



## The Use of Facial Recognition Technology in Cadillac Fairview Corporation

**Produced by:** Anna Vo (300065662)

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**Professor:** Doretha Carrington

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# Table of Contents

1. Executive Summary.....	3
2. Background on The Issue .....	4
3. Problem Identification.....	9
4. Alternatives Analysis	
a. Pros and Cons of Facial Recognition Device.....	10
b. Alternative 1: Suspending The Use of Facial Recognition Device.....	11
c. Alternative 2: Inform consumers about the facial recognition devices and provide an alternative choice.....	13
5. Recommended Solution .....	15
6. Implementation Ideas	
a. Immediate term.....	18
b. Short term.....	19
c. Long term.....	20
7. References.....	15
8. Appendices.....	17

## ◆ Executive Summary

The artificial intelligence technologies are becoming more advanced day by day, and one of them is the facial recognition device. It is a software that can analyze and identify someone's facial features in a crowd. The usage of the device continues to grow due the benefits it can provide. Many organizations including businesses and governments found the technology can be operated for many purposes. However, despite the pros this device can provide, some businesses can get in serious trouble regarding privacy invasion without permission from consumers.

The Cadillac Fairview Corporation is one of the most successful real estate company in North America. It owns and operates many shopping centres around Canada and the United States. In order to stand out from their competitors, Cadillac Fairview must find opportunities and strategies to satisfy and attract their customers. One of their recent strategies is installing the facial recognition devices into their facilities, placing them inside of the directories in several shopping malls, and secretly recorded customers' information such as gender, age, etc. However, this operation did not obtain positive feedback like they wanted, but received criticism from consumers after the company was exposed on social media by a customer at Chinook Mall in Calgary, Canada. This results in customer angst and a reduce in profit due to unhappy customers discontinuation to purchase from them. Even though the Cadillac Fairview claimed the purpose of the device was simply for traffic controlling, consumers are walking away from their shopping centres because of their concern regarding the privacy invasion issue.

One of the two possible alternatives were established to help the company resolve the primary problem is to suspend all of the facial recognition technology devices. This has some advantages such as fast recovery, however, this method is not considered the most effective one due to its disadvantages. The second alternative is to inform the consumers of the existence of these softwares in the directories as well as providing an alternative choice for customers who would like to use a directory but do not wish to be analyzed by the artificial intelligence device. This solution is proven to be the most effective way to approach the problem since it can benefit the business and satisfy the stakeholders at the same time.

Immediate term, short term, and long term implementations were demonstrated to lead Cadillac Fairview Corp. in their problem solving process.

## ◆ Background on The Issue

Humans have always had the ability of recognizing and distinguishing between different faces, yet computers have recently adapted this skill. Visual recognition software is able to select an individual out of a crowd, extract the face from everyone else and compare various features of the face to a database of stored images. This software must know how to differentiate each person it scans from the rest of the crowd by reading the distinguishable landmarks, the different peaks and valleys that make up facial features. The system goes through multiple steps such as detecting, which is when the software acquires a live picture of the object by using a camera. The second step is alignment, the system determines head size and its position. The measurement step requires the software to measure the curves of the face using a sub-millimeter scale, creating a template which then is converted into a unique code, providing a set of numbers representing the features for each template. The last two steps are matching the face scanned with the collected database and giving out information known about this face. These steps are not always followed, however they are the most common procedure used by 3D facial recognition devices. (refer to appendix 1) (Bronsor and Johnson, 2010)

Facial recognition technology has many applications. For instance, law enforcement agencies have been operating the device to capture faces in a crowd. Governments have also made use in the system for security purposes and to eliminate voter fraud. In fact, the US government has begun a program called US-Visit which records pictures of foreigners entering the country and compares them to criminals and terrorist database collected. In addition, businesses have also started to adapt facial recognition for many benefits. Airports are applying the systems to the Registered Traveller program, which allows travellers who have minimal to no criminal records to proceed through security checkpoint within a short amount of time. On top of that, automated teller machines and check cashing kiosks often request a digital image capturing to protect their customers against identity theft and fraudulent transactions. However, the use of facial recognition in businesses is not always consensual. A variety of businesses have been exposed by stakeholders that they are operating the software to collect customers' information without their permission and knowledge. Customers' data like age, gender, ethnicity, and behaviour can be recorded for different reasons but mainly for security and consumer demographics analysis purposes. (Bronson and Johnson, 2010)

