emeritus.org/courses/3412/users/159031)

WednesdayLocal: Sep 22 at 4:21am<br>Course: Sep 22 at 8:21am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

In the mining industry, “dilution” has been a problem. Dilution means that valuable ores are treated as wastes while mining, and vice versa. This causes less revenue and more cost because we could not exploit the maximum value from the ore mined and we put more energy to process worthless wastes.

As a countermeasure for this issue, ShovelSense technology was developed by MineSense. ShovelSense uses buckets with many sensors. It can scan the mineral content of the bucket by sensing the grade of the material and it helps us make operational decisions in real-time. It seems the sensing technology, but of course, AI/DL is the fundamental of this technology to tell which is valuable ore and which is waste. Since the rocks are not heterogeneous and contain a lot of minerals, such as Au, Ag, Cu, Fe, S, and so on, it is very difficult to value the rocks in real-time, but AI/DL can do it much more quickly thanks to the historical data and well-developed sensing technologies.

To maximize this kind of technology, I think the development of sensing technology is the most important. Since the mineralogy of rocks is the only raw data for this solution, having accurate information about mineralogy is essential. If collected data is not reliable, this solution ends up being useless.

[https://minesense.com/shovel-sense/ (Links to an external site.)](https://minesense.com/shovel-sense/)

<https://www.oracle.com/customers/infrastructure/minesense/>

## [Paolo Daneu](https://student.emeritus.org/courses/3412/users/158233)

WednesdayLocal: Sep 22 at 5:38am<br>Course: Sep 22 at 9:38am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

AI in Power Systems

Conceiving, designing, building, and managing a Power System (PS) – Generation, Transmission, Distribution and Utilization of Electrical Energy – is an activity that is recently facing new challenges due to the increasing usage of Clean Energy Sources (CES) such as wind and solar generations. A clear issue with these CES is that they are extremely variable, depending on the potential energy available. As an example, solar and wind energies might not be available when their energy is actually needed.

This brings many difficulties to manage the PS safely and optimized. We are talking of Smart Grids.

AI is the clear answer to manage this complexity and we have many examples of applications. Make reference to these articles that are well explanatory:

* “4 Ways Artifical Intelligence is Powering the Energy Industry” by Christopher Frye, Kolabtree Blog on November 5, 2018 [1]
* “Can the Artificial Intelligence transform the Power System?” by Chris Warren, EPRI journal on January 29, 2019 [2]
* “Artificial Intelligence is Key: Why the Transition to Our Future Energy System Needs AI” by Jeremy Renshow, Power Magazine, June 9, 2021

From these articles, it’s interesting to see the needed collaboration between the expert of power systems, EPRI – Electric Power Research Institute, and the company excelling in AI.

One interesting application of AI is the use of images shot by special infrared cameras on drones to the PS equipments and conductors. This is used to assess their operation by visual recognition and recognize critical operating conditions useful to prevent damaging black-outs or improving system utilization.

It is necessary to define the characteristics of the equipment under control and their behaviors under operation. This is particular when it comes to images under different conditions, to give the basic information to the AI, the supervised type clearly, to assess and learn. For more specific details on this please refer to the article under my sources, number [2] .

Sources:

[1] [https://www.kolabtree.com/blog/4-ways-artificial-intelligence-is-powering-the-energy-industry/ (Links to an external site.)](https://www.kolabtree.com/blog/4-ways-artificial-intelligence-is-powering-the-energy-industry/)

[2] [https://eprijournal.com/can-artificial-intelligence-transform-the-power-system/ (Links to an external site.)](https://eprijournal.com/can-artificial-intelligence-transform-the-power-system/)

[3] <https://www.powermag.com/artificial-intelligence-is-key-why-the-transition-to-our-future-energy-system-needs-ai/>

## [Ash Naidu](https://student.emeritus.org/courses/3412/users/164679)

WednesdayLocal: Sep 22 at 8:45am<br>Course: Sep 22 at 12:45pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

* What is one current application of machine learning or deep learning in your industry? To answer this question, do a search online and find an example. Make sure to include the link to your example, so your peers can read more if they are interested.

One current application in my industry (telco) that keeps coming up over and over again is AIOps. Machine learning use cases for telcos are apparently showing great promise in assisting with anomaly detection, alarm aggregation to alert on actionable items, correlate incidents, root cause analysis ,etc.

