

EAS 504: App of Data Science FINAL REPORT

- **Summarize your experience over all of these lectures and describe how data science impacts the variety of domains covered in the seminar.**

My education for my master's degree in various fields, such as machine learning, data purification, visualization, and other similar topics, helped me build abilities that are valuable in the field of data science. Nevertheless, I am aware that the most effective method for me to advance is to put my skills and knowledge to use in actual-life situations. Putting what I've learned in my master's degree to good use has been made possible thanks to the fact that I took this class on the practical applications of data science. These speeches inspired me to expand my knowledge of data science across a variety of domains, which will serve me well in the future when I am searching for job in the workforce. During the employment process, a data scientist who has extensive expertise in the industry may come off as more informed to potential employers. With the aid of tools that generate conclusions that lead to more educated business decisions and a wider worldwide effect, data science is a potent field because it can be used to enhance people's lives in unexpected ways. This is one of the reasons why data science is so strong.

In the first lecture, we learnt that data science can be used to better companies by enabling them to outsource activities to huge organizations at a low cost, and that any business that collects data stands to benefit from employing this discipline. This was one of the main takeaways from the first lecture. This technique identifies windows of opportunity for increasing a company's value by making more efficient use of in-house knowledge and automated business procedures. Included in this package are services that make it easier to communicate with consumers, such as email, phone conversations, and faxes, among many others.

We learnt in the second session that data science might be used to marketing in order to make individuals aware of new goods and services that they would not have found on their own and to expose new people to new goods and services. Businesses have reaped the benefits of data science's capacity to assist them in zeroing in on the particular demographic that is most likely to be interested in the advertising campaigns for a certain product, hence boosting the possibility that those things will be purchased. For the purpose of assisting businesses in enhancing their product advertising, it combines the study of technology, economics, and machine learning.

During the third meeting, we discussed the applications of data science in the manufacturing industry. We discussed topics such as how factories crank out goods, how to improve processes to boost efficiency and cut down on waste of raw materials, and how to solve procedures using complex neural networks. There is the potential to collect and analyze data from thousands of units inside a single facility. As part of Industrial Data Science, mathematical and physical studies, as well as models, are applied to real difficulties that arise throughout the production process. This is applied to boost fleet level optimization, business optimization, and contract management in addition to increasing equipment uptime and reducing the expenses of maintenance.

In the fourth lecture, we were taught that as data scientists, it is imperative that we always act ethically, regardless of what we are working on, because the data collected by businesses might have some kind of inherent bias that can discriminate against specific groups all over the world. This information was presented to us as a result of what we learned in the previous lecture. This information was provided to us as a reason why it is essential to always behave ethically as a data scientist. Specifically, it was offered to us as a reason why it is crucial to act unethically. It is everyone's responsibility to collaborate in an endeavor to make the world a better place by ensuring that no one is excluded from the benefits of efforts being made.

The fifth meeting was dedicated to the study of data science in online commerce and the ways in which it may be used to improve the distribution of products from manufacturers to end users. This may be achieved by leading users to a website to products that they are most likely to value or to the greatest discounts for the products that they are most interested in buying. A few examples of the many other sub-industries that work in tandem with this sector include the building of user trust, the decrease of fraud, and the improvement of selling and shipping methods. These are just few of the examples. Companies need user-tailored marketing as well as inventory management, support employees, promotional offers for repeat business, and a mechanism for rewarding loyal customers. In addition, businesses need a way to reward loyal consumers.

The sixth meeting focused on how corporate search and data science may be used to enhance the user experience while navigating a website. Information retrieval is crucial for the plethora of websites that provide a large amount of unstructured material and are meant to aid users in navigating the site. "Information discovery" refers to the process of searching through large datasets in search of unstructured content that answers a specific question. Enterprise search is used for a wide variety of purposes, from researching a company's legal standing to locating a specific file on a mobile device. The priorities of customers, on the one hand, are speed and quality, whereas the objectives of companies are to increase their client base, increase advertising revenue, and decrease operating expenses.

During seventh grade, we learned all there is to know about the use of data science in the retail sector. We learned about the whole supply chain, from raw materials sourcing to finished product distribution. Businesses in the retail industry have the dual goals of satisfying their current clientele and attracting new clients via innovative offerings. Using user data analysis, businesses may better understand their clientele and better tailor promotions and loyalty rewards to keep them coming back for more. Accurately targeting customers is crucial to increasing revenue per user while decreasing operational expenses. Similarly, retail businesses are devoting more manpower and funds to supply chain management. Companies are spending billions of dollars to optimize their operations in an effort to save hundreds of millions of dollars annually. This includes every step of the production process, from sourcing raw materials to packaging and shipping finished goods to customers.