Top retailers including Walmart, Costco, and Best Buy were questioned if they are currently using these artificial intelligence devices in stores. No statement to answer this was released from these companies, except for Lowe's Companies who admitted to using facial recognition service to identify shoplifters and Ahold Delhaize who claimed to not use the technology. The rest of the companies simply stated that this information is considered proprietary and confidential for competitive reasons. This arises some debate about the ethicality of these organizations. Many think it is unacceptable how multiple businesses refuse to provide the information about if they are collecting customers' data without consent and awareness. There is few to no government regulations concerning this subject matter. As a matter of fact, Canada's protection against invasive use or business use of facial recognition technology is considered more general than specific. (Bitar & Stanley, 2018) To be exact, only Quebec has legislation aimed at regulating biometrics (Moulton, 2016). Despite the controversy, the use of facial recognition devices in retail businesses is common and is continuing to grow due of all the benefits they can provide. (Bitar & Stanley, 2018)

Companies can use the facial recognition system to help them during the decision making process. Gathering information about customer demographics and understanding their needs and wants allow businesses to come up with alternatives to enhance their services to satisfy their customers. The use of facial recognition is considered an operational plan, meaning it encompasses a particular operational area of the organization, for example, a customer service branch. This organization strategy is a long term plan since many businesses are planning and organizing their processes to adapt to this device for a large time frame. Additionally, the system utilization is a directional plan because it is flexible, can be used to analyze customers, and can help for security purposes with the common goal of customer satisfaction and increasing sales profit. This device can also help detect problems, such as theft, which then allows the business to come up with specific, measurable, attainable, relevant, and time based (SMART) goals to solve the issues. Operating the visual recognition technology is contemplated as a strategic decision made by strategic managers. This decision determines the long run performance of an organization and assists in attracting its customers to gain profit. (Robbins, 2017)

Organizing and controlling in a company can also be improved using facial recognition technology. The device is able to recognize the emotion of a person as well as other features. This allows the managers to be aware of employees' attitude and sentiment, which often affect one's performance. Suppose that an employee is experiencing overspecialization, which increases their anxiety and leads to poor performance. Managers will be able to detect it based on the information provided by the visual recognition system and take appropriate action to resolve the problem. Another example would be if the result from the system shows positive emotions from employees toward their job, managers can continue to carry on the work environment quality to maximize efficiency. (Robbins, 2017)

Leaders who have a high desire to lead would try to understand their employees in order to decide what is the most effective way of leadership to help the team to accomplish their goals. Facial recognition allows leaders to understand their team members' emotions and create the most effective strategy for the team so that they are able to provide their best work. Leaders who have high concern for production and high concern for people can use this device which will enable them to create a positive work environment for their employees, resulting in high efficiency. (Robbins, 2017)

Even though the softwares can be used in organizations to help plan, control, lead, and organize, they are mainly used in businesses for competitive advantages. Recently, a shopping mall in Calgary was exposed by a customer for its use of facial recognition without consumers being aware. The shopping mall is owned and operated by Cadillac Fairview Corporation Limited (CFC), who owns and manages commercial real estate operating mainly in Canada and United States. It all began over 50 years ago with Eph Diamond, Joseph Berman and Jack Kamin developing their own construction company, focusing on the design of apartment buildings. The name Cadillac was picked because the city of Detroit was founded by a French explorer whose name this name belonged to. Despite the argument with General Motors, producer of the Cadillac automobile, the name was officially chosen, and a new company was established. In the early 1960s, The Fairview Corporation was striving to build its reputation in the Canadian real estate industry. The corporation was established as a division of Cemp Investments Ltd., a very successful business organization in Canada. Over the years, the two organizations occasionally

