Victor FEUGA
Engineering student, specialized in computer science

Artificial Intelligence in Education

2nd year engineering internship report done between 2nd of May and 31st of August

Under the directive of M. DUJOL Romain and M. SETA Kazuhisa

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Acknowledgments

I would like to thank first the Osaka Metropolitan University international office who was always there to help me and support me during my stay in Japan. I also want to thank the CY Tech international office which supported me in the procedures before my departure. Without both of them, nothing would have been possible.

I want to thank the professor SETA Kazuhisa and his associated professor HAYASHI Yuki who accepted me in the Knowledge System Lab. And presented me a fascinating research subject to work on.

Now, I want to thank all of the other students from the research laboratory. They were all kind and well-intentioned toward me. More particularly LIU Yue who helped me a lot with the Japanese administrative procedure. And FUKUOKA Katsuya, with who I worked a lot.

Finally, I would like to thank DUJOL Romain, my pedagogical referent, which stayed available throughout the course if I ever encountered a problem.

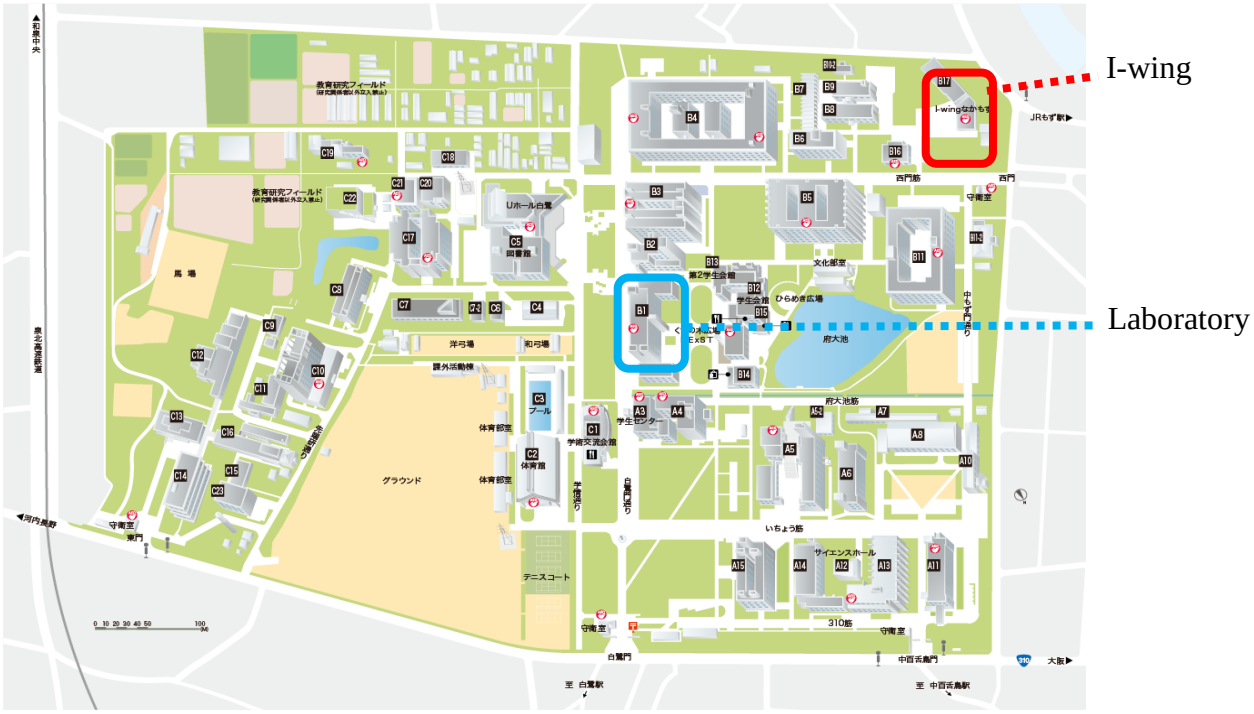
Introduction

From 02/05/2022 to 31/08/2022, I did an internship as a member of the Knowledge System Lab (ks.mi.s.osakafu-u.ac.jp) at the Osaka Metropolitan University. Located at the Nakamozu Campus, 1-1 Gakuen-cho, Nakaku, Sakai, Osaka 599-8531. Through this internship, I wanted to increase my knowledge and skills in computer science and artificial intelligence. And also experiment how is the life of a research student in Japan. This was a unique experience for me because I always wanted to know more about Japan and its culture.

During the internship, I had the opportunity to have a subject related to the Computer Supported Collaborative Learning platform developed by the laboratory. The aim of the platform is to provide several kinds of primitive verbal and non-verbal information which is the basis for multimodal interpretation.

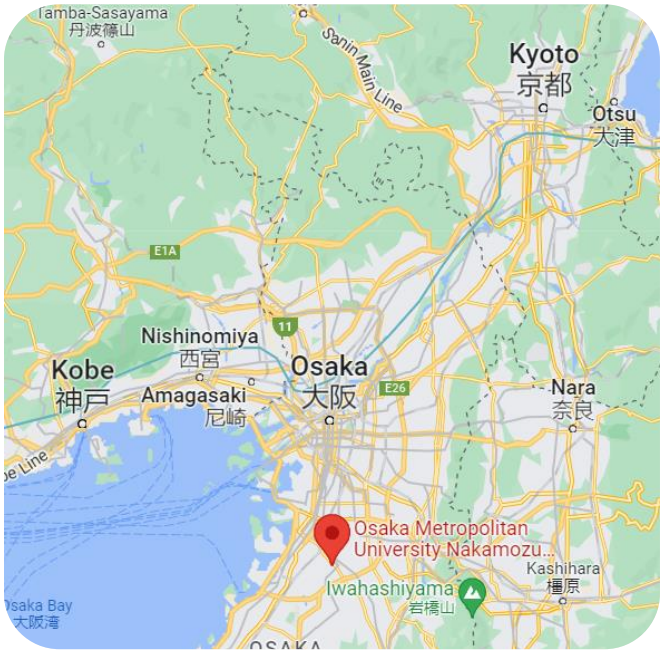
In this paper, we will take a look at all of the steps I went through in order to develop an emotional prediction application based on Action Units analysis.

Before coming to Japan, I never learned how to speak Japanese. It was a risky move. But luckily for me, the people in the laboratory and dormitory have a great English. I took Japanese classes in order to enjoy more my stay and to help me in the daily life conversation (going to convenience store, supermarket, restaurant, …). Being housed in I-wing (the campus dormitory) was very convenient for me. I was only 5-minute walk away from the laboratory and 15 from the supermarket and metro/train station (Nakamozu station).



Campus map

The campus isn’t not located in Osaka but in Sakai. The travel time between the nearest station and Namba (one of the main stations in the center of Osaka) is around 30minutes by metro. And less than 2 hours to go to other big cities like Kyoto, Nara or Kobe! I had the opportunities to work while enjoying my stay in Japan.