In the last and eighth lecture, we discussed data science's many financial-related applications. How to enhance our business choices to increase our revenue and our access to financing was covered as well as ways to discourage banks from working with unsuitable customers. Customers' contributions to the bank's data pool enhance the financial institution's data science capabilities, allowing for better business choices to be made. Using data science, financial institutions may increase revenue by optimizing processes, retaining and attracting existing customers, and reaching out to prospective ones. Because of this, banks will have a better idea of how a shift in interest rates on loans would affect their profits and the safety net they can

provide in the case of a drop in customer deposits. Financial institutions may also benefit from data science if they used it to foresee losses across their portfolios as a result of general economic circumstances. Organizational resilience to potential large-scale economic downturns in terms of credit and operational losses is examined as part of capital planning, another crucial feature of analysis.

In lecture nine, we discussed data science and its application to CAD software. By showing how machine learning and AI may be included into a chip's design, we showed that it could be feasible to increase the chip's intelligence. Ingenuity in this field has led to the creation of smarter computers that can perform complex tasks. Self-driving There is a growing need for processors in the automotive industry that can automate a wide range of tasks and improve drivers' overall experience on the road, and the industry is warming up to artificial intelligence. Teslas are only one example of how AI is being integrated into the vehicle sector. Multiple companies are working to build AI-enabled processors like Google Tensor and Nvidia GPUs, which will aid the scheduler in making more informed decisions. The widespread adoption of this technology is guaranteed by the fact that it is already being incorporated into the circuitry of mobile devices. The time and resources spent on automating mundane tasks in service of making smarter telephones are not wasted. The creation of smart cities may be aided by AI-powered chips.

The tenth lecture focused on the use of data science in manufacturing, during which we discovered how many different industries are dependent on manufacturing for the production of products for worldwide distribution. We gained an understanding of how to automate processes for the purpose of improving operational efficacy and how to raise output at industrial facilities by incorporating artificial intelligence into robots. In industrial processes, the field of data science may also be used to minimize the amount of time that machines are idle. Quality is of the utmost importance in the aviation, space, and military industries because of the potential for catastrophic outcomes in the event that requirements are not met. Without the assistance of data science, it is hard to maintain a high level of product quality while still keeping up with the norms of the industry.

- **Carefully, draw out the commonalities and differences of data science problems with respect to the various domains covered in the lectures. Please be specific and cite the lectures when you describe these commonalities and differences.**

When data science is applied to a problem, the goal is often to make the issue more efficient. However, data science may also be used to handle several instances of the same problem by reusing the same methods. This is accomplished by repurposing solutions that were originally designed to address a different set of challenges. The majority of the lectures I attended covered a broad variety of subjects; nevertheless, the lectures three (industrial sector), nine (electrical design automation), ten (manufacturing), and seven (business) were the ones that truly resonated with me (retail). Every single one of these many economic subfields is dependent on industrial production in order to bring a wide variety of products to market. Because their goods are assembled from separate components, a significant number of their processes might stand to gain from automation, which would help them save both time and money. The use of computer vision has the potential to improve and automate a broad range of occupations across a number of different industries. The use of robots and subsequent analysis of the data acquired by the

robots has the potential to significantly boost productivity. The use of data science may be found in a wide variety of business sectors, and its primary purpose is to bring about an increase in productiveness in the production of a good or service.

