Depression Detection

- Week 4

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Undergraduate 4th year

Duration of the presentation: ~7 minutes

Agenda

1. **Yuxin's Code Analysis and Comparison**
2. **Anxiety detection from free form speech**
    1. Data analysis in line with their code
    2. Results of their code on DAIC-WOZ
3. **Potential ideas to work on the codes**
4. **Tentative plan for the week**

Yuxin's Code Analysis and Comparison

CNN

Table 1: Yuxin's results

Epoch	Precision	Recall	F1	Accuracy
10	0.78	0.40	0.53	0.62

Table 2: Results on running Yuxin's code locally

Epoch	Precision	Recall	F1	Accuracy
10	0.64	0.38	0.52	0.57
20	0.42	0.15	0.22	0.47
30	0.40	0.12	0.19	0.47

LSTM

Table 3: Yuxin's results

Epoch	Precision	Recall	F1	Accuracy
10	0.76	0.42	0.54	0.60

Table 4: Results on running Yuxin's code locally

Epoch	Precision	Recall	F1	Accuracy
10	0.72	0.49	0.48	0.61
20	0.54	0.77	0.67	0.56
30	0.55	0.52	0.53	0.55
50	0.52	0.48	0.50	0.52

Yuxin's Code Analysis and Comparison

CNN + LSTM attention

Table 5: Yuxin's results

Epoch	Precision	Recall	F1	Accuracy
10	0.80	0.45	0.58	0.70

Table 6: Results on running Yuxin's code locally

Epoch	Precision	Recall	F1	Accuracy
10	0.63	0.52	0.57	0.61
20	0.55	0.64	0.59	0.56
30	0.51	0.74	0.67	0.52
50	0.50	0.74	0.67	0.50

Table 1: SOA results [1]

Precision	Recall	F1	Accuracy
0.85	0.89	0.79	0.74

[1] A Topic-Attentive Transformer-based Model For Multimodal Depression Detection, (Guo et al, 2022) | Paper

Anxiety detection from free form speech

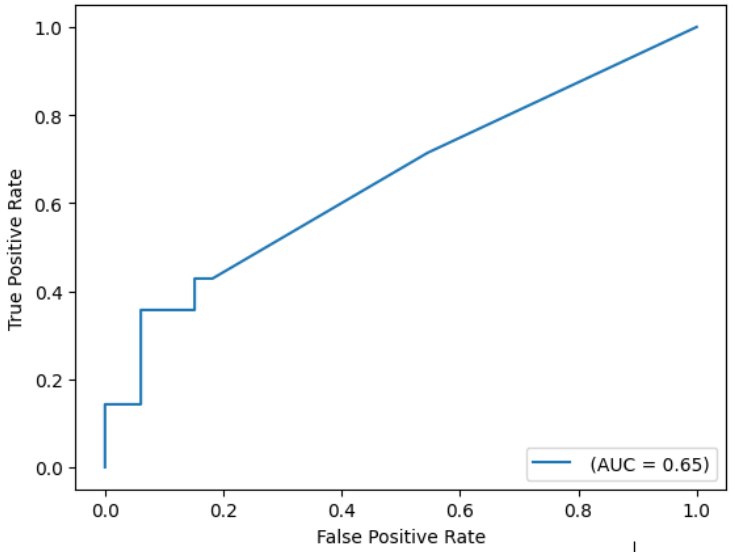
Table 8: Results from paper [2]

Precision	Recall	F1	AUC-ROC
0.64	0.57	0.60	0.68

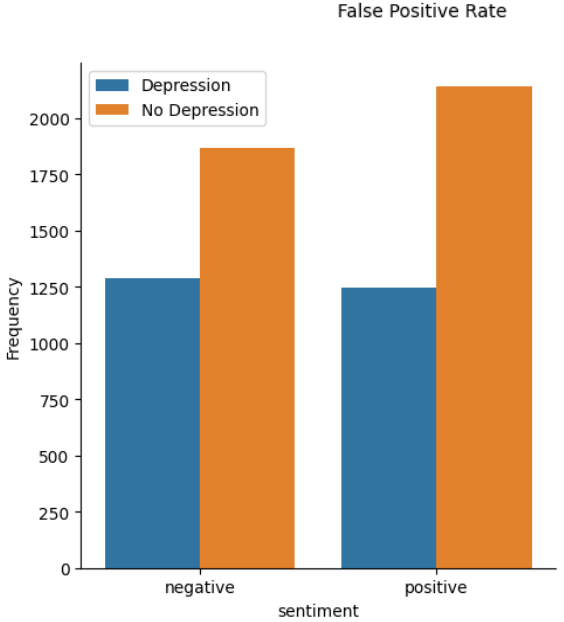
Table 9: Results on running locally on DAIC-WOZ

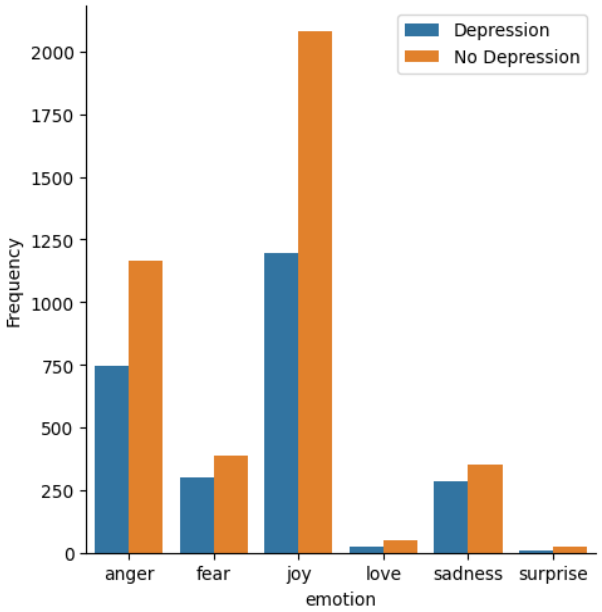
Precision	Recall	F1	AUC-ROC
0.59	0.51	0.60	0.65

Fig 1: Steps in methodology by [2]



[2] Detecting anxiety from short clips of free form speech (Agarwal et al, 2023) | Paper | Code





Potential ideas to work on the codes

Yuxin's Code

1. Data Preprocessing:
   - Current steps include: Stopword removal and removing "<>"
   - Proposed steps: converting to lowercase cleaning, what's – what is etc

2. Model:
   - Adding a dropout layer to prevent overfitting

Anxiety detection Code[2]

1. Data Preprocessing:
   - Current steps: None
   - Proposed steps: Stopword removal, converting to lowercase, cleaning

[2] Detecting anxiety from short clips of free form speech (Agarwal et al, 2023) | Paper | Code

Tentative Plan

Plan for next week

1. Work on making the proposed improvements for both codes
2. Work on trying to find cause for instability in performance and find a fix

Relevant Links

1. Overall project plan and timeline: Link
2. Analysis and notes from relevant papers: Link

End