partnered up when Cadillac built shopping malls for Fairview. In 1968, they joined forces to purchase Canadian Equity and Development Co., and now owned 80,000 acres in Erin Mills. Cadillac was focusing on building houses while Fair was interested in building shopping centers in this area. However, the Erin Mills development was at a standstill due to no municipal services were in place. As both companies began their operating areas, conflicts arose over the development of the area. Eventually, the two strongest forces of Canadian real estate agreed to merge in 1974 and started to expand to the real estate market in the United States. In early 1980s, a strategic decision was made to sell the Land and Housing division because of the turbulent in the real estate during this time. In addition, the economic recession in North America in the 1990s caused the rate of retail tenant bankruptcy to increase resulting in unoccupied shopping centres and oversupplied office space. This led to a decline in cash flow and asset values on top of debt which required a financial restructuring. After a restructuring plan, a total of \$832 million was funded by a new group of investors who recruited a new CEO, Bruce Duncan, and put together a management team in 1995 and 1996. In 1997, \$304 million was raised during an initial public offering, making it one of Canada's most successful business turnarounds. The executive made the decision to become real estate investment vehicle for investors and retail franchises in Canada. To achieve this goal, managers were focused on growing the corporation by building onto existing strengths and entering new market fields. The strategy was effective, making Cadillac Fairview one of North America's most successful real estate organizations. (Cadillac Fairview Corp., n.d.)

Like many other businesses, Cadillac Fairview aims to reach customer satisfaction and this requires the use of technology and artificial intelligence. As mentioned before, facial recognition software has been used by different organizations for multiple purposes, however, businesses tend to use it for security and analyzing consumer demographics intentions. Some businesses came forward when asked about the use of this device, yet, many did not. Other than the ones that were questioned, many companies have been secretly collecting data from their customers without informing them and Cadillac Fairview was one of them. The company was caught by one of their customers for using facial recognition software placed inside the mall directories, whom later posted the incident on social media to raise an awareness about the topic.

Investigations are continuing despite the company's claim that the use of the device was not causing any harm since it does not record images or videos of the customers. Consumers have raised concerns and are walking away from Cadillac Fairview shopping malls because of the fear of privacy invasion. (Burns, 2018)

◆ **Problem Identification**

In July, 2018, a shopper at Chinook Centre, a shopping mall owned by Cadillac Fairview (CF), came across a browser window that was being left open on one of the mall's digital maps. The browser appeared to be a facial recognition software running in the background of the directory. The concerned customer took a picture of this incident and posted it on social media, attempting to inform others about this device. CF Corp. has addressed this concern, stating that the software determines the number of people who use the directories and estimates their approximate age, as well as their gender for traffic monitoring purposes. They also claimed this device does not record any images or videos of the customers. Furthermore, the company has admitted to have been secretly using facial recognition software for multiple months in multiple locations across Canada. According to Sarah Rieger, CF Corp. believes they do not require consent from customers if they are not capturing or retaining images, although consumers think otherwise. Many believe that even though the data being collected at this moment is limited to age and gender only, the software can be easily adapted to collect additional information and data points in the future without consumers' awareness. Sharon Polsky, a member of Privacy and Access Council of Canada, thinks the customers were never given the choice of opting out, moreover, they were never notified about the software in the first place. She also points out the fact that there is no way to verify that the company's stated goal was the real goal, which means the goal the organization actually pursues -. Although this activity is not illegal, it raises huge concerns in privacy rights and civil liberties of the customers visiting CF shopping malls, resulting in the Office of the Privacy Commissioner of Canada and Alberta's Information and Privacy Commissioner to open investigations into CF Corp.'s use of the device. (Rieger, 2018)

More and more facial recognition devices are being used in the shopping industry for many purposes, such as collecting data about consumer demographics and tracking customers. Most companies do not inform their consumers about the use of such device, resulting in negative feedback from the customers since their privacy is being invaded. This also destroys customer loyalty and trust considering they would feel betrayed by the company. If the problem is not being taken into account and an attainable solution is not provided, consumers will most likely turn their backs to the company, causing a drop in sales and profit.

#### ❖ **Alternatives Analysis**

Facial recognition devices have many pros and cons and businesses must take them into consideration during the decision making process to determine if it is appropriate for the company, or if it will cause various of problems for them. Some advantages and disadvantages of this artificial intelligence system are listed below.

<b>Pros</b>	<b>Cons</b>
High accuracy to avoid false identification	Data processing and storing might experience difficulties since there is a large amount of information is being recorded on a daily basis
Easy to install and operate	Camera angle has a huge impact on the information collected
Significantly improves security levels	Raises concern regarding privacy invasion
Fully automated, does not need to be controlled by human	High cost to buy and maintain the device
Records data and information useful for the company	
Make things easier for both the business and the consumers (example: Registered Traveller program)	

(TecSynt Solutions, n.d.)

Despite the drawbacks of this new device, many organizations incorporate it due to the many benefits it can provide. In addition, engineers are looking to reduce the cons of the device, as well as constantly applying new technology to improve the system. People believe there is a

high possibility that such systems would be able to detect gestures, expressions, gait patterns, palm & ear prints, voice and scent signatures in the near future.