In session three of an industrial data science course, for instance, the focus is on industrial equipment utilized in industries like aviation, meteorology, healthcare, and so on. Differentiation between these two types is discussed, along with similarities seen in a variety of business sectors. The success of a product is more important than ever because of the impact it may have on consumers' daily lives. In the seventh lecture, we take a closer look at retail, an economic subsector where the vast majority of goods sold are clothes and accessories meant to make people's lives easier. Increasing productivity in this sector is driven more by a desire to make money than by a desire to improve people's lives. After going through the steps of electronic design automation, which were covered in lecture nine, chips are created that may be used in a broad range of devices. The semiconductor industry has been focusing heavily on improving chips in order to assist the creation of smarter goods that can handle both simple and complex jobs, freeing up people's time to focus on what really matters to them. Smarter computers, better suited to tackle the world's most intractable problems, will be the end outcome of incorporating machine learning and artificial intelligence into computer chips. Manufacturing processes need to be enhanced, as was discussed in lecture ten, primarily to increase the quality of products made for the aerospace, military, and space sectors. High-quality commodities are essential because they are employed in the military and in the space industry, where they have the potential to save lives and advance humankind's endeavors. The first presentation covered business process services, a generic method for dealing with data science issues that may be implemented in any sector. Information is gathered across departments to better internal operations in terms of both efficiency and cost. In order to gain market supremacy, most companies in this industry are narrowing their focus to certain types of applications, thus they must constantly come up with new solutions. Problems that affect many industries may be taken on by such groups if their skill set is enough for the task at hand. Businesses in this industry have difficulties in improving business processes in domains where the market is still emerging since there are already leaders in many similar industries that have overcome analogous obstacles, have better data, and have a deeper grasp of the issues. The implications for companies in this industry's competitiveness are dire.

Using a recommender system, one may complete a wide variety of jobs. When individuals interact while shopping online, friendships might develop. The system will provide recommendations to the user based on both their own purchasing patterns and those of other consumers who share their tastes. User preferences will be taken into account while making these suggestions. Additionally, it may be used to broaden the scope of the search conditions. Within one of the modules, a user looking to buy Ray-Ban sunglasses may apply filters to narrow their results by price range, category, and brand. However, the share of effective models in different economic areas varies widely. Different people have different ideas on what an effective manufacturing model should include. The recommender system's record of successfully convincing other consumers to use the links it gives and purchase the things it advises is shamefully low. Online marketplaces like Amazon and eBay can survive with a lower rate of successful listings because customers tend to make more purchases overall. However, in the industrial sector, models would need to have a success rate of 99.9 percent. Since the models are responsible for other people's

lives, it is essential that they have a high success rate. In the case of a catastrophic breakdown, large pieces of equipment like airplanes and enormous drills might result in substantial property damage and even casualties. Because of this, it's possible that individuals will be killed.

Data science is used in both the computational advertising examples presented in lecture 2 and the online buying examples shown in lecture 5. Consumer data is used by both industries to provide accurate pictures of their respective markets. Users may save their preferred websites in a profile and then have that profile take them directly to the material that is most relevant to them whenever they visit any of those sites. These sites hope to increase their revenue by promoting products and services that are already interesting to or have the potential to interest their current audience. The interest of potential customers may be piqued by directing their attention to products that could interest them. Startups may more easily reach customers who are interested in purchasing their original and high-quality products via these platforms. E-commerce platforms, in contrast to computational advertising's emphasis on connecting people with the products they're interested in across websites, are dedicated to, well, selling. As an alternative, e-commerce businesses use a wide range of computational advertising strategies to boost sales on their own websites. Nonetheless, online stores also employ enterprise search to speed up the shopping process for customers. These ideas relate the e-commerce covered in Lecture 5 with the corporate search covered in Lecture 6. Any company that believes it might benefit from enhanced search capabilities should investigate enterprise search. There is a broad range of applications for enterprise search, from checking the legitimacy of a business to looking for a certain file on a portable device. The fourth session will focus on the potential legal applications of data science to the previously covered areas of study. Since data science deals with sensitive user information, potentially harmful products, and risky procedures, there should be regulations in place to prevent companies from abusing the data they collect and putting people in danger. These rules are aimed to stop companies from using personal information in a manner that puts people in risk. There's talk of legislation in the United States and the European Union that requires companies to treat their employees fairly.

- **Comment on ideas introduced in the cross-cutting theme lecture i.e the. lecture on trust, privacy, ethics and legal aspects and its potential impact on how it might influence design and development of data science pipelines for an organization in any of the domains covered in the other lectures.**

