week7

MSc Project 2021

Title: Estimating personality in communication
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weekX	This indicates when it was done
X-X	This corresponds to the mindmap number

Time Plan		Oct				Nov					Dec	My Progress	
Step	Task	4	11	18	25	1	8	15	22	29	6	Status	Question(Yes/No)
		week1	week2	week3	week4	week5	week6	week7	week8	week9	week10		
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	

week7

Improving the accuracy of the model!

Time plan for writing my dissertation

Chapter	What should I write?		Nov					Dec	My Progress
			1	8	15	22	29	6	
	Level 1	Level 2	week5	week6	week7	week8	week9	week10	Status
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 (Updated on week 5)

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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...

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1. Summary of actions agreed during last meeting

1-1. Using logistic regression and Pytorch, I have created the following model to predict emotions.

1. Facial features (OpenFace)
2. Body Pose features (OpenPose)

1-2. Dissertation: I have written a draft version of Chapter 2 (Analysis/ Requirements part)

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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. (but I didn't conduct features selection yet.)

Model	Accuracy	
	LogisticRegression()	3 layers NN (Pytorch)
OpenFace	0.686	0.684
OpenPose	0.720	0.044
OpenFace+OpenPose	0.821 To Be Updated	0.043

What's next?
1. Collecting videos (to reduce variability in emotional categories)
2. Data pre-processing (to reduce variability in emotion categories, to generate new features)

2. Summary of work done & results this week

2-1. I have created the following models to predict emotions using Logistic Regression and 3 layers NN model (Pytorch)

1. Facial features (OpenFace)
2. Body Pose features (OpenPose)

2-2. Data visualisation for report

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

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2-1. 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	

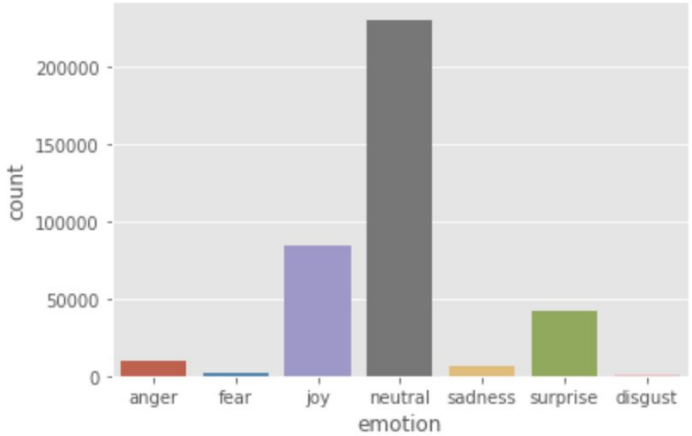
I am currently unable to merge the OpenFace and OpenPose csv files due to a memory crash.

2-2. Data visualisation for report

This figure shows the distribution of the emotion categories (neutral, joy, surprise, anger, sadness, fear, disgust) for the datasets used by OpenFace.

```
# EDA and Preprocessing
# Class Distribution
sns.countplot(x = 'emotion', data=df)
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fb670febad0>
```



2-2. Data visualisation for report

This diagram shows the transition of the emotional categories(neutral, joy, surprise, anger, sadness, fear, disgust) in a single video (video01).

3. Questions to be discussed during the meeting

3-1. Would you please review the 3 layers NN model with Pytorch which I created?

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4. Proposed objectives for next week

4-1. Improving the prediction accuracy (I will apply soft max)

4-2. Data visualisation /analysis results frame by frame for reporting

4-3. Dissertation: Chapter 4 (Testing/ Evaluation part) & Chapter 5 (Conclusion)

5. Articles read this week

5-1. Estimating Users Engagement from Eye-gaze Behaviors in Human-Agent Conversations
https://dl.acm.org/doi/10.1145/1719970.1719990

5-2. Predicting multimodal presentation skills based on instance weighting domain adaptation
https://www.researchgate.net/publication/349453487_Predicting_multimodal_presentation_skills_based_on_instance_weighting_domain_adaptation

End