week8

MSc Project 2021

Title: Estimating personality in communication
Name: Yuichi Midorikawa

weekX This indicates when it was done

X-X This corresponds to the mindmap number

Time Plan		Oct				Nov					Dec	My Progress	
		4	11	18	25	1	8	15	22	29	6		
Step	Task	week1	week2	week3	week4	week5	week6	week7	week8	week9	week10	Status	Question(Yes/No)
1	capture a dataset that contains people talking and the text of what they say.	1					buffer				buffer	Finished	
	1-1. Find a dataset to use	1-1										Finished	
2	using the conversation text, do sentiment analysis (A)	2										Finished	
	2-1. Find a model to use	2-1										Finished	
	2-2. Using the model and its data set, perform sentiment analysis		2-2									Finished	
3	from the videos, extract people and body pose (B)	3										Finished	
	3-1. Find a model to use	3-1										Finished	
	3-2. Using the model and its data set, extract body pose		3-2									Finished	
4	from the head, extract facial feature points (C)	4										Finished	
	4-1. Find a model to use	4-1										Finished	
	4-2. Using the model and its data set, extract facial points		4-2									Finished	
5	Then train a model to predict (A) from (B)+(C)			5								Finished	
	5-1. Predict (A) from (B) body pose			5-1								Finished	
	5-2. Predict (A) from (C) facial feature points			5-2								Finished	
	5-3. Predict (A) from (B) body pose + (C) facial feature points			5-3								Finished	
6	evaluate and analyse the results.				6							Running	
	6-1. Decide a evaluation metrics				6-1							Finished	
	6-2. evaluate and analyse the results					6-2						Running	
7	Write a paper					7						Running	

week8

Data observation and visualisation of forecast results for my report

Time plan for writing my dissertation

week8

Chapter	What should I write?		Nov					Dec	My P
			1	8	15	22	29	6	Status
	Level 1	Level 2	week5	week6	week7	week8	week9	week10	
1	Introduction							Buffer	Draft
		• Briefly explain the context of the project problem							Draft
		• Specify overall aim and objectives and report structure							Draft
2	Analysis/ Requirements								Draft
		• Problem Statement							Draft
		• Background Survey/Analysis							Draft
		• Effectively combine above in one chapter							Draft
3	Design & Implementation								Draft
		• Discuss the main features of your design and how it evolved							Draft
		• In your implementation part							Draft
4	Testing&Evaluation								Draft
		• Describe how you evaluated your solution/product							Draft
		• Summarise the evaluation results, and use them to critically evaluate your own work							Draft
		• Be honest about any shortcomings							Draft
5	Conclusion								Running
		• Describe the status of your research/product							Running
		• Summarize what you have achieved							Running
		• Compare to what you originally set out to achieve							Running
		• Relate your work to relevant previous work							Running
		• Suggest further/future work that you think would be worthwhile							Running
6	Bibliography								-
		• List, in alphabetical order by author and date, all articles that you have consulted							-
		• Use consistent style							-
		• Collect all the details when you access a document first							-

Research Steps

week8

Data Preparation

1-1. capture a dataset that contains people talking and the text of what they say.

Youtube

【Updated on week3】
No manual annotation for this project

1-2. Watch the video and manually annotate each subtitle/frame with a positive/negative. (A') (Use as training data)

Positive/
Negative

Implementation (Using a pre-trained model)

2. using the conversation text, do sentiment analysis (A)

【Updated on week3】
Use as training data

① Positive/
Negative

【Updated on week5】
I will predict the emotion frame by frame first.
If I have time, I will predict the emotion in sentences. (Using LSTM or Transformer)

3. from the videos, extract people and body pose (B)

4. from the head, extract facial feature points (C)

5. Then train a model to predict (A) or (A') from (B), (C) and (B)+(C)

② Positive/
Negative

【Updated on week4】I create three models to predict emotions.
(1) predicting emotions from facial feature points
(2) predicting emotions from body posture points
(3) predicting emotions from facial feature and body posture points

Evaluation

6. evaluate and analyse the results.

① Positive/
Negative

② Positive/
Negative

Evaluation metrics:
Accuracy, Precision,
Recall, and F1-score...