Lecture 4's emphasis on moral principles, adherence to the law, and respect for individual privacy is especially timely in light of recent events in politics. To sway voters in his favor, Donald Trump leveraged the Cambridge Analytica scandal during the 2016 election and ultimately won the presidency. Even if no user data was hacked, Facebook's brand would be severely harmed if its customers began to question the company's security practices (username and passwords). Facebook's failure to strictly enforce its privacy policies led to the compromise of the personal information of some of its users. Facebook was hit with a \$5 billion punishment after political, regulatory, and legal pressure. The lectures for this course have covered a lot of material, and that's significant since data security is a major issue for modern organizations to face against both hackers and rivals. Their knowledge is

essential to the proper operation of their instruments, and this is becoming more important as technology develops and more intelligence is built into machines. Their knowledge is essential for the machinery to work properly. When it comes to hacking technical equipment, there is a lot more at stake than simply one's health and physical safety; the issue has the ability to waste a lot of time and money in the workplace. A significant investment is necessary to launch a solid infrastructure that will protect a company's data and property against theft or destruction. The tenth lecture focuses on the manufacturing sector, covering topics such as aerospace and aviation. In today's economy, transactions that put the general populace in jeopardy are par for the course. Protecting people's privacy and taking precautions against machine learning's potential to sow discord among the public are of the utmost importance throughout the construction of a country's military infrastructure. There can be no compromises in the safety or security of any aircraft systems. This shift might be attributed in large part to the standardization on autopilots throughout newer aircraft. There would have a negative impact on the health of the consumer base. In order to guarantee the optimal performance of their retail, industrial, manufacturing, and electrical design automation robots, manufacturers depend extensively on data science. This idea was covered in more than just Lectures 9 and 7; Lectures 3 and 10 also contributed. The devices' high rates of speed and acceleration make these precautions essential. In order to get access to the information of the customers whose business process services they provide, businesses in the business process services industry are required to sign a wide range of non-disclosure agreements (NDAs). Because of the trust our customers have in us, we will never intentionally let any of their personal information leak. Companies in the computational advertising business (Lecture 2) and the ecommerce industry (Lecture 5) must exercise the utmost caution when establishing a user model using algorithms. On systems that were built from the ground up with the user in mind, the introduction of bias from the application of these models would be a major setback for the user experience. Some examples of personal data that are protected by multiple laws include: health and medical records (HIPAA), school records (FERPA), credit reports (FCCRA and FACTA), financial records (RFPA and GLBA), children's online information (COPPA), and video rental information (GLBA) (under GLBA and RFPA). In the seventh lecture, we learn why it's crucial for financial institutions to use data science to protect their data while still following to the criteria that have been set. Financial organizations must review their qualifying algorithms for banking promotions, lending, and other types of transactions to prevent unfair discrimination against their customers. Any time a company solicits, receives, or utilizes consumers' personally identifying information, it has a special obligation to safeguard such details. A single permission form is inadequate due to the wide variety of possible data uses. Using the service is conditional on the user opting in, since companies are not permitted to request access to any data without express consent. This is because of regulations placed on businesses that need unrestricted access to their facilities. Under the legislation, businesses are required to provide customers with information about how their personal information will be used and shared. Users should be required by law to be informed of the companies that have access to their personal information. In addition, consumers should be made aware of the businesses that have access to their information. Getting access to data in the first place shouldn't be too difficult, and neither should taking it away from a company. A user has the option to have their data deleted or moved to a different service provider if they are

unhappy with the one they are currently using. A company's claim that it has removed customers' personal information must be corroborated by actions proving that the data has been destroyed.

The potential for bias in your data is an additional concern. They investigated the viability of using a mobile app to track road damage in the Greater Boston area. The system would report any issues to Boston and keep a record of them. However, this does not take into consideration the prospect of a decrease in one's income. Because of their lower wages, low-income individuals may not be able to afford luxury items such as vehicles and cellphones. After some period of time has passed, the system will only identify potholes in wealthy areas, but not in poor ones. You, as a data scientist, must constantly keep in mind the end-users' potential to make use of assistive technology. Always keep this in mind, since it is of vital importance. When a product is accessible, it may be utilized by the largest possible demographic, including those who would have barriers to using it, such as those with physical impairments or limited access to the internet. As with other things, there are several approaches of easing access. In the end, the result of everyone's efforts will produce a model that is much superior than the competition.

- **Pick 3 case studies from different lectures (try to choose case studies you have not used in previous assignments) and write in some detail about each bringing out the data science methodologies and impact for the application. The description of the use cases should provide the reader with enough detail to understand the application and the technical solution proposed.**

