Automatic Text-based Personality Recognition on Monologues and Multiparty Dialogues

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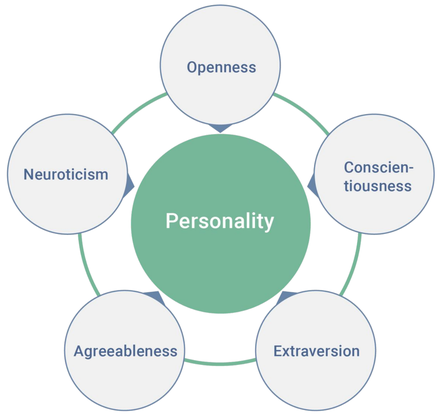
Esssays

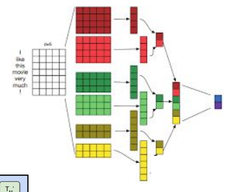
Essays Dataset is the benchmark dataset for text-based personality recognition with 2,468 self-report essays (1.9 million words). Each essay is annotated by big five binary personality traits.

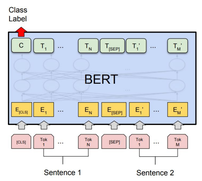
Methods

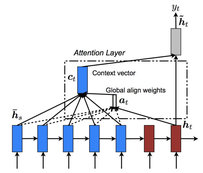
Previous works only use simple LIWC-based Models or Hierarchical CNN. We introduced both attentive neural networks and contextual word embeddings to the task of automatic personality prediction:

1. Attention-based CNN (**ABCNN**)
2. Attention-based LSTM (**ABLSTM**)
3. Hierarchical Attentive Networks (**HAN**)
4. Bidirectional Encoder Representations from Transformers (**BERT**) and **RoBERTa**

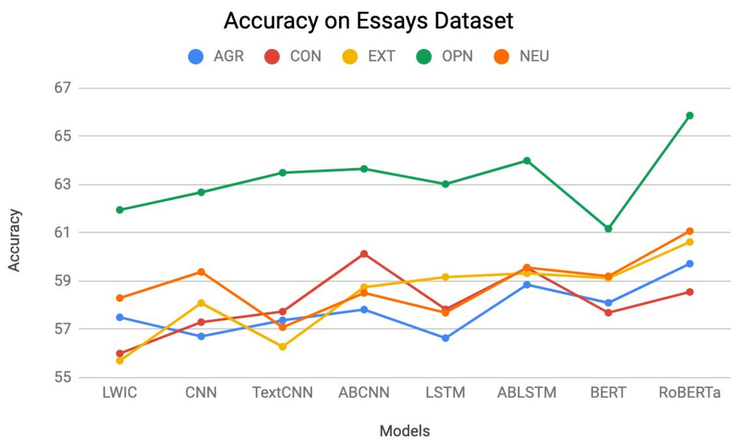






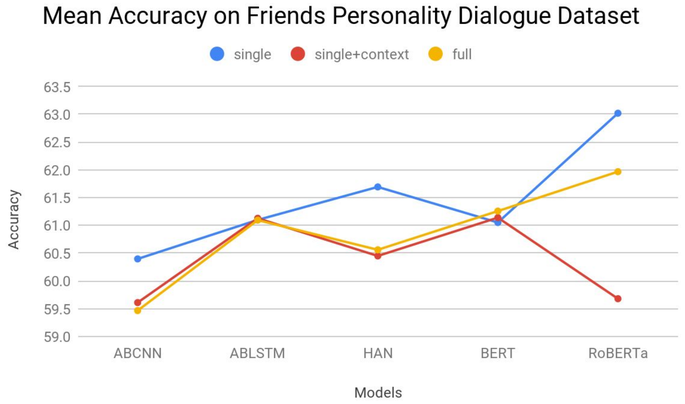


Experiments on Essays



Models	AGR	CON	EXT	OPN	NEU
Majority	53.08	50.81	51.74	51.54	50.04
LIWC (2016)	**57.50**	56.00	55.70	61.95	58.30
HCNN (2017)	56.71	**57.30**	**58.09**	**62.68**	**59.38**
ABCNN	57.82	**60.13**	58.75	63.65	58.51
ABLSTM	58.85	59.55	59.32	63.99	59.56
HAN	57.62	59.32	59.77	63.61	58.75
BERT	58.10	57.69	59.12	61.17	59.20
RoBERTa	**59.72**	58.55	**60.62**	**65.86**	**61.07**