After identifying the primary problem, two alternatives have been developed to help CF Corp. to get back on track. The pros and cons of facial recognition technology for a business plays a big role in deciding which will be the most effective alternative that will directly attack the issue in the shortest amount of time without creating future problems.

#### 1) Suspend the use of facial recognition devices

The first alternative to resolve the problem CF is experiencing is to suspend the use of the facial recognition system in shopping centres to prevent further losses. This essentially means the company will discontinue any active device for the time being and focus on bringing back customers. If the corporation publicly apologizes and announces the discontinuation of the software, consumers will eventually return to the shopping since their main concern is settled. Although, unhappy customers might not forgive CF for such action immediately. Business methods such as promotions can be used to attract them back.

Suspending the program will lead to some positive impacts on the company. For instance, the consumers will be content knowing the facial recognition system that has been capturing their information is suspended. This could lead to the return of customers, as mentioned above, resulting in sell profit increasing. Since the facial recognition devices have only been operating in three shopping malls located in Canada within the recent months, the removal of the service can be done in a short amount of time, advantaging in a fast recovery for the company. Another benefit is that since the device costs a lot of money to purchase and operate, CF Corp. could save the financial resource and invest it to some other field such as expanding the company. This solution also prevents the company from experiencing the cons of using the software. Furthermore, CF Corp. will not interfere with government regulations and privacy invasion laws in the future regarding the use of this artificial intelligent technology.

Although this alternative has many advantages from the consumer perspective, it has multiple disadvantages based on the business perspective. The discontinuation of facial recognition will cost CF Corp. their resource of consumers demographic, even though they

claimed to not use the device for this purpose. The software provides a specific data collection on the customers who use the directories placed in CF shopping malls. Using this analysis, the managers can come up with goals and strategies to improve customer satisfaction. Understanding consumers' needs and wants enables the company to supply the products and services they desire and a system that records data such as gender, age, emotions can help the business to succeed in this subject matter. Even though there are other ways to collect this data, including surveys and questionnaires, these methods are not as effective as facial recognition since they cannot record as much information, for many reasons. As a result, CF Corp. will lose a huge advantage in the marketplace. Managers will not have enough information to make plans, as well as design an appropriate company structure to benefit the company. The shopping malls will also lose the benefit of using the technology for security purposes. An example would be if a shoplifter returns to a mall, without the facial recognition device, security staff would have a hard time detecting him/her in the crowd. CF Corp. claimed that the software only identifies the number of people who use the directories and estimates their age and gender for traffic monitoring motives. Suspending the device will result in the inability to access this information for such purpose. Additionally, the time and resources spent on purchasing and putting the device into work will be wasted if the company decides to suspend all of them. On top of that, this alternative will disable the company from gaining the advantages of using the visual recognition technology.

Overall, the suspension of the operation of facial recognition technology would be cost efficient, result in customer satisfaction, and bring a sense to the ethicality to CF Corp.. Discontinuing the program will protect them from public criticism, as well as unhappy stakeholders. However, it will also cost the company many benefits gained from using the service. It is an effective and short term solution to resolve the company's current problem, but it may lead to others in the future, as the company would not have enough information about customers and security would not be as strong, therefore it is not the best option available at the moment.

2) Inform consumers about the facial recognition devices and provide an alternative choice

Another solution the company can approach is to inform and update the stakeholders on the use of the device. This requires them to come forward and open up to the public, as well as answering questions asked by consumers. An apology and explanation are also needed to ease up the controversy and to deter anger from the public. In addition, CF Corp. must inform their customers every time the facial recognition device is activated and provide an alternative solution if they do not wish to have their data collected. This way, customers who are concern about this issue can avoid it while the business will still able to benefit from the use of the visual recognition technology.

This solution allows the consumers to make a choice on whether or not they want their information recorded, resulting in customer satisfaction. As mentioned above, the use of this artificial intelligence provides many benefits for the company. It will help the managers identify the target audience and the demand in order to create the products and services that will result in a positive experience for shoppers. Meeting and surpassing customer expectations develops customer loyalty. According to White House Office of Consumer Affairs, loyal customers are worth 10 times more than the new ones. Improving customer experience will also help CF Corp. stand out in the competitive field. These all lead to an increase in sales, which is a business ultimate goal. Not only that, the data collected by this device allows managers to make appropriate decisions to improve customer service, and it can also ensure safety for the shoppers at these shopping centres. For instance, an individual with a past record of disregarding the rules of one of the cooperation facilities could be watched by security staff for other customers' safety. This method benefits both the customers and the business in a way that will satisfy all parties. It also protects the company from legal allegations from the government, and public criticism concerning the ethicality of this program. To summarize, the benefits that come with this software are considered a big advantage of this alternative.