1. Summary of actions agreed during last meeting

1-1. I have created the following models to predict emotions using Logistic Regression and 3 layers NN model (Pytorch)

1. Facial features (OpenFace)

1-2. Dissertation: I have written a draft version of Chapter 3 (Design/Implementation part)

week7

1-1. Created the model and predicted emotions from facial features.

I predicted emotions from facial features and body pose features using LogisticRegression() and Pytorch.

Model	Accuracy	
	LogisticRegression()	3 layers NN (using Pytorch)
OpenFace	61.56%	76.83%
OpenPose	71.47%	80.06%
OpenFace+OpenPose	To Be Updated	

I am currently unable to merge the OpenFace and OpenPose csv files due to a memory crash on my environment.

2. Summary of work done & results this week

2-1. Improved model for predicting emotions using a 3-layer NN model (Pytorch)

1. Facial features (OpenFace)

2-2. Observed and visualised the data for the report

- Explore examples of correct/incorrect predictions
- Visualise trends in confidence for each frame

2-3. Dissertation: I have written a draft version of Chapter 4 (Testing/ Evaluation part)

2-1. Created the model and predicted emotions from facial features.

I predicted emotions from facial features and body pose features using 3 layers NN with Pytorch. I tried to apply the Softmax function.

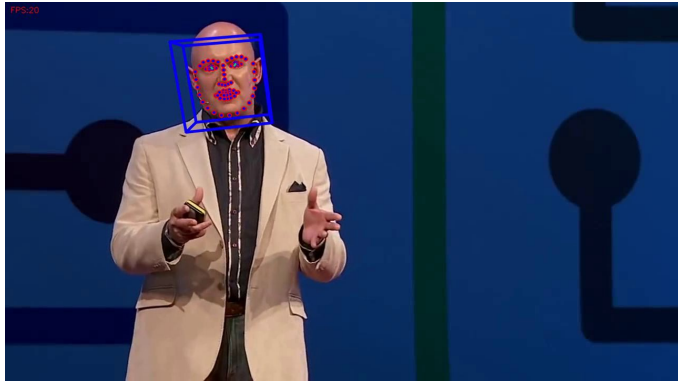
Model	Accuracy	
	LogisticRegression()	3 layers NN (using Pytorch)
OpenFace	61.56%	79.99% (+3.16%)
OpenPose	71.47%	68.57%
OpenFace+OpenPose	To Be Updated	

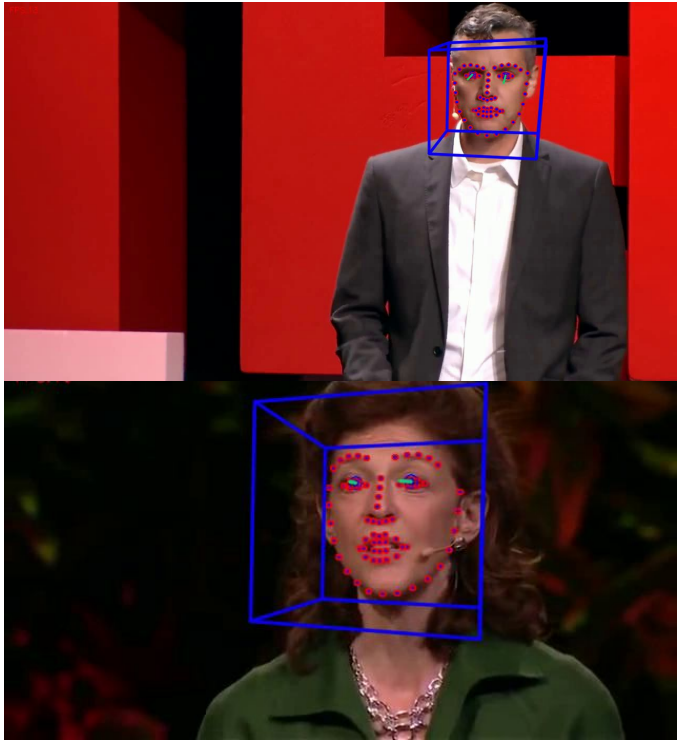
I am currently unable to merge the OpenFace and OpenPose csv files due to a memory crash on my environment.
→ Pandas concatinate() or Numpy

2-2. Observed and visualised the data for the report

I was trying to analyse examples of correct/incorrect predictions.

