“Personalized” Chatting Machine

Personality Representation &
Personality based Chatting

三个咕咕呆写出了一群bug
Three hero & A Bunch of Bug

“Personalized” Chatting Machine

(MBTI) Myers-Briggs Personality Classification

“ENTREPRENEUR”

ESTP (-A/-T)

Smart, energetic and very perceptive people, who truly enjoy living on the edge.

Target of this part is classifying people into 16 distinct personality types across 4 axis, showing their some dialogues or some declaration (or Twitter, Wechat …)
Introversion (I) – Extroversion (E)
Intuition (N) – Sensing (S)
Thinking (T) – Feeling (F)
Judging (J) – Perceiving (P)

“ARCHITECT”

INTJ (-A/-T)

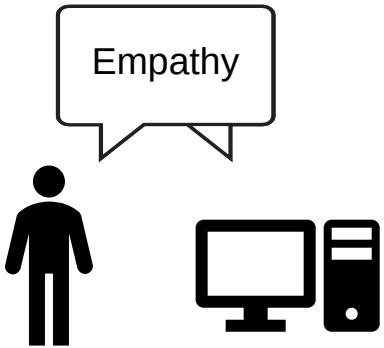
Imaginative and strategic thinkers, with a plan for everything.

“Personalized” Chatting Machine

Chatting Machine

We work on Chatting Machine that can generate appropriate responses not only in content (relevant and grammatical) but also in personality of human speaker (personality consistent).

The chat robot first judges speaker’s personality, and then gives the response according to the one’s personality. In the end of the conversation, that give more accurate personality, according to historical chat information.



Data

Train Personality classifier using Kaggle Myers-Briggs Personality Type Dataset

Used the classifier to annotate the Twitter and “ParlAI” daily conversation Dataset.

Used the conversation Dataset that contained Personality label to train chatting machine