The only drawbacks to this solution would be the high costs of maintaining the operation of the device, as well as creating the alternative choice for customers who do not wish to be analyzed by a facial recognition system. The customers that choose the alternate choice can be

considered unattainable information resources, however, the amount of accessible data collected from the ones that allow the analyzation will outweigh this disadvantage. The system must be updated constantly which requires a lot of financial resources that could be put towards something else, like expanding the company to more places. Employees are also needed in order to ensure the system works perfectly. The cons of the device are also considered a disadvantage if CF Corp. decides to proceed with this method.

In conclusion, informing customers about the use of facial devices in shopping malls, and creating an alternative for those who refuse to be analyzed proves to be an effective and efficient solution for the main problem. The information recorded will aid the company to make the best strategies to ensure the best customer service for the consumers. Satisfied customers will lead to an increase in demands, which is the most important key when making profit. This methodology also builds the company image in the consumers' eyes, and it attracts new customers, as well as maintaining the old ones. The negative impacts, such as high cost, can be resolved since the sale profit will increase, leading to an increase of financial asset. Therefore the advantages outweigh the disadvantages of this alternative, making it the best solution to attack the primary problem CF corporation is facing.

### ❖ Recommended Solution

After analyzing both alternatives, the recommended solution for CF Corp. would be to inform the operation of facial recognition in shopping malls and come up with an alternative choice for those who do not consent to have their data collected. This solution ensures that the goals for implementing the system are met, which were to obtain information pertaining to consumer demographics, which would provide the company with valuable information that would increase sales and improve administrative efficiency. This solution also minimizes the public disapproval of the company, and would help re-establish the company's ethical reputation.

Firstly, by choosing this solution, the company will be able to continue using their facial recognition system. From a financial standpoint, this benefits the company, since the company has already invested time and resources to implement this system into their shopping centres. If the company decided to discontinue this initiative, as described in the first potential solution, the time and resources spent on this system would have been meaningless, resulting in an overall net loss in company resources. In addition to this financial aspect, this solution provides business benefits to the businesses located within the shopping centres, and thus to the CF corporation as well. To elaborate, facial recognition systems that are implemented in shopping centres have the capability to provide valuable information concerning the consumer demographic. Such information includes information pertaining to age, gender, ethnicity, and even the emotions of individuals. By acquiring information relating to consumers, the businesses are able to understand who visits the shopping centres most frequently, resulting in a better idea of who their consumer demographic is. Using this knowledge, the businesses are able to cater to that audience, by providing services and products that that group of consumers would be interested in. For example, if the facial recognition system showed that the majority of the shoppers that visited the centre were elderly, the CF corporation could implement a wheelchair renting service. Another way the cooperation could cater to the demographic would be to implement more businesses that cater to the elderly, resulting in more sales, and more profit for the CF corporation. Overall, without this facial recognition system, it would be less efficient to determine who the consumer demographic of the shopping facility is, resulting in less catering

towards the consumers that would result in less profit for individual businesses, and for the CF corporation.

In addition to the financial benefits, by choosing this alternative, the implementation of the system would provide benefits concerning the safety of the employees and consumers. To do this, the facial recognition system would be able to recognize individuals and to have records about them, relating only to their interactions with the facility, and with the businesses within the facility. For example, an individual with a past record of disregarding the rules of one of the CF corporation's facilities would be able to be recognized by the facial recognition system. The system could then notify security and the individual could be addressed accordingly. For example, if an individual was previously banned from the facility for assaulting an employee at a shop, and is seen again inside the facility at a later date, security could be notified to ensure that the individual is escorted out of the building in a safe manner, thus ensuring the safety of all the individuals within the facility. To summarize, by choosing this alternative, the rules of the facility would be able to be enforced and it would create a safer environment, as opposed to the other solution, which chooses to remove this system. Without this system, the safety of the facility would be more at risk, and the rules of the centres would be more difficult to enforce.