Campus localization

I- Searching for the internship

During the engineering course at CY Tech, we must do a semester aboard. Because I always wanted to go to Japan, it was convenient that my school has a partnership with Osaka Metropolitan University. This partnership is one of the reasons I choose to enroll in CY Tech engineering program in 2020. It offers 6 spots to French students to do a research laboratory internship at the Nakamozu campus. And allows 2 of the 6 to do a double degree in Japan.

The application period started in October 2021 based on the 2020/2021 academic results and motivations. I tried my best to have the best results during the first engineering year. Unfortunately, I was not accepted for the double degree at the Osaka Metropolitan University. But being accepted for the internship is already a unique opportunity! I've been wanting to experience living in Asia (especially Japan) for a long time. My plan B if I was not accepted would have been to go to Canada for my internship.

II- The internship environment

A- Company objectives

The Osaka Metropolitan University is a Japanese public university that was established on 1st April 2022 with the merge of the Osaka City University and Osaka Prefecture University. The number of student amounts to about 16 000 (the largest scale in Japan for a public university). Currently, there are 6 different campus sites in Osaka, plus one who will be completed in 2025. The university offers the possibility to attend to 12 undergraduate schools and 15 graduate schools.

There is a lot of different laboratory around the Nakamozu campus. For example, you can find physics, astrophysics, computer science or even plant nutrition laboratories. The main thematic of my laboratory is to work on systems that helps for education and to gain knowledge. Each student has a different study project related to this subject. The Knowledge System Lab is directed by the professors SETA Kazuhisa. With the help of his associated professor HAYASHI Yuki. There are currently 18 students in the laboratory (from bachelor to PhD courses).

The laboratory is located at the 2nd floor of the B1 building of the campus. It’s divided in 4 rooms. The first one is the biggest where all of the students have a personal desk with computer and screens. Then, there is the meeting room, where meetings are held every Wednesday (laboratory life meeting) and Thursday (research meeting). The last 2 rooms are the private office of each professor. The laboratory is accessible all day long and all week long (weekend included). Because it’s a “research internship”, I didn’t have any fixed working hours.

B- Personal observations

The human relations in the Japanese laboratory is all about respect and politeness. In Japanese business life, the surname name is always followed by the honorific suffix “san” (even if they know each other for a long time). Which basically means “dear” or “honorable Mr/Ms”. There is an exception for professors. The suffix "sensei" must be used. The hierarchical level can easily be established. At the top there is the professor M. SETA. Then, there is his associated professor M. HAYASHI. Finally come the students where ordered by their academic course level (PhD course > Master course > Bachelor course). Having a very respectful working environment disturb me a bit at the beginning. It’s very different from French business life. Seeing students calling others like “Mister FEUGA” for daily conversation was weird. But once you get used to it, it’s very pleasant. Plus, it’s just a normal sign of respect in Japan.

C- Integration of the trainee

In order to help in my administration papers, LIU Yue (a Chinese student from the lab who speaks very well Japanese) was assigned to be my student buddy. She had to help me for Japanese administration papers and procedures. She went to the ward office with me when I arrived in Japan. For integration in the laboratory, I had to introduce myself by doing a presentation in which I talked about myself, my family and what I like to do. Please take a look at the *Annex n°7* if you want to see my introduction presentation. The Japanese students are sometimes shy about communicating in English. I regret not speaking Japanese before coming because the language barrier sometimes blocked in order to communicate with some students. I’m also shy so I don't blame them. But luckily for me, they still tried to make efforts to communicate with me. In order to have opportunities to exchange, we did some events between students. For example, we went to izakaya restaurant or had a pizza party.

III- Technical inputs

A- Technical description

The main objective was to implement an emotion prediction function based on facial Action Units to the Computer Supported Collaborative Learning system developed by the laboratory. As the internship takes place in a university laboratory, I had to search and gather information by reading research papers and articles.

Firstly, it’s important to present the Computer Supported Collaborative Learning system. The system consists of creating some learning support tools that are designed according to the

objective of collaborative learning. The platform is made in C# in order to run on Windows systems. Most of this information are extracted from the laboratory paper "*Multimodal Interaction Aware Platform for Collaborative Learning*" published in 2017. Here are some core functions in the platform:

- A mechanism to provide several kinds of primitive verbal and non-verbal information which is the basis for multimodal interpretation (context information)
- A mechanism for developers to define learning support tool specific information types (message types), and properly make them communicate in parallel.

Here is a brief explanation of the platform concept:

- Use of sensing devices (like shown *in Figure 1 a*) in order to capture verbal and non-verbal information of participants in collaborative learning.
- An infrastructure for developing CSCL systems, network and session management (*Figure 1 b*).
- A framework which allows developers to specify rules (Figure 1 c). CSCL system developers in order to develop the learning support (*Figure 1 d*).

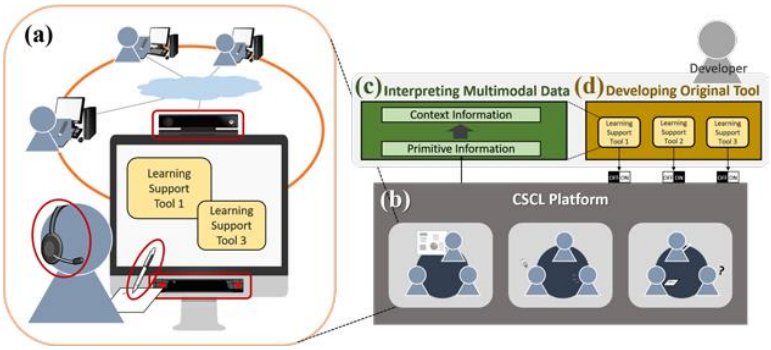


Figure 1: Platform Concept towards Developing CSCL Systems

The CSCL platform is divided in 2 parts:

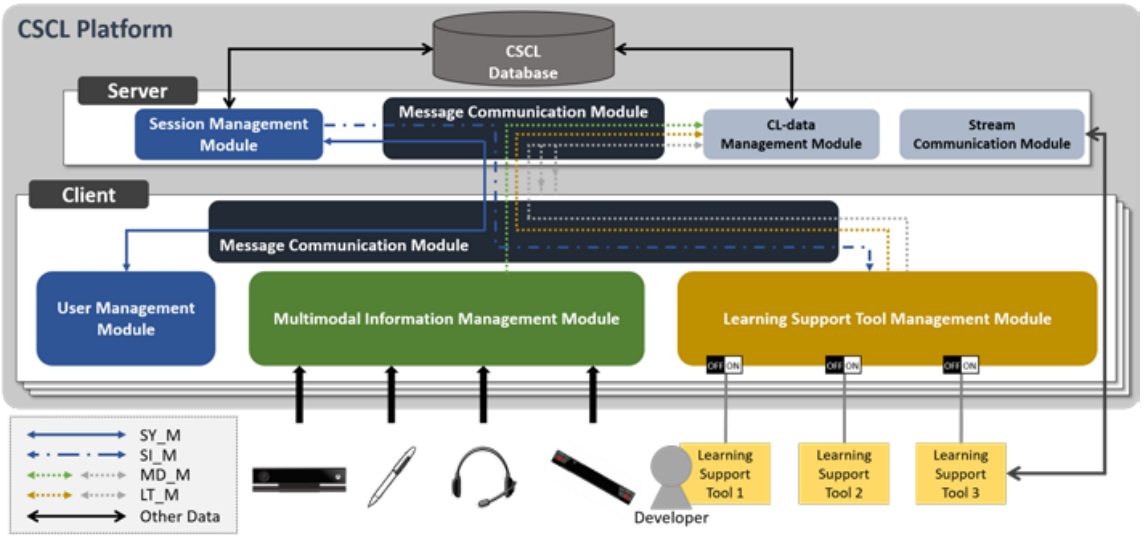


Figure 2: Platform architecture

Explanation of the messages in the *Figure 2*:

SY_M = SystemMessage ⟶ ⟶ login / logout to the system message

SI_M = SessionInfoMessage ⟶ message generated by the platform when a user leaves or enter the session

MD_M = MultimodalDataMessage ⟶ verbal and non-verbal information provided by the platform. The data detected from each sensing device is provided for developers as subclass messages of MD_M such as 'StartWriting', 'GazeIn', etc. These messages are once sent to the server, and distributed to client sides in the collaborative learning session.

LT_M = LearningSupportToolMessage defined by developers when they implement specific learning support tools. Developers define them as subclass messages of LT_M such as 'ChatTextMessage', 'WritingCoordinateMessage', etc

Has shown in the *Figure 1 a*, the platform requires some devices in order to send the data to the application.

Type	Device	Information	Layer
Utterance	Microphone	Speech interval	Interaction primitive
		Content of utterance	Interaction primitive
Gaze	Eye-tracker	Eye-coordinate data	Raw data
		Gazing interval	Interaction primitive
		Target object	Interaction primitive
Writing action	Digital pen	Timing of writing	Interaction primitive
Head movement	Depth camera	Head direction data (roll, pitch, yaw)	Raw data

The column “layer” is based on the different levels of human interaction:

Layer	Summary	Example
Interaction Context	The flow of interaction	Dominant level transition
Interaction Event	The combinations of multiple primitive data	Joint attention
Interaction Primitive	A single motion by a human	Looking, speaking

The system also includes an analysis support environment linked to the servor database (shown in *Figure 2*):

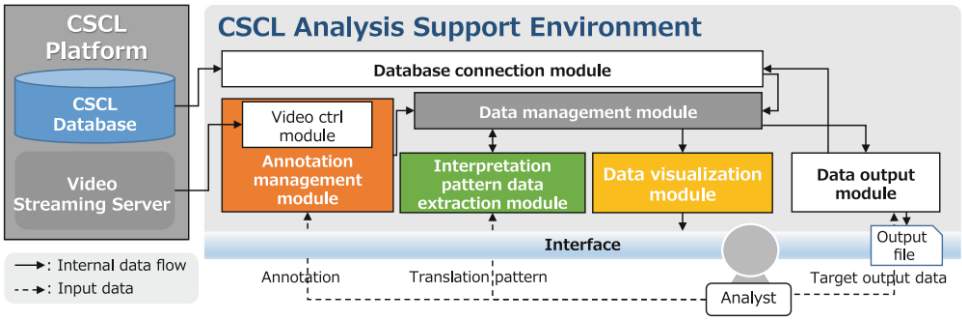
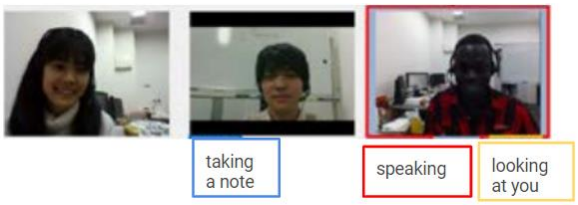
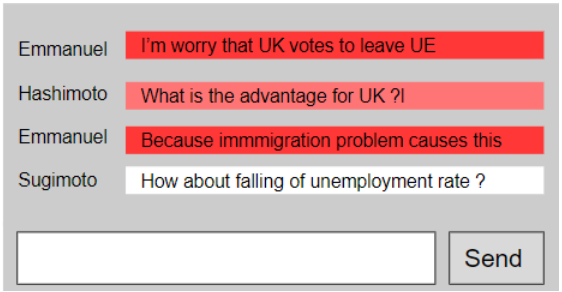


Figure 3: Analysis Support environment architecture

To end the presentation of the CSCL application, here is some examples of it works:



Non-verbal Aware Video-chat Tool, gives in real time who is doing what during a meeting. Using speech, gaze and writing action data.



Gaze Aware Text-chat Tool, highlights the background of text messages gazed at by other participants. In the case that a text message is gazed at by plural participants, its background is deeply colored to highlight according to the number of gazing participants.

Then, it's important to talk about OpenFace and Action Units. OpenFace is an open source tool intended for computer vision and machine learning researchers, affective computing community and people interested in building interactive applications based on facial behavior analysis. The open source code can be found here: https://github.com/TadasBaltrusaitis/OpenFace. There is a lot of documentation in order to install and execute the application. OpenFace can be used as a Graphical User Interface (GUI) (for Windows only) (cf *Annex n°1*) and as a command line tool (for Ubuntu, Mac OS X and Windows). The application works with images files, video files and webcam. The system can extract different types of data. The basic one, with the frame number, timestamp and the confidence of the landmark detection. The gaze related one, with eye gaze direction and the location of 2D/3D eye region landmarks in pixels. Head pose related, with the location of the head and the rotation in radian. Then, there is the landmark locations on the face. In total, there are 68 points (cf *Annex n°3*). Thanks to these points, the system is able to detect the intensity (from 0 to 5) of 17 Action Units (named AU01_r, AU02_r…) and the presence (0 absent, 1 present) of 18 Action Units (named AU01_c, AU02_c…).