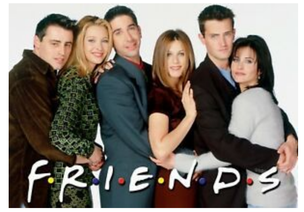
Experiments on FriendsPersona



Trait	Format	Majority	ABCNN	ABLSTM	HAN	BERT	RoBERTa
AGR	S	56.96	63.86	64.56	64.00	62.02	**65.58**
	S+C	56.96	59.64	60.76	**61.60**	59.77	57.77
	F	56.96	59.21	62.01	61.88	62.77	**64.49**
CON	S	53.59	56.40	57.38	**58.66**	55.21	56.78
	S+C	53.59	54.71	57.53	57.53	**57.77**	55.92
	F	53.59	54.99	56.67	**57.81**	57.07	57.35
EXT	S	56.12	59.78	59.50	60.35	61.77	**64.21**
	S+C	56.12	59.64	**62.03**	57.25	60.34	59.05
	F	56.12	58.93	**61.60**	58.37	63.62	60.05
OPN	S	64.98	65.40	66.52	67.23	67.19	**68.47**
	S+C	64.98	66.95	66.10	66.67	**67.61**	66.90
	F	64.98	66.39	66.52	66.39	66.33	**67.19**
NEU	S	53.31	56.54	57.52	58.23	59.06	**60.06**
	S+C	53.31	57.12	59.22	59.21	**60.20**	58.76
	F	53.31	57.82	58.66	58.36	56.49	**59.33**

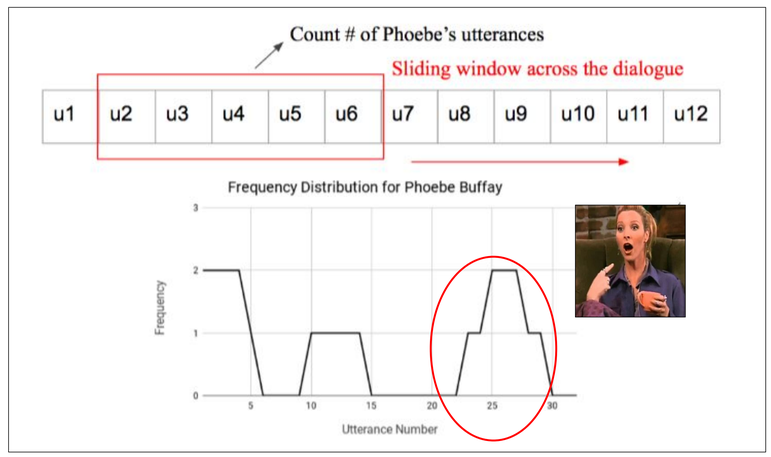
FriendsPersona

Our **new** FriendsPersona dataset is developed upon the public Friends TV Show Dataset (Chen and Choi 2016) and contains **711** extracted conversations.



MSF Extraction Algorithm

To build our own dataset, we develop **a novel dialogue extraction** algorithm, **Main Speaker Finder** (**MSF**), to extract sub-scenes from full scenes and mark each sub-scene with a main speaker for three annotators to annotate.



Annotation through Crowdsourcing

We annotated 711 sub-scenes from the first 4 seasons of the Friends TV Show on Amazon Mechanical Turk. Each sub-scene is annotated by 3 annotators for Big Five personality traits with **-1, 0,** and **1**. We sum scores from 3 annotators and convert them to binary class with the median split.

amazon mechanical turk

Trait	Fleiss's Kappa	Average Pair-wise Kappa
AGR	23.50%	53.87%
CON	18.90%	54.34%
EXT	20.90%	57.81%
OPN	21.60%	56.12%
NEU	17.80%	52.46%
Average	20.54%	54.92%