If the prediction is correct - anger

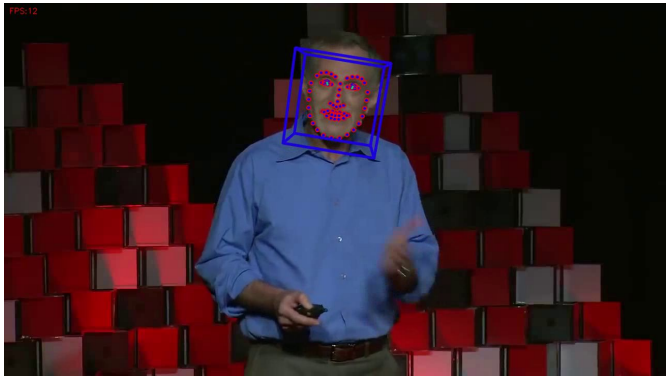




2-2. Observed and visualised the data for the report

I was trying to analyse examples of correct/incorrect predictions.

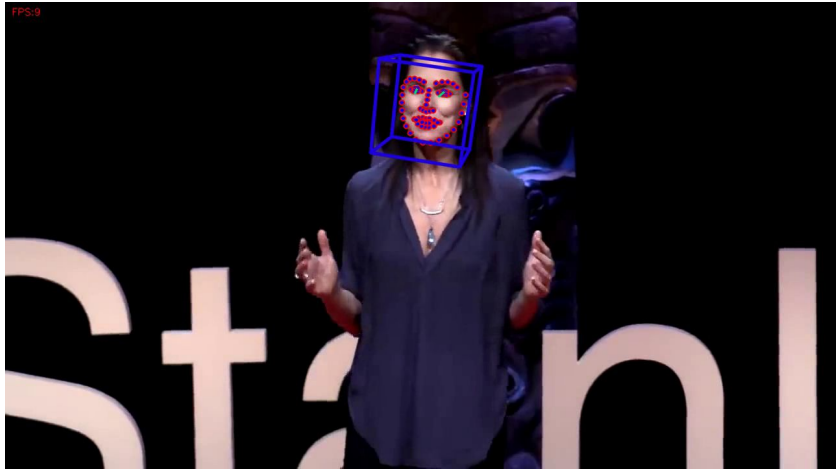
If the prediction is correct - <u>neutral</u>

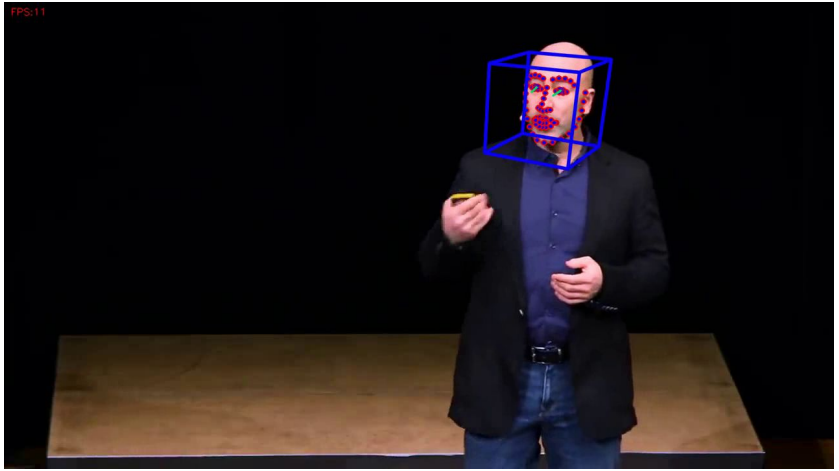


2-2. Observed and visualised the data for the report

I was trying to analyse examples of correct/incorrect predictions.