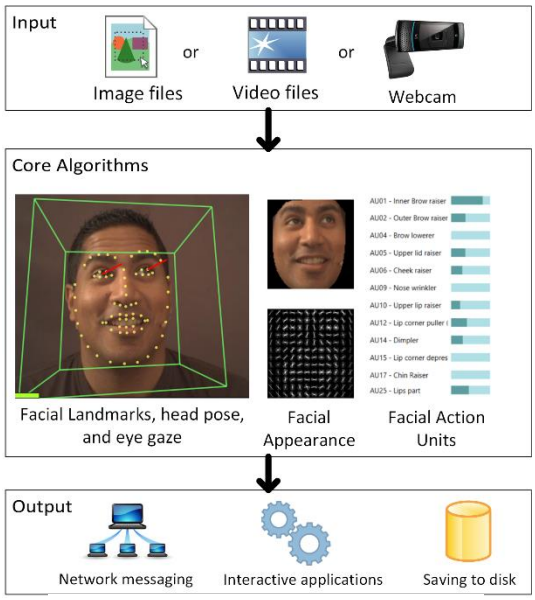


Figure 4: OpenFace scheme

Here is the list of all the Action Units predicted by OpenFace:

AU	Full name	Illustration
AU1	INNER BROW RAISER	
AU2	OUTER BROW RAISER	
AU4	BROW LOWERER	
AU5	UPPER LID RAISER	
AU6	CHEEK RAISER	
AU7	LID TIGHTENER	
AU9	NOSE WRINKLER	
AU10	UPPER LIP RAISER	
AU12	LIP CORNER PULLER	
AU14	DIMPLER	
AU15	LIP CORNER DEPRESSOR	
AU17	CHIN RAISER	
AU20	LIP STRETCHED	
AU23	LIP TIGHTENER	
AU25	LIPS PART	
AU26	JAW DROP	
AU28	LIP SUCK	
AU45	BLINK	

Figure 5: List of the Action Units

To have more information about how to call OpenFace with command line, look at this part of the project documentation: https://github.com/TadasBaltrusaitis/OpenFace/wiki/Command-line-arguments. And go to the FeatureExtraction.exe part.

In our case we want to use the following command line in order to proceed to Action Units extraction: ***FeatureExtraction.exe -device 0 -vis-aus -of data -aus***

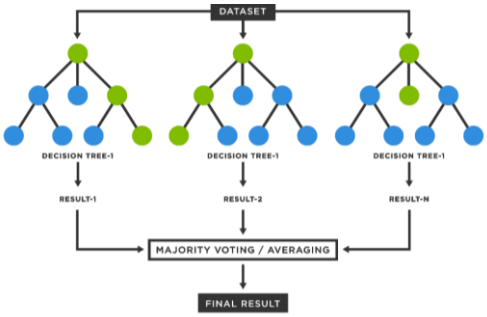
FeatureExtraction.exe is the execution file to extract
-device 0 performs feature extraction from live feed with webcam
-vis-aus visualizes in live the Action Units (cf *Annex n°2*)
-of data writes the data into the file named "data.csv"
-aus only output Action Units

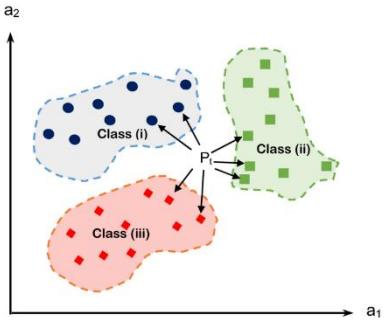
Please find a screenshot of the data output at *Annex n°4*.

After doing some data analysis on the Action Units data, my initial idea was to use some Machine Learning model in order to predict the emotion based on the Action Units. I built my own dataset by using pictures of friends or found on the internet doing specific emotion faces in order to train my models.

The goal was to build a multiclass classification, so I used the following models:

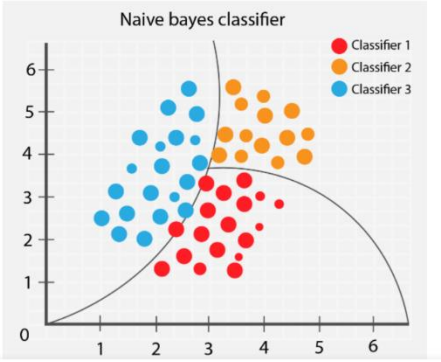
- Random forest, operates by constructing a multitude of decision trees. The output of the random forest is the class selected by most trees





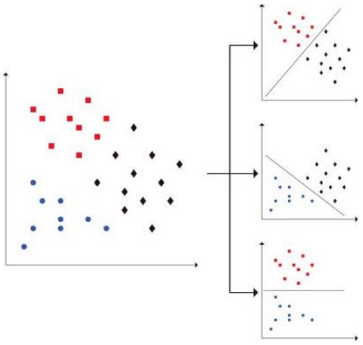
• K-nearest neighbor, is a non-parametric, supervised learning classifier, which uses proximity to make classifications or predictions about the grouping of an individual data point.

- Decision tree, a flowchart-like tree structure where an internal node represents a feature (or attribute), the branch represents a decision rule, and each leaf node represents the outcome.



- Gaussian Naive Bayes, a set of supervised learning algorithms based on applying Bayes' theorem with the "naive" assumption of conditional independence between every pair of features given the value of the class variable.

- Support Vector Machine (One vs One), it involves splitting the multi-class dataset into multiple binary classification problems.



Now let's compare the accuracy of the different models on our test data. And let's compare which Action Units data is the best (the "Presence" or the "Rate" data) using Python with sklearn libraries.

	Presence	**Rate**
Random Forest	0.8	0.8
KNN	0.6	0.7
Decision Tree	0.6	0.7
Naive Bayes	0.5	0.5
Support Vector 1v1	0.6	0.8

We can see that the rate data provide a better accuracy for the prediction for the test dataset.

Even if the prediction accuracies are high, the problem of using Machine Learning models is the lack of explainability for some of them. For example, a decision tree can easily be explained. But with a random forest, it's more difficult to describe the steps of the decision making (even more when there are a lot of trees inside it).
Because the work of the laboratory is more about "why are we predicting this?" then only focus on the result, the professors suggested to find another way to predict the emotion. Luckily for me Katsuya FUKUOKA, another student from the laboratory, has a similar subject. And already worked on an emotion prediction algorithm using Action Units combination (based on the paper

"*The Extended Cohn-Kanade Dataset (CK+): A complete dataset for action unit and emotion-specified expression*").

He developed a Python script in order to match present Action Units in a video frame to the Action Units present in emotion. Using the following rules:

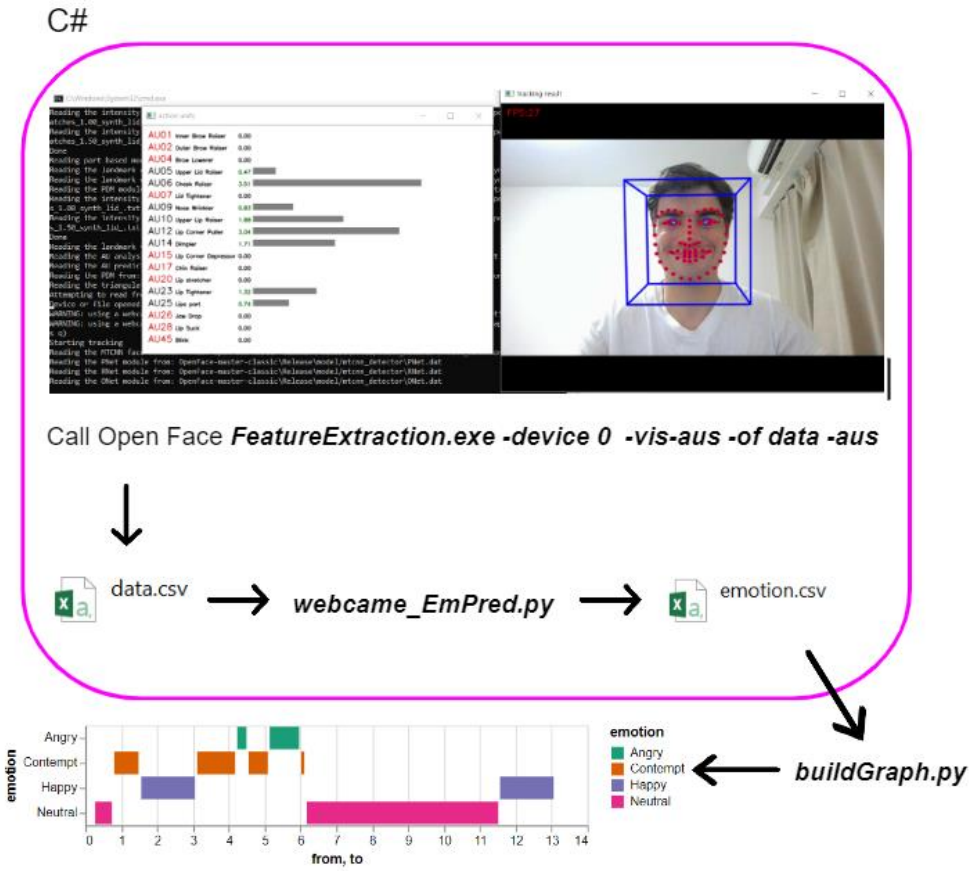
Emotion	Angry	Disgust	Fear	Happy	Sadness	Surprise	Contempt	Neutral
Action Units	4,5,15,17	1,4,15,17	1,4,7,20	6,12,25	1,2,4,15,17	1,2,5,25,27	14	

The prediction function is a little too sensitive. And it has an impact on the accuracy.

After adapting the algorithms for my data frame in Python, I managed to include it in a small C# program in order to develop a user interface. It was my first-time using C# and I got a bit lost with it.

I discovered a new Python library named Altair that allows me to produce a timeline bar graph representing the beginning and ending of each emotion phases during the recording.

Here is the result where I'm now:



B- Organization

The Knowledge System lab is composed of:

- 2 professors (Dr. Kazuhisa SETA and Dr. Yuki Hayashi)
- 4 PhD students
- 5 Masters students
- 8 Bachelor students
- 1 exchange student (me)

In order to keep track of everybody progress and planning, they are 2 weekly general meetings. The first one is on Wednesday afternoon. Every laboratory member share quickly his weekly progress and his planning for the incoming week. In order to encourage students to speak English, 2 of them have to prepare a presentation about what they are attracted to (in English). The second general meeting is hold on Thursday. This one is really more focused on the research subjects. It's free to present or not. We have to prepare papers about our progress and share them while doing an oral presentation (I had to do mine in English, see example cf *Annex n°5*). When the presentation is over, professors and students are invited to share thought and questions about the presented subject.

The laboratory uses the application "Slack" to communicate and share important information ("*One platform for your team and your work*"). This is the first time I use this platform. But it's very popular in companies like: Spotify, BBC or Deliveroo. I'm glad to have discovered this tool. I will probably use it for my next works.

The laboratory also has a website to share important news about laboratory life, members, events and projects (ks.mi.s.osakafu-u.ac.jp).

C- Self-assessment

I believe that having the research meetings helped me a lot in order to know if I was in the good way or not. Exposing my ideas to the professors and other students brought me options that I hadn't thought of. Plus, having to prepare my progress paper also helped me to keep track my progress and how to summarize it. The professors stayed available in order to guide me toward the objectives. And to make sure I wasn't going in the wrong way.

At the end, I'm proud of the work I did. It was a really good experience to work as a research student. Compared to my previous internship, I was way more autonomous. I spent most of my time working on my own. It wasn't easy at the beginning. But once you catch the rhythm it gets better.

I hope that my stay and work in the laboratory was appreciate by the professors and other laboratory members.

D- Possible extensions

My biggest regret is that I wasn't able to implement a live prediction function. I think I lost too much time on some technical problems in order to run correctly the OpenFace source code. Maybe with more time I would have been able to change the application open source code to do a pipe communication between the data and my prediction function. I know it's possible. This would be the major next step of the program.

Another thing I would have loved to implement is a function that detected if you a student is losing his focus from the class. To do so, we could use Action Units to determine his facial expression. And so, to predict if he's paying attention or not in real time. With a tool like this, the teacher would be able to know when a student is losing concentration.

I would have also loved to finish implementing a "median" prediction system to handle prediction error. Because the prediction function is very sensitive to change, it happens the predicted emotion changes only for 2 frames.

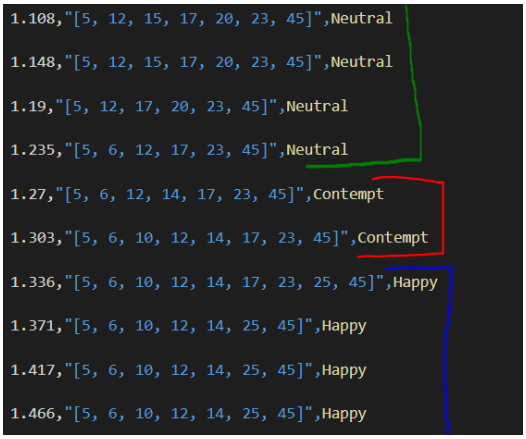


Figure 6 : Prediction error

As shown in the *Figure 6*, we can see that the prediction goes from "Neutral" to "Contempt" for only 2 frames (for less than 0.1 second) before going to "Happy". It would be interesting to develop a post-processing function that will flatten the predictions. For example, it could be by predicting for each second what is the median predicted emotion. And so, will output the prediction from one second to the next one.

I hope that my work will help other for their research. I will remain available to help other laboratory members for OpenFace related works.

IV- The internship in the course

During my course at CY Tech I discover many things about Artificial Intelligence. The theoretical courses helped to identify the problem. And to choose what models suit it the best. In this case, the problem is a multiclass classification. I also used the practical courses to help me in

the methodology to develop my models. In addition, I used my programming skills developed at CY Tech (mostly C, C++ and Python) in order to understand the OpenFace source code and to learn how to use C# (which as a lot of similarities with C++). Last but not least, the communication classes we got helped me during the meetings I had. It helped me to share my opinions and present my work.

I believe that the internship helped me to develop my skills. It developed my reading, understanding and summarizing research papers skills. I also learned how to search for online documentation in order to support my research. I also developed technical skills in C++ (for understanding and analyzing the OpenFace source code) and Python (implementing Machine Learning models, data analysis, data handling). Because I went to an unknown territory with a lot of cultural differences and not being able to speak a lot of Japanese, I highly developed my adaptation skills. I stepped out of my comfort zone and I had to think outside the box.