One tool we're looking at is NewRelic :  [https://docs.newrelic.com/docs/alerts-applied-intelligence/new-relic-alerts/get-started/introduction-applied-intelligence/ (Links to an external site.)](https://docs.newrelic.com/docs/alerts-applied-intelligence/new-relic-alerts/get-started/introduction-applied-intelligence/)

* Given this application, what is one opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization?

Organisations are at various stages of their digital maturity. Traditional ops models still exist supporting legacy applications on on-prem legacy infrastructure, separated by engineering and operational functions. Traditional IT service management systems have supported these models pretty well up until now, but as more and more teams adopt devops ways of working, I think AIOps is a natural evolution of that merge of engineers wanting to do less and less of the repetitive work, and finding creative ways to make the intelligence tell them where the problem is rather than go digging for it.

Data visualisation can then help us demonstrate these productivity gains back to the business for future resourcing or business change type decisions.

* To capture this opportunity, what types of data would you need to collect or create?

If you wanted to improve Incident workflow;

Number of alerts,

Types of alerts,

Number of alerts that required human intervention/escalation

Mean time to detect/restore

Root cause detection - what is causing our incidents?

Visualise old flow vs new flow

How does the workforce need to change/adapt/upskill to now manage new types of work?

## [Marco Carranza](https://student.emeritus.org/courses/3412/users/90865)

WednesdayLocal: Sep 22 at 12:55pm<br>Course: Sep 22 at 4:55pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Currently I'm an advisor of a startup that provides on demand delivery workforce for companies, and is focused on a B2B model. One problem detected is that the demand of different companies could be very different, for example a large restaurant chain will require a delivery workforce during lunch and dinner, but other companies that focus more on sending documents will require people on an office schedule (9am to 5pm).

There's a large opportunity to optimize all the available resources using Machine Learning. If your clients are composed of the right mix of companies (Restaurants, Banks, B2C retailers) you can increase the profit without requiring extra workers.

[https://towardsdatascience.com/reinforcement-learning-for-production-scheduling-809db6923419 (Links to an external site.)](https://towardsdatascience.com/reinforcement-learning-for-production-scheduling-809db6923419)

To implement this solution we have new multiple data, the proposed schedule of the workers, the historical sales of all the registered businesses and the demand forecast for each  business.

## [Adam Jones](https://student.emeritus.org/courses/3412/users/36465)

WednesdayLocal: Sep 22 at 1:19pm<br>Course: Sep 22 at 5:19pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Dell Technologies has dedicated a significant investment in utilizing machine learning for predicting hardware failures. These advancements primarily extend into storage and servers but also cover networking components as well.

The Dell blog post [https://www.delltechnologies.com/en-us/blog/data-science-predicting-disk-drive-failures (Links to an external site.)](https://www.delltechnologies.com/en-us/blog/data-science-predicting-disk-drive-failures) outlines the early origins for disk (hard drives) when we were EMC. Hard drives are the most prominent quantity-based components within a data center. Unfortunately, they are also the singular component that has the highest rate of failure. This was even more so on traditional hard drives versus solid-state drives. At EMC, we started developing algorithms around 2010 to parse hard and soft errors on drives within a storage array. Not only would soft and hard errors be logged, but we also had storage processors that would check every block of data through health checks to determine failure possibilities.

Having customer-initiated and dial home parts replacement tickets is one of the most cost-intensive aspects of support. This is because someone physically has to come on-site, physically change out the drive, and then initiate a data rebalance to the new drive with parity or mirror data. Being able to proactively determine when a hard drive or any component is getting ready to fail represents one of the most significant leaps forward in customer support, along with overall component and solution stability.

After successfully implementing these technologies at EMC, they started making their way into Dell products after Dell purchased EMC. It has been a very successful program and continues to grow daily in reference to the reach of components that can be monitored with predictive algorithm-based data. All storage, server, and networking components collect major and minor component data that is collected and stored locally. The data is also sent to a data lake where to discover failure trends from component manufactures.