If the prediction is correct - joy

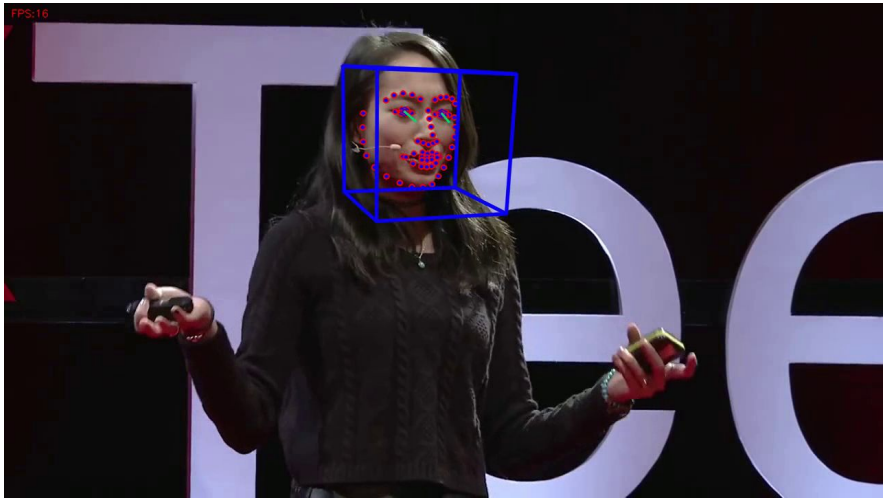


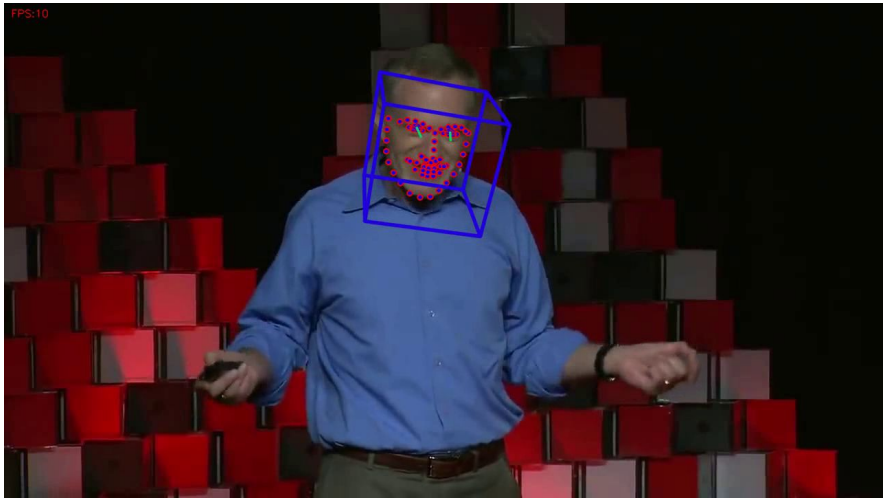


2-2. Observed and visualised the data for the report

I was trying to analyse examples of correct/incorrect predictions.