V- Conclusion

To conclude, I didn't go as far as I wanted in my research work. The fact that I wasn't able to implement the CSCL platform developed by the laboratory before leaving really disappoint me. And it's like a failure for me. I wanted to give a good image of French international students. I had a lot of technical difficulties that slowed me down. So, I didn't really come out with a nice final product. Otherwise, I'm still proud of the work I produced. I learned a lot of things about emotions and education, machine learning and discovered the wonderful tool named OpenFace. But I really believe that with more time I would have been able to implement it. I think it can be a very interesting tool to study student behavior. I would have loved to finish it.

I really enjoyed my time at the laboratory. I met and exchange with a lot of interesting peoples here. I realized how serious it's to be a research student. You have to do a large amount of work aside of the usual classes and laboratory meetings. I wish them all great success.

I also really loved living in Japan. It's a once in a lifetime experience. I made some good friends from all around the world. And was able to visit many different places, enjoy a lot of good food and attend some very nice events. In France, I will keep practicing my Japanese. So that when I will come back, I will be able to be more autonomous.

VI- Bibliography

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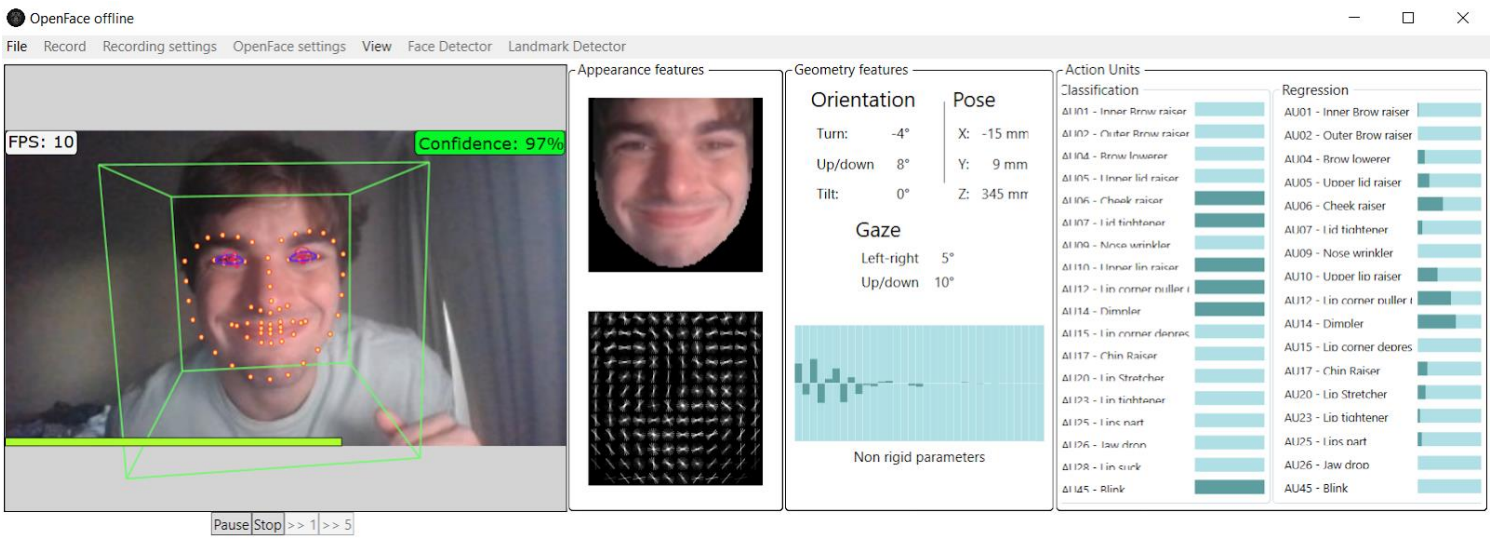
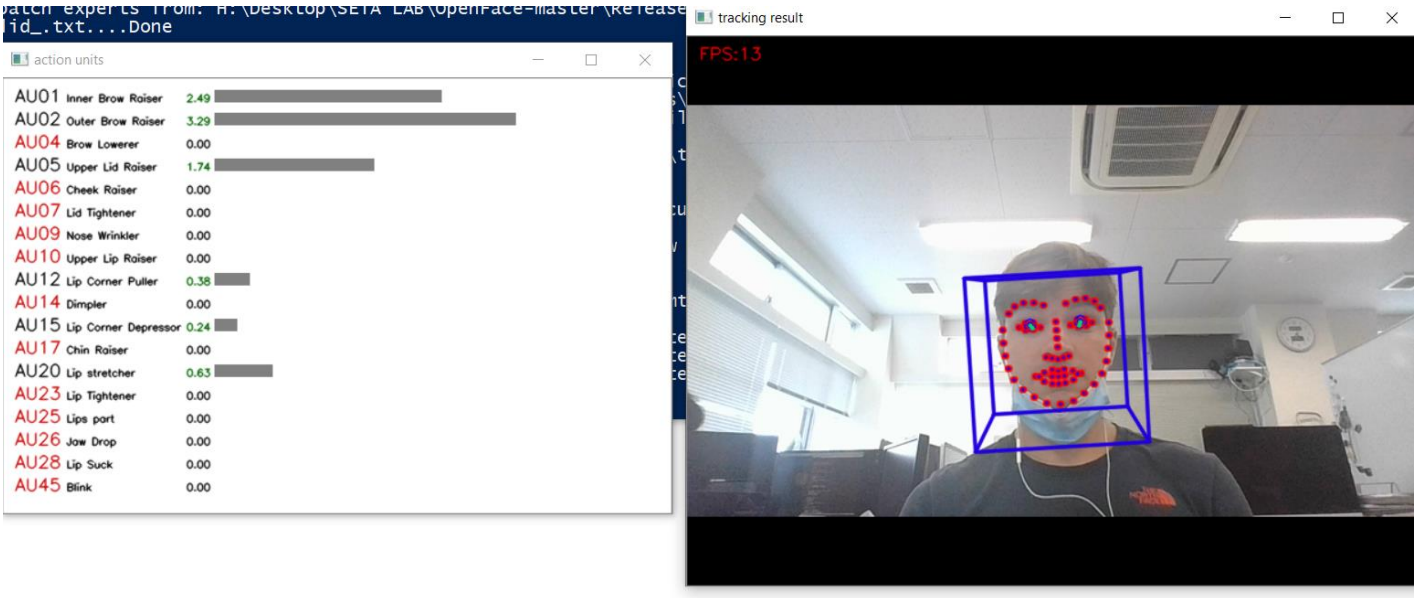
VII- Annex