Finally, by choosing this alternative, the CF corporation would be able to reaffirm their ethical reputation, which would minimize the loss of customers and would help re-establish new longterm consumers. In order to continue the use of their facial recognition system, the CF corporation would be required to address and apologize to any of their consumers who have expressed disapproval and concerns relating to this system. An apology would likely deter the amount of negative controversy, which would improve the overall image of the corporation, and would reassure stakeholders and businesses who are operating within the company's shopping facilities. The company would also be able to answer any question that their consumers have. They could also implement a system that would provide consumers the ability to choose whether to be recognized by the facial recognition, which would provide a sense of transparency, which would be reassuring to stakeholders and consumers. To conclude, a statement or an apology would be preferable for both solutions to this problem. However, if done in an appropriate manner, an effective apology would allow the facial recognition system to continue to be

implemented, thus enabling the CF corporation to benefit from the advantages that the system provides.

Despite all of the benefits that this solution provides, the alternative does have some cons that should be addressed. When choosing this solution, time and resources would have to be spent to continue the operation of the facial recognition system. Also, this method will prevent the company from obtaining the information from customers who do not want to be analyzed by the software. However, it can be argued that information that the system can potentially provide positive result in overall financial benefits and benefits concerning to safety, which significantly outweighs the resources needed to implement the facial recognition system. Overall, this solution enables the facial recognition system to be continued to be implemented as well as directly attacks the primary problem, which will provide the cooperation with benefits that greatly outweigh the benefits of choosing the alternative of this solution, including the discontinuation of facial recognition in CF shopping malls.

## ❖ Implementation

- Immediate term (present - six months)

Ultimately, the goal for CF Corp. is to strive for consumer's satisfaction. However, with the consumers unhappiness due to the recent incident, the company has to take a step up and offer an apology to the public, specifically to their customers. Top managers of CF Corp. need to come forward and admit the fact that their operation was considered privacy invasive and unethical. This action shows the company's leaders proneness to guilt, which is one of the most important traits of an effective leadership. Taking responsibility for their wrongdoings will improve the company image in consumers' eyes since it was destroyed due to the incident. In addition, CF Corp. must be open to questions regarding this topic from interviewers or consumers as well as announce their decision on continuing operating this technology in their facilities. They will have to explain the benefits and purposes of using the facial recognition in shopping malls such as customer service and security improvement. The company would also need to mention there are alternative choices available for customers who do not wish to have their face analyzed by the software. By informing their customers on this device, CF Corp. is changing the consumers' perspective regarding the topic in a positive way.

Following, the alternative choices should be established in CF Corp.'s facilities within a short amount of time. Since the facial recognition software was placed inside directories in shopping malls, those who wish to use these kiosks but are concerned with the device will not be satisfied. Company's managers must follow the decision making process to come up with the solution for this problem. For instance, some directories could be installed with the technology while others are not, and customers will be able to differentiate them by looking at the kiosks' colour. Determining a SMART goal and developing an appropriate plan based on it should be one of the first few steps during this problem solving process. Then, the managers must organize a working structure to out carry the plan, dividing the tasks, training the employees, and making sure they are done effectively.

Finally, the alternative choice will be installed quickly to satisfy the customers. As mentioned above, painting the directories in two different colours in order to inform the customers which ones have the artificial intelligence software and which ones do not, will be an

effective way of solving the problem. Furthermore, the ones that contain the facial recognition device must have a warning whenever a customer tries to use it. The warning will notify the customers and allow them to make the decision of having their data recorded or not. For the kiosks that contain the technology, a fun activity can be developed to encourage the customers to use them. An example would be providing the customers their information that is recorded in the system so they can see if it is accurate. The fun activities will satisfy the customers' curiosity on how these devices work, making them willingly provide their information to the company.

Overall, these immediate implementations will assure the customer satisfaction and soothe out their concern regarding the issue, while allowing CF Corp. to gather information about the consumers. Even though the potential costs are quite high due to facial recognition devices purchases and training process, the increase in profit will counteract this problem in the future.

- Short term (six months - one year)

The installations of the facial recognition device in other CF Corp. shopping centres could be taken into account. By now, a team that specialises in controlling and operating this system should be established. This team will analyze the data collected by the software then transfer it to the marketing and customer service department. They are also responsible for identifying any problem in the technology and updating it constantly. Moreover, the executives of CF Corp. need to record progress and feedback to determine whether any changes should be made to improve the solution.