If the prediction is correct - surprise

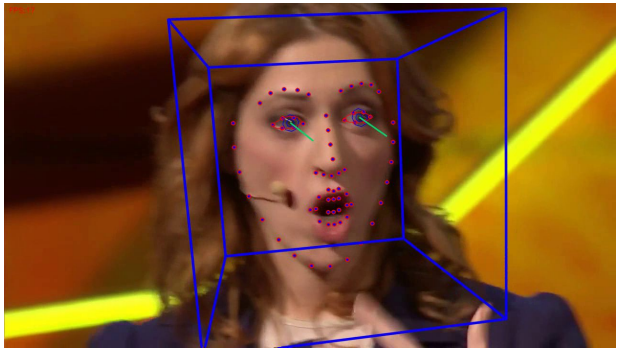


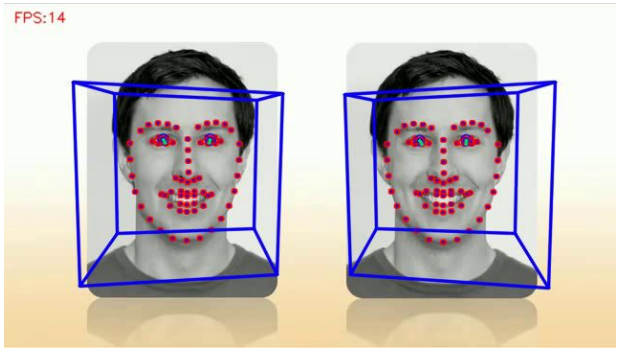


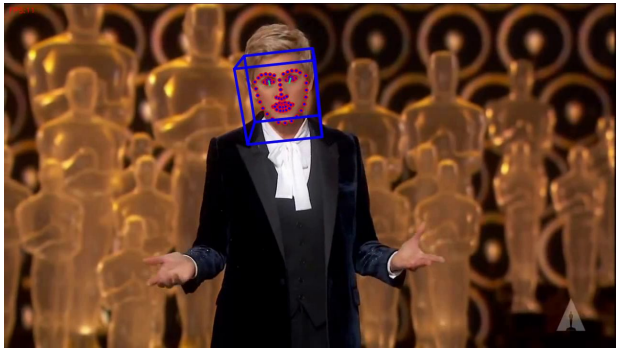
2-2. Observed and visualised the data for the report

I was trying to analyse examples of correct/incorrect predictions.

If the prediction is incorrect - <u>model prediction : neutral, label : surprise</u>



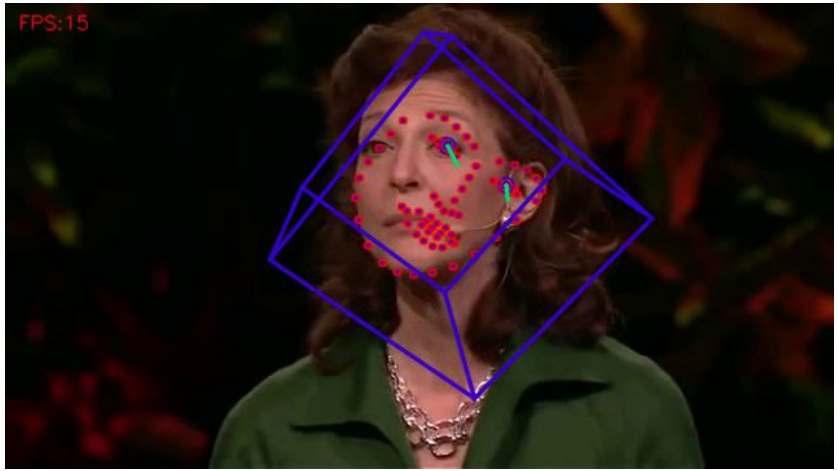


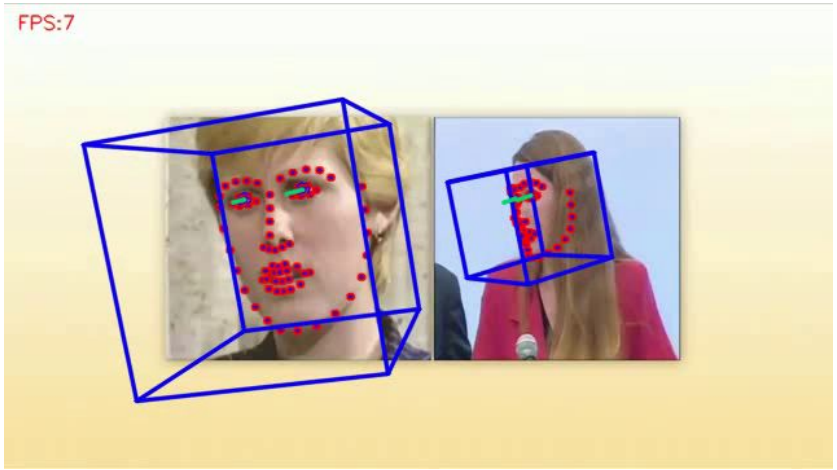


2-2. Observed and visualised the data for the report

I was trying to analyse examples of correct/incorrect predictions.