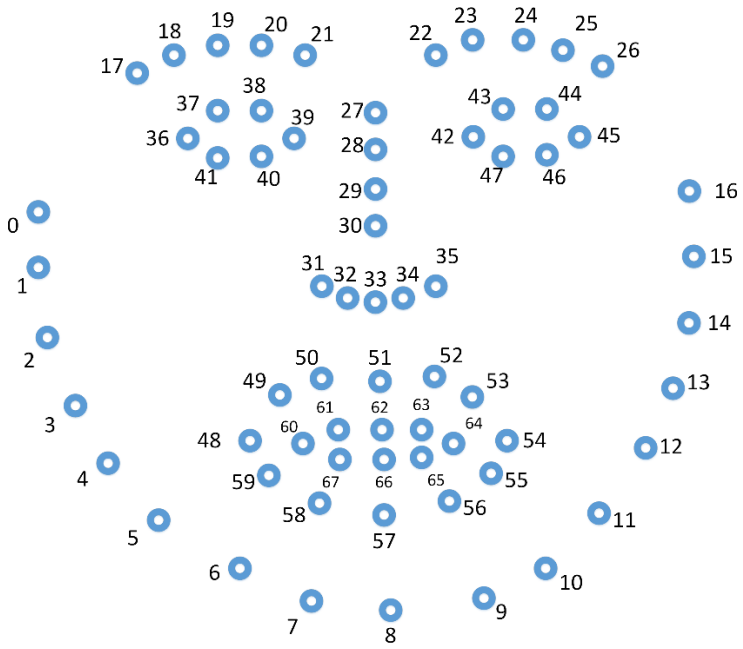
n°1 OpenFace Graphical User Interface



n°2 OpenFace command line call



n°3 OpenFace landmarks index



n°4 Data output

frame	face_id	timestamp	confidence	success	AU01_r	AU02_r	AU04_r	AU05_r	AU06_r	AU07_r	AU09_r	AU10_r	AU12_r	AU14_r
1	0	0.289	0.93	1	0.65	0.25	0.77	0.00	0.10	0.00	0.00	0.00	0.22	0.00
2	0	0.677	0.93	1	1.01	0.38	0.69	0.00	0.18	0.00	0.00	0.00	0.31	0.00
3	0	0.887	0.98	1	1.26	0.36	0.54	0.00	0.23	0.00	0.00	0.00	0.44	0.00
4	0	0.957	0.93	1	1.20	0.31	0.61	0.00	0.32	0.00	0.00	0.00	0.55	0.00
5	0	1.021	0.98	1	1.26	0.32	0.60	0.00	0.34	0.00	0.00	0.00	0.59	0.00
6	0	1.103	0.98	1	1.09	0.39	0.83	0.00	0.46	0.00	0.00	0.00	0.55	0.00
7	0	1.186	0.98	1	1.02	0.29	0.79	0.00	0.45	0.12	0.00	0.00	0.53	0.00
8	0	1.249	0.98	1	0.79	0.16	0.90	0.00	0.49	0.12	0.00	0.00	0.52	0.03
9	0	1.306	0.98	1	0.75	0.03	0.79	0.00	0.35	0.31	0.00	0.00	0.59	0.05

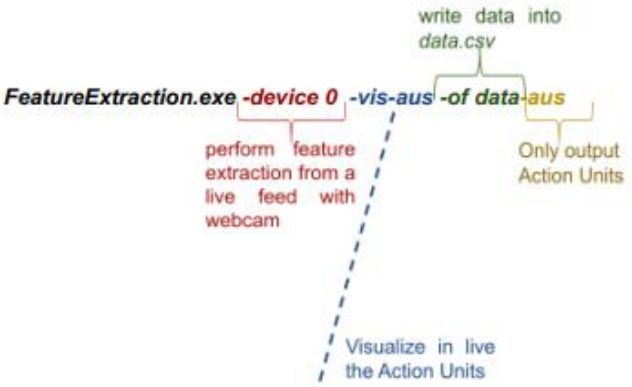
n°5 Thursday meeting progress report example

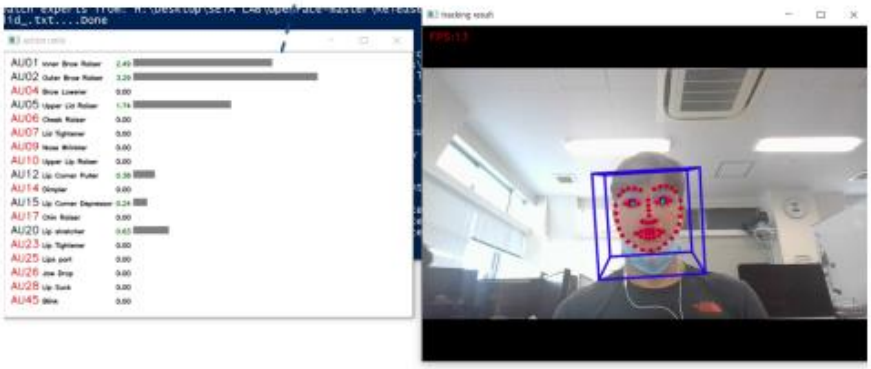
Progression about my research on emotion recognition

Victor FEUGA
07/14

Finally fixed technical problems in order to compile OpenFace source code !

Use OpenFace from command line :





Possibility to use other arguments :

- au_static if this flag is specified the AU prediction will be performed as if on static images rather than videos (learn more here)
- verbose visualize all information in live

And more here.

Prediction model :

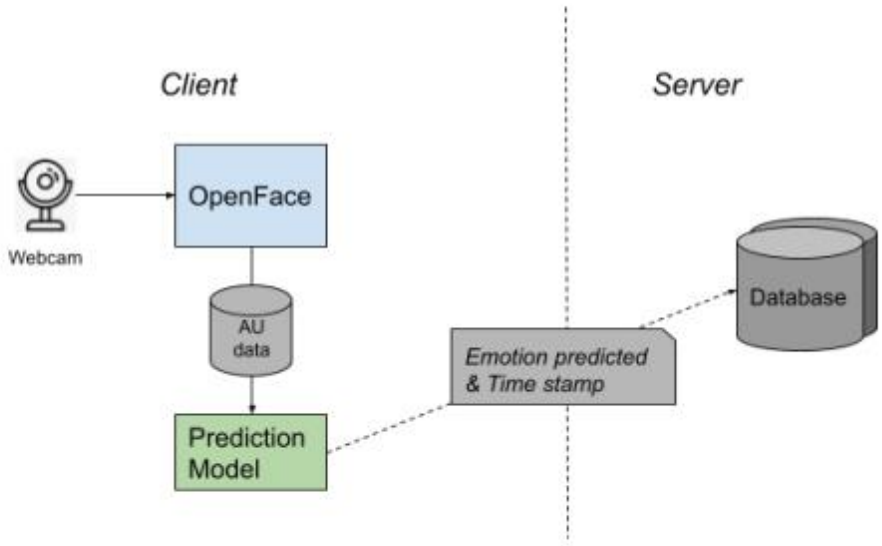
Use of Katsuya-san prediction function that predicts the 7 basic emotions with only using Action Units.
The prediction is based on this table :