CASE STUDY-1(Lecture-1): An excellent example of this kind of research is the first unit's investigation into the factors that contribute to the retention or loss of customers. The churn rate, which may also be referred to as the rate of attrition, is a measure that is used in order to determine the frequency with which consumers stop making purchases of a certain product or service. As an example, I just switched from Spectrum to FIOS fiber due to the fact that FIOS fiber provides higher download speeds for the same monthly rate as Spectrum. When compared to the cost of keeping an existing client, the expense of attracting new customers is far more expensive. The expenses incurred in order to keep an existing client are five times more than those incurred in order to bring in a new customer. The research procedure consisted of three stages: the issue foresight stage, the problem description stage, and the problem avoidance stage. Churn prediction examines historical data in order to make educated guesses about who will depart and when they will do so. This exercise in categorizing is being done with the intention of determining the factors that contribute to customer attrition. The goal of this approach is to figure out why consumers are departing and what can be done to prevent this from happening in the future. It may also help you figure out how to increase the number of customers who purchase from you. The collection contains a variety of personal facts, including the ages of previous customers, the lengths of service they received, their chosen services, and other information. Following that, the data is run through a pattern-mining algorithm such as Apriori or Random Forest. The uncovering of previously unknown linkages inside data storage is very beneficial to the Apriori algorithm. When the number of occurrences is getting near to the threshold, using the feature that occurs the most often allows for an increase in the size of the subspace. A further example of an ensemble learning strategy is the

random forest method. In order to generate forecasts, it takes as input a whole forest of decision trees. When applied to the process of regression, it generates a mean value for all of the trees. When choosing a group, we seek for the one that has the most different kinds of trees represented within its membership. The information is analyzed by the computer in order to search for trends or patterns that may suggest repeat offenders. This procedure is repeated everytime the model requires some adjustments or whenever fresh data is supplied in order for it to learn anything new. If the company is serious about lowering the amount of customers that leave, it may investigate the many different retention and acquisition tactics available.

CASE STUDY-2(Lecture-4): The Cambridge Analytica scandal brought to light Facebook's inadequacy in providing proper protection for the personal information of its users. For financial gain, it shared information about its users with advertising businesses and other app developers. The responsibility for the information was carried out by the corporation known as Cambridge Analytica. It resorted to quizzes that were connected with Facebook and offered incentives to users in exchange for the information that they shared about themselves. Cambridge Analytica was able to access users' likes on images and posts and utilized this data to develop models of people based on features that may be exploited. For the purpose of developing personality profiles, interviews with people's friends were carried out. There were 270 thousand people that participated in the survey, and from their responses, 87 million data were filtered. The aforementioned algorithms were then utilized by Cambridge Analytica in order to microtarget voters with political advertisements. The factor was one of the reasons why Donald Trump was victorious in the presidential election of 2016. Even if none of the users' data was lost or stolen, it was still a grave violation of Facebook's users' faith in the company (username and passwords). Facebook did not live up to the privacy rules that it had established in order to secure the information of its users. As a result of legislative, regulatory, and political pressure, Facebook was required to make a payment of \$5 billion as a penalty.

CASE STUDY-3(Lecture-8): Recognizing the characteristics of a bank's portfolio - There is a significant amount of wiggle room at both the beginning and the end of the clustering operation. To begin, the calculation of the distance has undergone two algorithmic improvements that have resulted in a reduction in the amount of computer resources that are required. The size of the window determines the maximum amount of temporal distortion that may be produced. To achieve even greater advancements in window size, a time-modified version of the traditional DTW approach is used. The Euclidean distance is used as a shortcut whenever the precision of the calculation is enhanced. The DTW lower bound is the designation given to this particular version. In order to construct the final dendrogram, hierarchical clustering using Ward's D Statistic was used. This method aims to minimize the overall variance that exists inside each cluster. The RPN count takes the activity of 25 clusters and combines it into five broad behaviors that the bank may use to infer the behavior of the balances. These behaviors are as follows: If the cluster is mountainous, then it is very probable that more money has flowed out of the financial institutions as a consequence of increased opportunity costs or market interest rates. In the event that the cluster is, in fact, dispersing, the surviving balances will become obvious; however, their histories may also reveal RPNs with significant potential for unbalance. If the Cluster grows, then the balances will have increased despite any adjustments in opportunity costs; this indicates that they are relatively resistant to

changes in the market. By using this method, the bank is able to accurately record and monitor the many characteristics of its assets.