If the prediction is incorrect - <u>prediction : joy, label : neutral</u>





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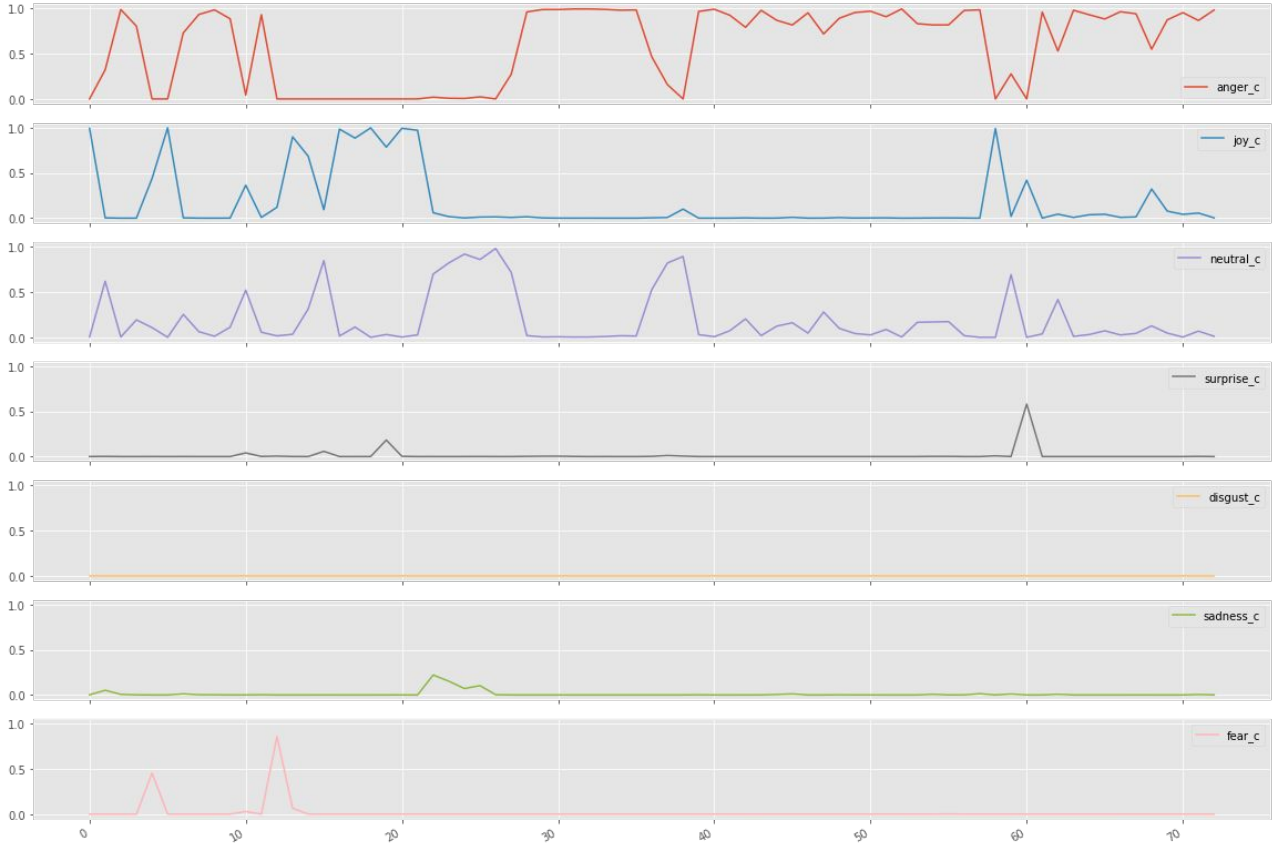
anger

2-2. Observed and visualised the data for the report

I have visualised the trend in confidence (0~1) by emotion category for each frame.

This sentence is a label for anger.



