

# Capstone Project

**Artificial Intelligence: Business Strategy and Applications**



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January 2022



# Monitor and improve the customer experience to the next level



January 2019

## New VTO live on Afflelou website

In January, my Team and I implemented a new **Virtual Try-On Advanced solution on the afflelou.com website**. This solution provided by Fittingbox allows internet users with desktop or mobile devices (any connected device with a camera) to test an immersive and interactive eyewear experience that will make all the difference. In effect, you can try virtually most of the frames from the portfolio to better select the one that fits the most. The rendering of the frame looks real, it's easy to picture yourself wearing the glasses.

March 2019

## First results

The first thing we were able to check the days after the launch was the statistics showing 30% of users trying it online. Then with further promotion, **we have reached a conversion rate of 40%**, while we were expecting a rate of around 20%, so our results have exceeded our expectations and the current market. That is successful for Afflelou and outstanding compared to the competition. It was followed by a [testimonial available online](#).

January 2022

## Capstone Project objectives

Today, if I were still in the same position at Afflelou Company, I would leverage AI to **track the customer's sentiment using VTO**. Are they happy with a frame, neutral, or unhappy? **Adding this dimension of the customer experience helps the business to manage the portfolio**. Today we can use analytics to understand the time spent on each frame. But this is not enough to match the customer feelings with the products. AI that I will describe can provide insights to the Category Manager who manages the products.

Archives

## Select any frame and launch the VTO

Finding THE right pair of glasses can take some time. Round, oval, rectangular? Black, tortoiseshell, pink, or gold? Has anyone ever managed to find the perfect pair of glasses right away? Looking for your new frame is also a pleasure. At afflelou.com, you can try on a large number of frames online. That is useful to prepare in advance your shopping experience, especially in the current Covid context where it's getting hard to go on retail. Discover this feature now by clicking on the following button:

**ESSAYAGE VIRTUEL**



## Strategy

# How is the application going to generate business value?

By monitoring the customer experience and detecting his behavior !

With facial recognition already used to virtually wear the glasses, we will add an AI to detect the feeling expressed visually while wearing the frame.

The main sentiment will feed the web analytics with new specific events related to each frame. This data will help the Category Manager and the business to take better portfolio decisions.

## Competitive advantage

This unique and first-mover competitive advantage allows a better understanding of users' frame preferences. To know the reasons why a frame is worn with today's only indicator: the time spent. Tomorrow with the emotion expressed in front of the camera.



## Financial sustainability

Facial expression classification using AI already exists in open-source solutions and can be leveraged using transfer learning. Such an approach requires a low investment to build and train the model for this purpose.



Metrics to measure the success of application

# Monitoring customer experience

Neural networks trained on a limited set of emotions provide higher rates of accurate classifications. We will consider eight categories to classify customer behaviors, the "Neutral" and seven universal Emotions: "Happiness"; "Surprise"; "Anger"; "Fear"; "Sadness"; "Contempt" and "Disgust".

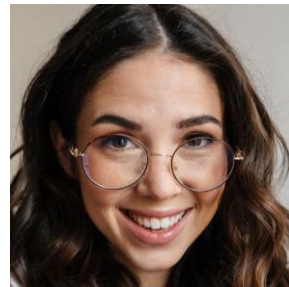


January 2019

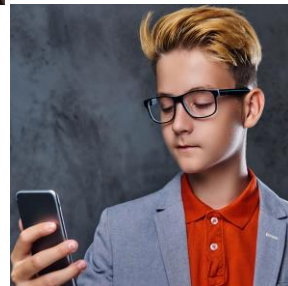
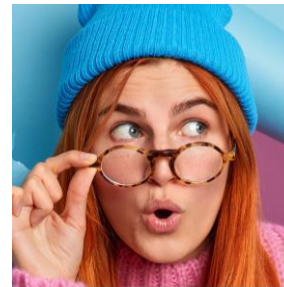
## Google Analytics as today

All VTO are tracked by adding an event with the name of the frame, reporting volume of sessions and time spent.

Data is owned and managed by Digital Team who leverages and provides metrics reports and dashboards.



7 emotions



January 2022

## Google Analytics – new event Label to add with 8 new values

[eventLabel] 'VTO behavior'

[eventValue] 'Neutral', 'Happiness', 'Surprise', 'Anger', 'Fear', 'Sadness', 'Contempt', 'Disgust'

Those additional reports will be analyzed by Category Manager who maintain the product portfolio.

# Computer vision for better human vision

## 1. Emotion Recognition

Human emotions can be detected using facial expressions. This Computer Vision can see, observe and understand. Two essential technologies are used to accomplish this: a type of machine learning called deep learning and a convolutional neural network (CNN).

## 2. Libraries are available on the Web

No need to reinvent the wheel!  
Use these libraries to find Emotion Recognition models and implementations:  
<https://paperswithcode.com/task/emotion-recognition>

## 3. Training of the model

Use an open-source expression database.  
The contributor of this dataset has carefully labelled all images with related expressions. The important goal of this step is to avoid any bias with a very good structure of the data.