CASE STUDY-4(Lecture-10): Learning algorithms that are run under human supervision to find seams; this includes supervised machine learning tactics that make use of convolutional neural networks (CNN) for seam identification. Following the cropping process, which included eliminating the image's boundaries, the remaining field was divided in half. Before the dataset can be used in the creation of the CNN dataset, it must first be trained and then confirmed. The metal coupons have to be imaged and lighted in the same way every time in order to achieve the greatest results from the CNN. In order to normalize the data that was fed into the CNN, the images were converted to greyscale by averaging their RGB values. We used deep learning data augmentation techniques to make up for the small sample numbers that were used for training and validation. These techniques included randomly shifting the width and height of images in the dataset, randomly shearing and zooming images, and randomly rotating images in the dataset. After cutting seam-containing rows in half and weighting them the same as those without seams, the dataset seems to have more than doubled in size, going from a total of 40 samples to a total of 200 samples. (One hundred for training, six for validation) The trained CNN obtained a classification accuracy of 94.3% when it was evaluated on the original grayscale photos from the DoE. It did this by accurately recognizing each of the four corners as either a seam or a non-seam.

- **Describe a potential use case of your choice (outside of those described in the lectures) and discuss the data that might be available for the use case, any preprocessing that you might need to do to the data, the goal of the application, and what potential data science techniques might be relevant for that use case and how you might use them.**

I've always been interested in the concept of trying to anticipate the price of a stock using just the company's historical data. I was intrigued by this, so I coded a basic program to calculate the optimal response to a given range of stock price fluctuations. The tool is referred to as the "best possible result calculator." The data I utilized to perform this assignment was gleaned from the Kaggle Nasdaq and forbes2000 folders, specifically the one on Tesla shares. Using these two sources, I was able to compile a data set covering the last five years. The dataset offered covers a lot of ground in terms of detail. The low price, the open price, the high price, the volume, the closing price, the adjusted closing price, and so on are all examples. There were so many typos that I had to go through and fix them all. I've had to go through despite data anomalies like accidentally negative numbers or prices marked as "0" or "NA," or simply different formats for different pieces of data. Moreover, I have been the one to put out with wildly varying data formats. In order to refine the information for my needs, I've spent time in a variety of public libraries.

The pyplot module, which is a component of Matplotlib, was used to generate the data trend graph that was utilized for display. To address this problem, I've settled on a machine-learning strategy that incorporates both reinforcement learning and the Q-learning method. To begin, there must be an agent; next, there must be states; and finally, for each state, there must be actions. Then and only then can reinforcement learning be effective. If the

agent does not do one of the specified actions, then the agent cannot go from one state to another. Agents get compensation if and only if they do the specified activity while meeting the specified criteria (a numerical score). Using the current evaluation context, the off-policy reinforcement learning algorithm known as Q-learning seeks the next action that will yield the best results. To achieve this goal, it looks for the next step that will be most productive. Because it may potentially learn from occurrences that are not bound by the existing policy, the q-learning function is commonly referred to as the "off-policy" function. Taking part in seemingly meaningless pursuits is a wonderful example of this. More specifically, q-learning seeks to identify the behaviors that result in the greatest cumulative accumulation of rewards. A function represented by Q is used to determine the expected benefit of an activity in a given condition. In this method, such capability is put to good use. It's an RL variant that doesn't need any preexisting models.

I have participated in the market by way of purchasing, selling, and holding up to this point. This Q-learning algorithm analyzes the information to find the optimal course of action that will provide the highest potential return for the user in light of the current stock price. To achieve this goal, the optimal next steps are identified and provided to the user. Success in the financial markets was attained by using a buy-and-hold-and-sell trading strategy, which was made possible by the reinforcement learning method and the Q-learning algorithm. The results are as follows: Just after 250 days of implementation, the q-learning algorithm produced a 76.2% ROI on a \$100,000 investment in Nvidia stock. In under 250 days, this was done.

In part because to these seminars, I've been able to take a fresh look at old problems and, as a result, have developed a promising strategy for resolving them. Unlike most others, I am in a position to predict what the optimal course of action will be for a particular stock price. For instance, if I want to make the most money possible off a stock, I know whether it's best to sell it, buy it, or hold onto it for a while. I was curious in stock market predictions as well because I believed they would help me make more educated financial decisions. Time-series analysis was dissected and investigated deeply during lecture 7's study of the retail business. By combining the time-series analysis with a few additional methods, we may predict the stock price by looking at how it has performed in relation to the prices of other, similar firms for whom we have access to historical data. In other words, we may utilize this method to predict the future stock price. This enables us to compare its cost to that of similar stocks trading at other markets. I have an idea for predicting stock values and acting appropriately to maximize profits, and I'm eager to learn more about the subject so that I may develop my concept. I'm eager to learn as much as can about this.