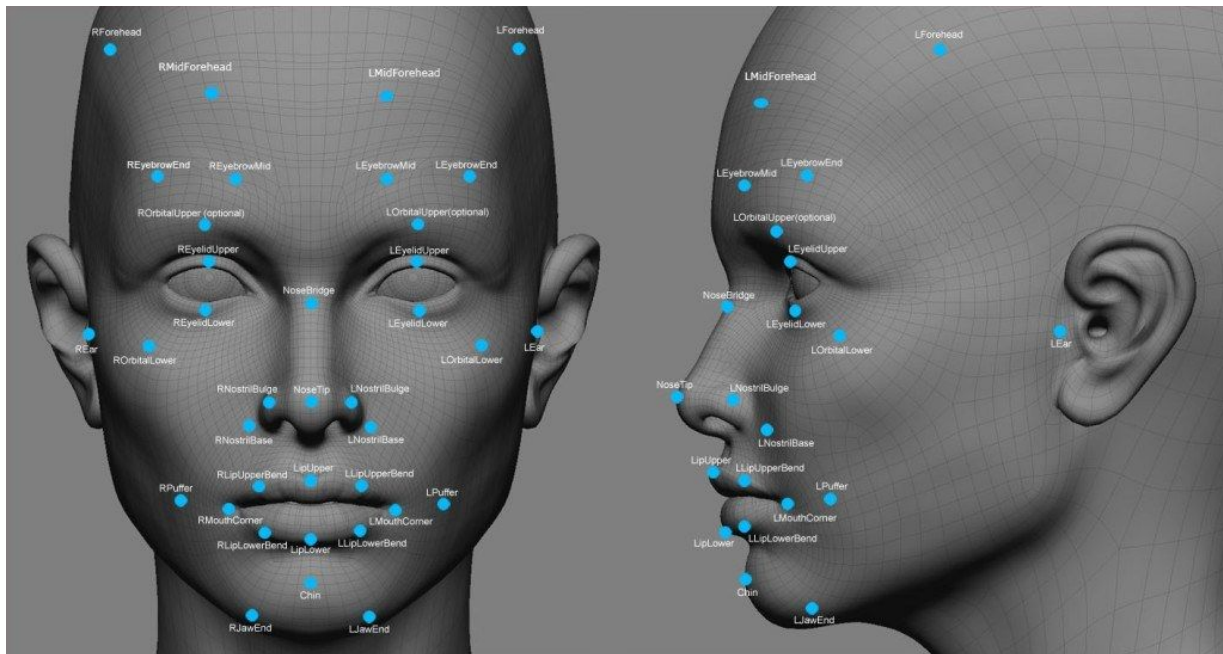
In conclusion, the short term implementations' goal is to expand the operation of the facial recognition technology onto other facilities owned by CF Corp. and identify if any improvement can be done. Installing the device into different facilities will require a lot of financial resources, however, as mentioned above, the potential profit will be gained from this will eventually counteract this problem.

- Long term (one year and beyond)

In the long term, CF Corp.. will continue to use the facial recognition device, however, if newer versions of the device are published, they can update their softwares to the more advanced version with more features such as the identification of the entire body movement, not just the face. The ultimate goal is to satisfy the key stakeholders, which are the customers in this case, and understanding them will significantly help the company figuring out strategies to achieve the goal. In addition, updating the devices will require the company to inform the customers in the new features of the new version and more employee training and development.

To conclude, updating a new model of the artificial intelligence technology will also require financial resources, but it will be lower compared to the implementations during other time frames since the base already exists therefore there is not a need to of installing completely brand new devices.

## ◆ Appendix



Appendix 1: Facial recognition software captures distinguishable landmarks, the different peaks and valleys that make up facial features of a person. The system goes through multiple including detecting, measuring, matching, and giving result. This device can detect a person from a crowd and collect information such as age, gender, emotions, and ethnicity.

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**Personal Ethics Statement for an Individual Assignment:**

By signing this Statement, I am attesting to the fact that I have reviewed the entirety of my attached work and that I have applied all the appropriate rules of quotation and referencing in use at the Telfer School of Management at the University of Ottawa, as well as adhered to the fraud policies outlined in the Academic Regulations in the University's Undergraduate Studies Calendar.

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Signature

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Date

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Last Name (print), First Name (print)

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Student Number