## [Adam Salmen](https://student.emeritus.org/courses/3412/users/144005)

WednesdayLocal: Sep 22 at 2:12pm<br>Course: Sep 22 at 6:12pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

One interesting application I am aware of, is in the gambling industry.  I have a Data Scientist friend who was working for Cesars entertainment ([cesars palace as well as 54 other gambling facilities across the US (Links to an external site.)](https://www.caesars.com/corporate)) with the end goal of helping them make more money. Here is an article I found online which talks about this trend of big data in the gambling industry: [https://vegasinc.lasvegassun.com/business/gaming/2017/jun/26/big-data-huge-potential-gaming-sector-could-see-gr/ (Links to an external site.)](https://vegasinc.lasvegassun.com/business/gaming/2017/jun/26/big-data-huge-potential-gaming-sector-could-see-gr/)

- To answer the question about how its leveraged to inform business decisions, my friend has told me many crazy stories.

- He was responsible to help optimize their rewards program, to get more people to sign up, to get the biggest gamblers to choose Cesars entertainment, and link every transaction that player made to his rewards card, and thus to his profile.  The reward cards were the easiest as it was all inherently digital, but they also have many other inputs to their digital models which come from physical interactions. examples can include, the positioning of each game, and how the traffic flow patterns can be optimized to both bring in people from the streets (penny slots at the entrance), and keeping people in (high stakes tables next to the bars and dancing entertainment)

to answer the third question about a specific instance, I borrow an example from the above article; casinos can use the data gathered about a certain player to understand what games they like to play. if they know the player likes roullet, they could send an offer to have $100 free roullet chips, knowing that on average- that guy (or girl) will come and not only give back that $100 on the roullet table, but loose another 300 on blackjack...

To capture this opportunity, I borrow a quote from the above article : "It’s not necessarily about collecting more data, he said. It’s about how you use the data you have. “The key word is efficiency,” he said.

In the case of the casino industry, many of the data collection points are already there. it just takes more data-scientists to help create, and test, knowledge generated by this data and use it to inform decision makers' actions!

[Mark Penna](https://student.emeritus.org/courses/3412/users/164256)

## [Mark Penna](https://student.emeritus.org/courses/3412/users/164256)

WednesdayLocal: Sep 22 at 7:17pm<br>Course: Sep 22 at 11:17pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

* What is one current application of machine learning or deep learning in your industry?

Managing energy for efficiency across industries. Usage is collected and billed accordingly, however, there is more and more applications around profiling energy usage,  This can be on time interval levels or through signal analysis.

* Given this application, what is one opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization?

Time interval has been around for a long time and this is how energy generation may forecast future demand.  Signal analysis can go much deeper, such as monitoring actual devices (motors, compressors, water heaters, etc.) for efficiency.  The information gathered and with the right rules can predict potential failures and may even schedule preventative maintenance or may suggest more energy efficient products to use.  This opens up better business service models and can also help end-customers/businesses on where to invest to reduce cost.

## [Petite Silvey](https://student.emeritus.org/courses/3412/users/164987)

WednesdayLocal: Sep 22 at 8:24pm<br>Course: Sep 23 at 12:24am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

I am going to focus on the “Rise of the Ghost Economy” in this TED Talks posted by Marco Carranza from our class.  Thank you, Marco.

[https://open.spotify.com/episode/4rDC4IPiOZSMCWtztWDkWS?si=EhAs4-k9QHSqhRIauvPRXw&dl\_branch=1 (Links to an external site.)](https://open.spotify.com/episode/4rDC4IPiOZSMCWtztWDkWS?si=EhAs4-k9QHSqhRIauvPRXw&dl_branch=1)

This TED talk relates to gig work which is possible because of Applying Machine Learning and Deep Learning. The pockets of workers which are needed to manipulate data, or to input data, or to provide a service as the result of manipulated data (Uber Eats for example), are described in this article.

Mary L. Gray points out that this type of gig worker offers “flexibility” and “cost savings” to organizations.  And, this type of work with flexible scheduling and choosing projects is ideal for workers.  If more organizations focused on providing benefits and social interactions, as detailed by Mary L. Gray, this could define the workforce of the future and address the shortage of tech talent. Learning Journeys would tie these gig workers to the corporate culture.  Crowdsourcing about benefits, and corporate blogs would also provide socialization.  Mary L. Gray points out that these workers were skyping while they worked so they were part of a social environment.