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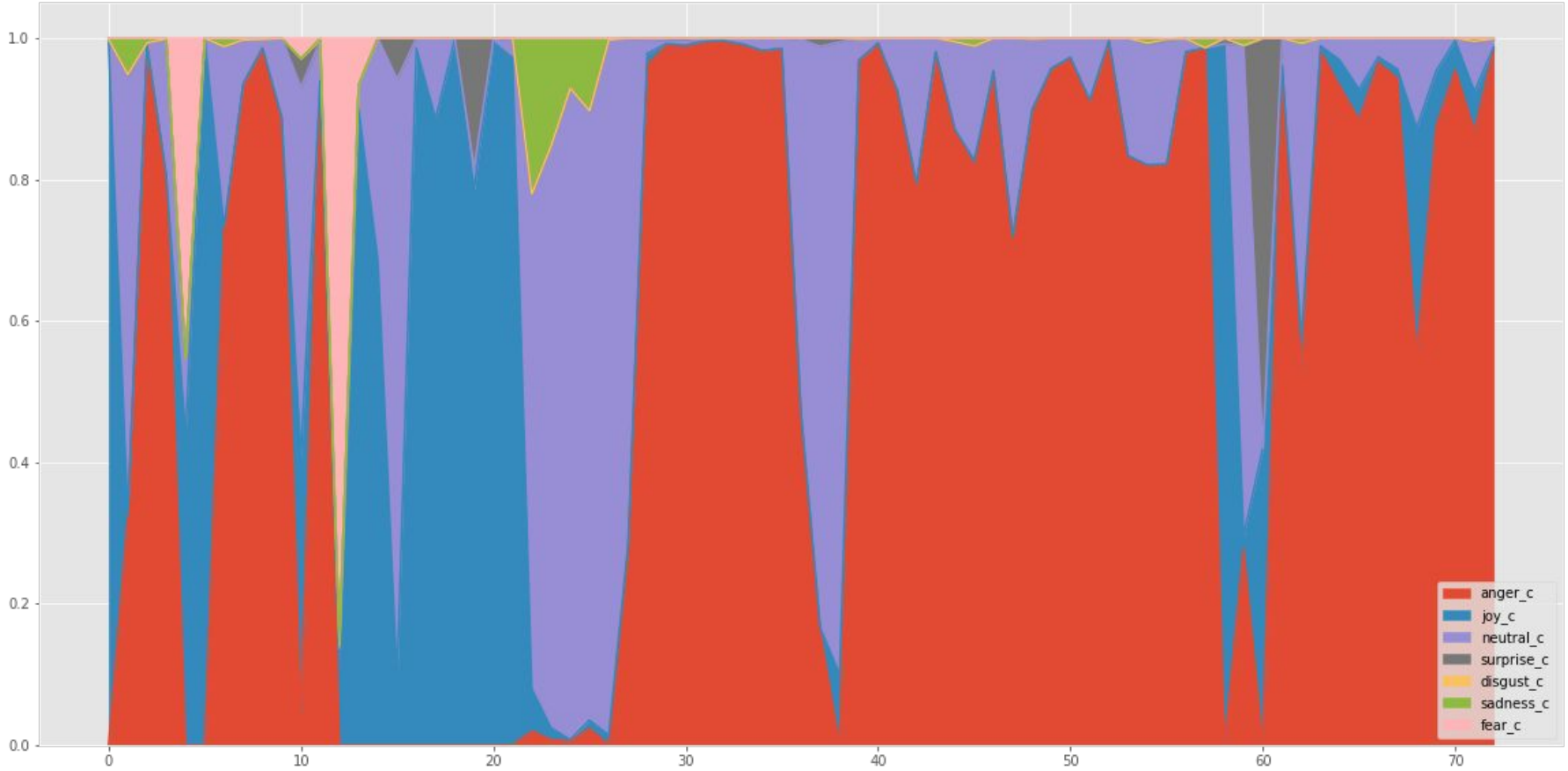
anger