Emotion	Criteria
Angry	AU23 and AU24 must be present in the AU combination
Disgust	Either AU9 or AU10 must be present
Fear	AU combination of AU1+2+4 must be present, unless AU5 is of intensity E then AU4 can be absent
Happy	AU12 must be present
Sadness	Either AU1+4+15 or 11 must be present. An exception is AU6+15
Surprise	Either AU1+2 or 5 must be present and the intensity of AU5 must not be stronger than B
Contempt	AU14 must be present (either unilateral or bilateral)

cf : *The Extended Cohn-Kanade Dataset (CK+): A complete dataset for action unit and emotion-specified expression*

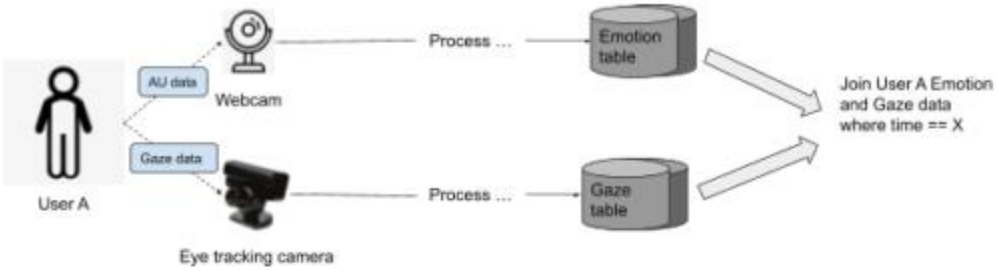
For now :

Include OpenFace in application :



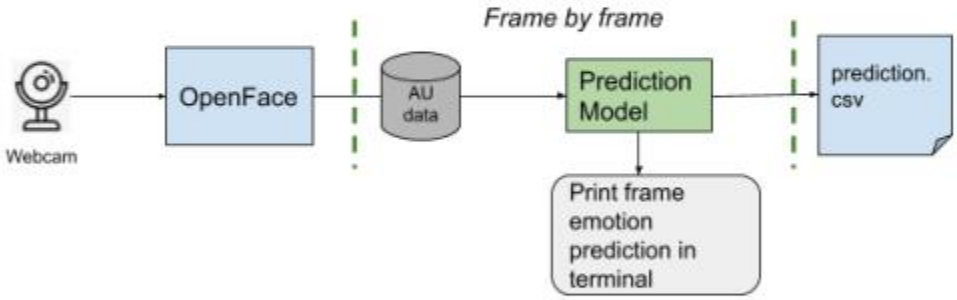
Having timestamp data will allow us to join data.
For example, if we have an user A and we recorded his gazing data plus predicted his emotion at the same time.

We can know what was his emotion when he gazed at the document at the time X.



Next step :

Do live prediction using pipe system



Use of ZeroMQ to stream the extracted values

n°6 new resume after the internship

VICTOR FEUGA

ASPIRING DATA SCIENTIST

SUMMARY

Currently enroled in a Master 2 of engineering specialised in Artificial Intelligence.

CONTACT

Phone number : (+33) 6 81 60 71 24
E-mail : vicfeuga@orange.fr
Address : 80 quai des Queyries, 33100 Bordeaux, France
LinkedIn : www.linkedin.com/in/victor-feuga/

HARD SKILLS

Programming (Java, Python, R, VBA, HTML/CSS/JS, SQL, C, C++)
Data Handling (R, Python x Pandas, Excel x VBA, SQL)
Webscraping (Python x Beautiful Soup)
Use of distant servors (Debian)
Ability to design, operate and control a relationnal database
Quick learning skill of different programming languages
Statistical and mathematical tools

LANGUAGES

French : Native language
English : Avanced
Spanish : Limited professional competence
Japanese : Beginner

INTERESTS AND HOBBIES

Finalist at the Battle Nouvelle Aquitaine 2022 organized by AI Pau **(AI allowing the matching of job offers and jobbers)**
Participation at the IA Pau Data Challenge 2022 (NLP, OCR, Streamlit)
Participation at the 2019 Enedis Data Challenge (data analysis /handling)
Sports : American football, Snowboard, Basketball, Surf
Cooking
Analogue photography

EXPERIENCES

Second year of engineering course internship at the Knowledge System laboratory, Osaka Metropolitan University
Artificial Intelligence in education
Sakai, Japan | May 2022 - August 2022

- Developement of an emotion prediciton system based on facial Action Units with OpenFace open source application
- Machine learning
- Research about Computer Supported Collaborative Learning system and emotion facial expression with Action Units

First year of engineering course internship at LAMY Expertise
Implementation of IT tools
Champagne-au-Mont-d'Or, France | June 2021 - Jully 2021

- Establishment of an online inventory platform (GLPI) to reference the company's IT assets
- Integration of an indexing plugin (Elasticsearch) for documents under NextCloud using the "full text search" method
- Creation of a tool to evaluate the referencing of sites thanks to a simulation of a Google search (Python) according to certain keywords, putting the results online on a Google Sheets page thanks to the Google API

DIPLOMAS

Master degree of Software engineering
CY Tech, Pau, France | September 2020 to this day

- Statistics and mathematical tools
- Programming and procedural algorithms
- Web development (HTML, CSS, JS, PHP)
- Computer programming (Java, C, SQL, Python, C++)
- Data Exploration
- Artificial intelligence
- 2 interships

University Diploma of Higher Education
Statistics and Data Analysis
UPPA, Pau, France | September 2018 à June 2020

- Statistics and mathematical tools
- Statistics and business intelligence
- Economics, management and communication
- Computer programming (HTML/CSS, JS, Python, SQL, SAS, R)
- 2 study projects

References available upon request

n°7 Presentation about myself

Presentation about myself

自己紹介

- Victor FEUGA
- 21 years old
- Birthday : 09 August
- France

- Master 1 degree of Software engineering specialised in AI
- Doing an internship
- Here until end of August
- Japanese beginner

Where do I come from ?

ボルドー

カヌレ

ワイン


My family
お父さん
Vincent
ヴィンセント
お母さん
Caroline
カロリネ
おにいさん
Jean
ジャン
Me
いもうとさん
Adélie
アデリー
猫
Jana
ヤナ
Higher education
2018 - 2020
University Diploma of Higher Education in Statistics and Data Analysis
UNIVERSITÉ DE PAU ET DES PAYS DE L'ADOUR
2020 - 2023
Master degree of Software engineering specialised in AI
CY TECH
Bordeaux
Pau
Donostia-San Sebastian
Pamplona

My hobbies

Sports

- American Football
  アメリカンフットボール
- Basketball
  バスケットボール
- Surfing
  サーフィン
- Snowboarding
  スノーボード
- and a lot of other !

Cooking / Eating

Film photography

Things I did in Japan

Ate in an izakaya and yakiniku

Loved the ramen, sushi and takoyaki

Visited Namba and Dotonbori

Visited Kyoto in a kimono

Went to gyoza festival

Went to Osaka Aquarium

Went to Osaka castle

Went to Nara

Thank you for listening !

ありがとうございます