Some of the strategic considerations for organizations, according to Dr. Groth, are:

• Building the right talent base,

• Close skills gaps,

• Effective hiring practices,

• Design learning journeys.

These steps can be accomplished with this group, and the success of retention and job satisfaction can be tracked through data metrics, informing future hiring practices.

A cursory collection of data could include:

• Retention

• Job satisfaction

• Percentage of time working

• Benefits: satisfaction, relation to retention, sick days

• Type of projects chosen

• Length of time on a project

• Location and success of the gig economy

• Socialization

## [Suvarna Sardana](https://student.emeritus.org/courses/3412/users/29990)

ThursdayLocal: Sep 23 at 12:35pm<br>Course: Sep 23 at 4:35pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

Robo-advisors as defined by Investopedia are “digital platforms that provide automated, algorithm-driven financial planning services with little to no human supervision”. These platforms have provided various benefits to the individual/ordinary investors like  low cost alternatives to the traditional advisors by providing the same services at a fraction of the cost. These are also more accessible i.e. 24/7 and also require significant less capital to get started.

In the financial advisory business, rebalancing a portfolio based on investor’s risk tolerance and investment goals  is critical and required service especially in today’s highly volatile and unpredictable market. “Rebalancing” of a portfolio as defined by Mortley fool is adjusting the weightings of the different asset classes in your investment portfolio. This is achieved by buying or selling assets, which changes the weighting of a specific asset class. This process is time, resource and labor intensive process and comes with cost. Most of the organizations have use very basic rebalancing option like calendar rebalancing. Such organizations can benefit from more robust auto rebalancing feature provided by robo advisor which use more than one rebalancing strategies and allow the advisors and investors to be more responsive to market fluctuations

To implement any algorithm-driven financial planning services,  data is a critical component. Hence the organization will need data that is internal to the organization i.e. collected as part of the advisory services like client data like – demographics , goals ,preferences, risk tolerance  financial background, existing investments etc . Will also need external data like asset fund classification (e.g. value, growth, small cap etc), expense ratios, performance measures (e.g. Beta, volatility measures, return-to-vol etc), historical benchmarking, etc.,

References

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<https://www.vamsitalkstech.com/architecture/design-and-architecture-of-a-robo-advisor-platform-33/>

[Jerry Li](https://student.emeritus.org/courses/3412/users/139854)

## [Jerry Li](https://student.emeritus.org/courses/3412/users/139854)

FridayLocal: Sep 24 at 12:47pm<br>Course: Sep 24 at 4:47pm

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

# Machine Learning and Deep Learning Techniques for Cybersecurity continues evolving as the demand goes higher and higher when other technologies such as "Internet of Everything" and multi-cloud advance. [Here is a good article (Links to an external site.)](https://ccdcoe.org/uploads/2018/10/Art-19-On-the-Effectiveness-of-Machine-and-Deep-Learning-for-Cyber-Security.pdf) detailed this technology.

Implementing more deep learning features on the top of current machine learning functionalities will enable our product provide advanced auto-

detection and prevention. Collecting network traffic and event data is crucial for its implementation.

## [Davide Clo'](https://student.emeritus.org/courses/3412/users/160377)

YesterdayLocal: Sep 27 at 6:26am<br>Course: Sep 27 at 10:26am

[Manage Discussion Entry](https://student.emeritus.org/courses/3412/discussion_topics/189341?module_item_id=745824)

**What is one current application of machine learning or deep learning in your industry?**  
    In my industry, Machine learning / Deep Learning is applied to identify defects on the final objects (https://www.krones.com/en/products/machines/linatronic-ai-empty-bottle-inspector-with-deep-learning-technology.php).

**Given this application, what is one opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization?**  
    In this kind of application the business value is in tha capability to identify issues on the final product.

**Thinking about your chosen application, identify an opportunity where machine learning or deep learning can be leveraged to inform business decisions at your organization and share the details in the discussion board.**  
    For example DL can be used to identify human invisible glass crack that could generate end-user issues.  
    Then can enabled the customer to performe a tuning of the plant and finally from the supplier perspective, to provide services solution for better plant performances.

**To capture this opportunity, what types of data would you need to collect or create?**  
    The initial data points are images for a stand alone solution, then if we want to go deeper we can create a machine interface to contextualize the information and generate insight that can tune the machine.