2-2. Observed and visualised the data for the report



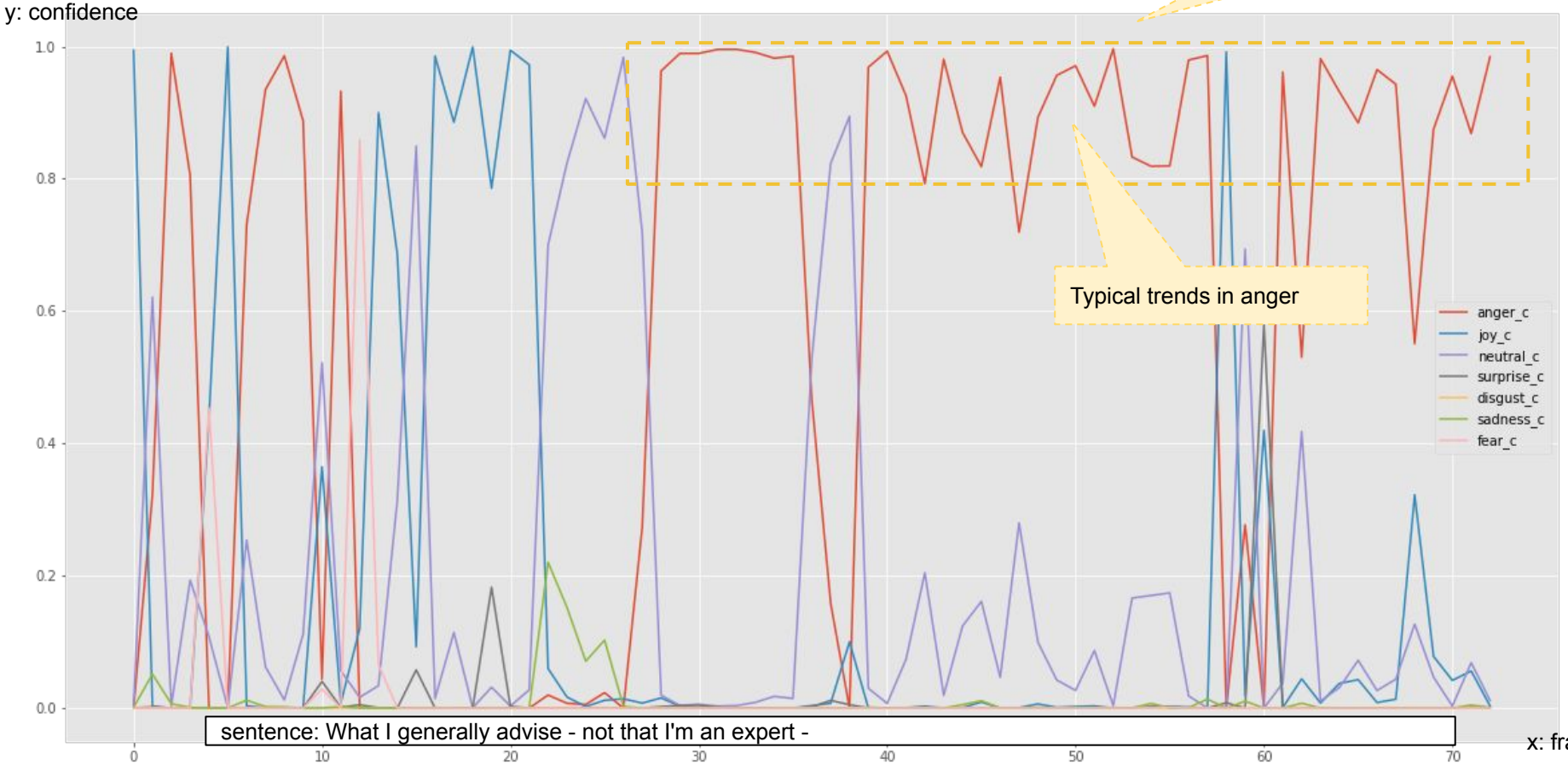
OpenFace

week8

2-2. Observed and visualised the data for the report

anger

‘anger’ accounts for 60% of the total



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3. Questions to be discussed during the meeting

3-1. I have no specific questions.

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4. Proposed objectives for next week

4-1. Observed and visualised the data for the report

- Explore examples of correct/incorrect predictions
- Visualise trends in confidence for each frame

4-2. Improving the prediction accuracy for OpenPose

4-3. Dissertation: Write a draft version of Chapter 5 (Conclusion)

5. Articles read this week

5-1. Explorations in engagement for humans and robots
https://arxiv.org/abs/cs/0507056

5-2. Attention Is All You Need
https://arxiv.org/abs/1706.03762

5-3. Unification-based multimodal integration
https://dl.acm.org/doi/10.3115/976909.979653

End