## 4. Review, UAT and roll-out

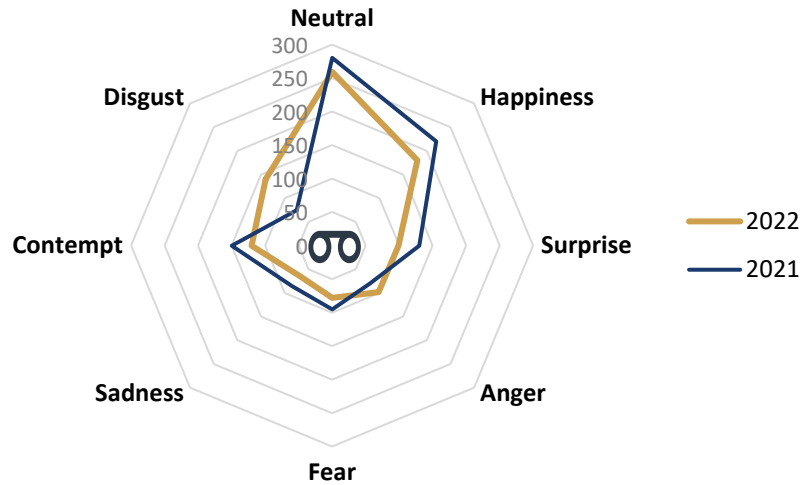
We must make sure frames are not affecting the emotion recognition and must ask user to remove Covid mask using our VTO. Test will be done by users, Category Manager and Product Owner.





Data related to AI application

**Frame or Product range report**



**Radar of emotions**

A report can be built with emotions tracked per each frame where VTO is performed. Same report can be built for a range of product or at all product level to understand the success at all levels.



**Data source to train the model**

200 images from open-source expression database labialized with height distinct facial expressions.



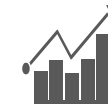
**Time and costs**

- How hungry in data AI will be: Low
- Time to train the network: Fast
- Training costs: Low
- Inference latency: Low
- Inference cost: FREE



**Data to run AI application**

During the use of VTO, AI will detect the feeling expressed visually while wearing the frame. The main emotion will be reported as a new event in Google Analytics at the end of the session.



**Data destination**

Google analytics will collect all events. Category Manager and Product owner will be able to extract data, create radar reports and build Google Data Studio dashboards.



Humans and AI

# Human with Augmented Intelligence

## Organization and human factors

This application empowers the Category Manager to decide the best product to promote on the web or retail. Tracking the customer experience in this way provides two outputs: at the same time quantitative (number of sessions per frame, time spent) and qualitative (emotions related) metrics. It's also even more interesting for the Product Owner you can promote more than other products on the web and claim generating more value-added for the organization. VTO are not recorded and stored in servers. All data is collected anonymously to ensure ethical behavior towards customers.

### 01

#### Organization

The Web and Digital Product team is already available. But there is a lack of knowledge on AI expertise. Someone to hire to develop this feature, working closely with Product Owner.

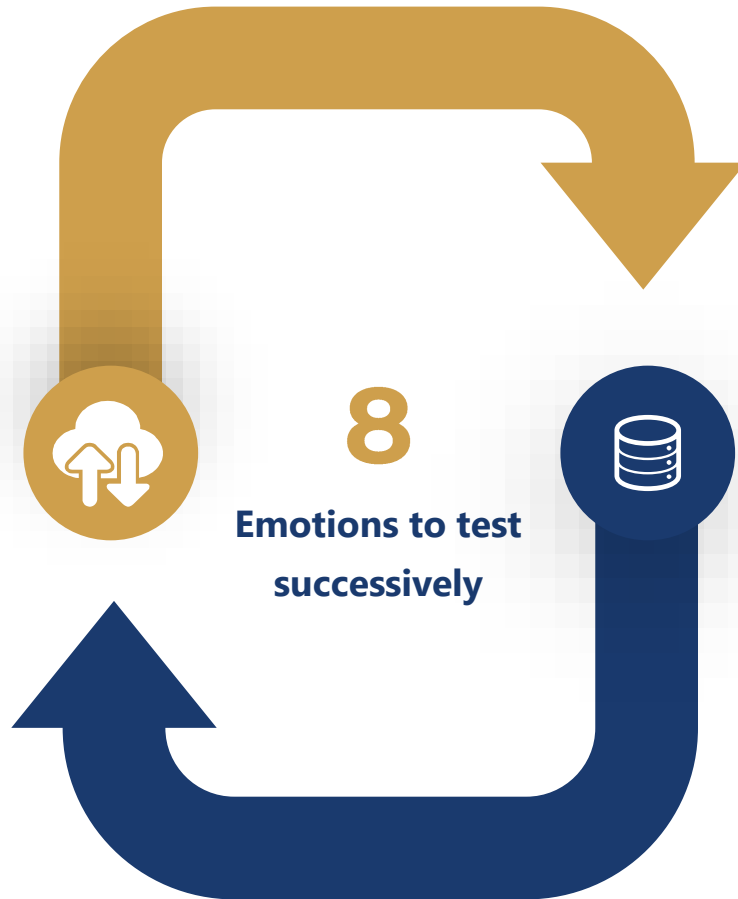
### 02

#### Human factors

It's a step forward to a customer-centric organization as what matters is the Customer Experience with the product of the brand, which is extended into Data-driven decision.







Design an experiment to test the success of your AI application

## 8 tests in iteration to validate end to end process

### Staging environment

AI application will be hosted in a staging environment. Few devices will be used by different people to test VTO: Mobile (iOS and Android), Desktop (Windows and Mac), and Tablet. The first iteration will be a neutral emotion followed by the seven other types of emotions. Users, Category Manager will be involved, and the value of emotion can be shown live to test what will feed the analytics.

### Success metrics

The list of VTO performed with different frames will be tracked and compared with the records available in Google Analytics. If it's matching, the AI application will be deployed to production. Then further tests will be performed to verify the data outputs are still accurate. Finally, metrics reports and dashboards can be built for business reviews. Category Manager gets further insights to decide.



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