	type	posts
0	INFJ	'http://www.youtube.com/watch?v=qsXHcwe3krw|||...
1	ENTP	'I'm finding the lack of me in these posts ver...
2	INTP	'Good one _____ https://www.youtube.com/wat...
3	INTJ	'Dear INTP, I enjoyed our conversation the o...
4	ENTJ	'You're fired.|||That's another silly misconce...

```
A: u know why i’m up u need to do ur homework and u could be sleep pussyy
B: go back to sleep ! ! !
MBTI Score: [0.12544563 0.3110942  0.66989878 0.69659827]
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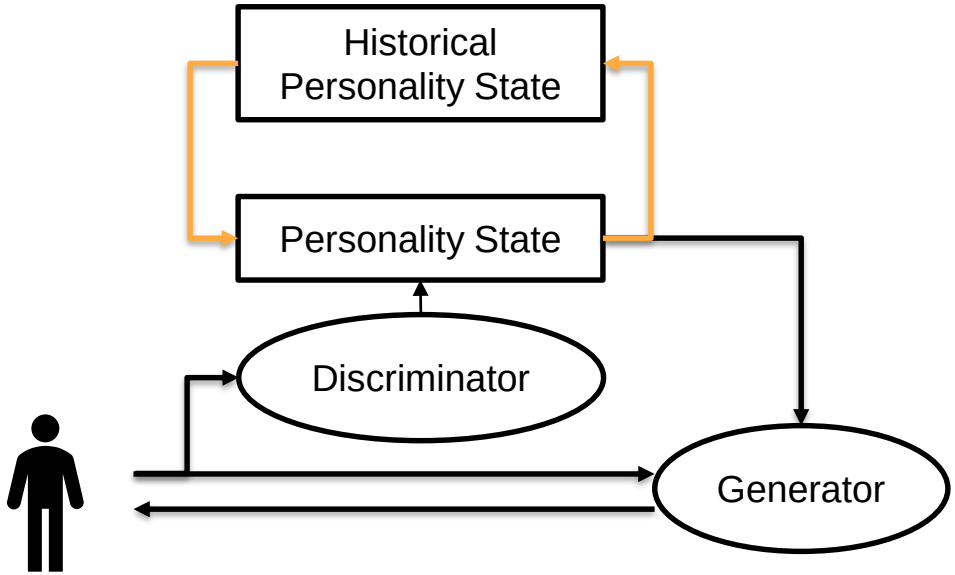
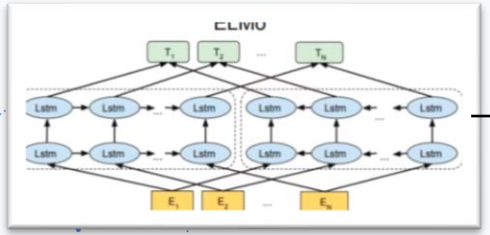
Structure


Historical
Personality State
Personality State
Discriminator
Generator

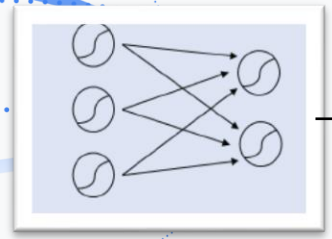
Discriminator

——Personality Classification Network

ELMo Pretrain (Word Char Embedding)

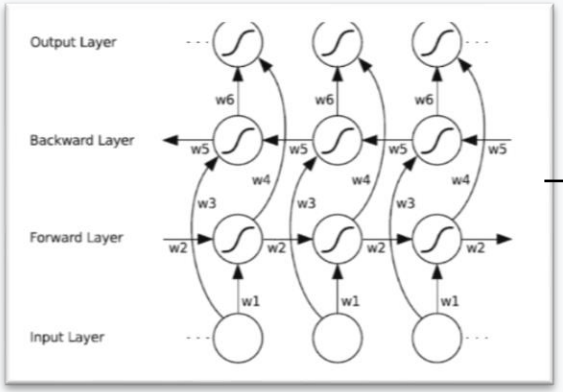


Trainable Word Embedding



Concat

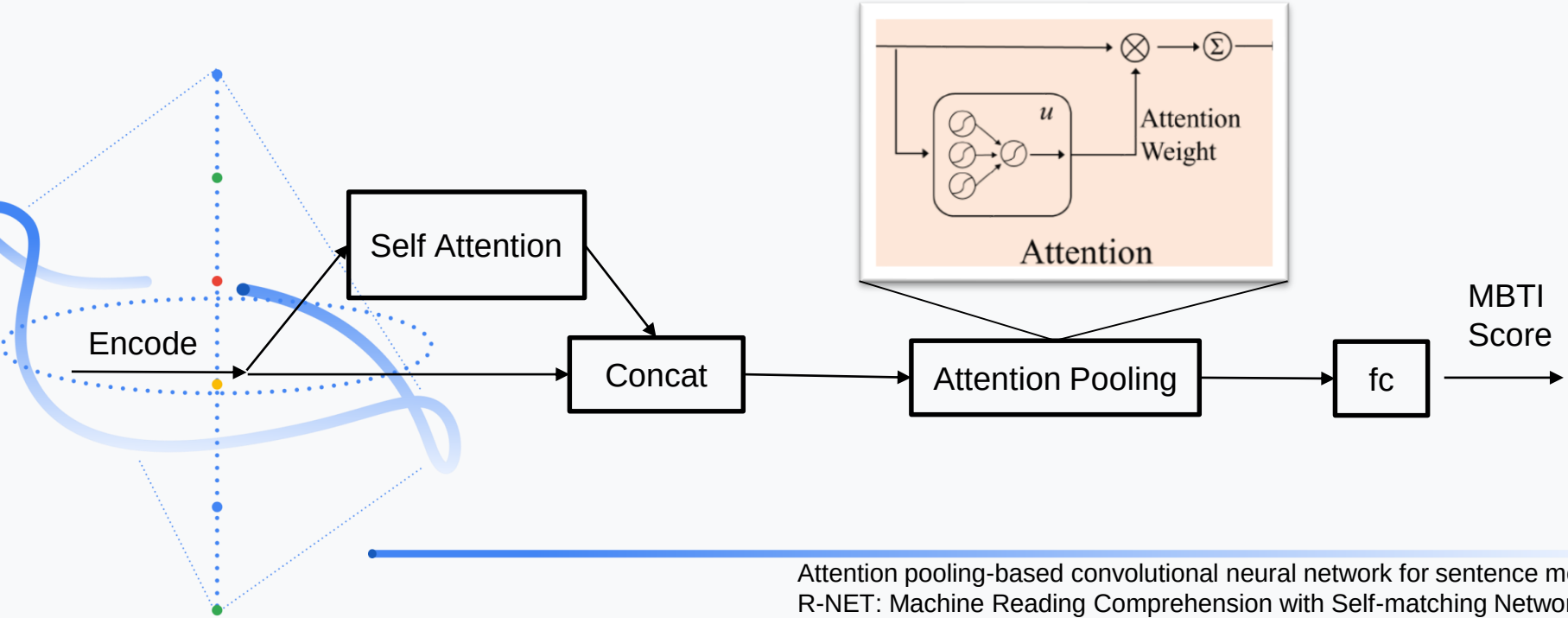
Bi-LSTM Encoder



Encode

Discriminator

——Personality Classification Network



Attention pooling-based convolutional neural network for sentence modelling
R-NET: Machine Reading Comprehension with Self-matching Networks

Results

Personality Classification

	I/E	N/S	T/F	J/P	Average
F1	0.72	0.66	0.88	0.87	0.782
auc	0.91	0.94	0.94	0.91	0.925

Introversion (I) – Extroversion (E)
Intuition (N) – Sensing (S)
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Generator
——Chatting Machine Network

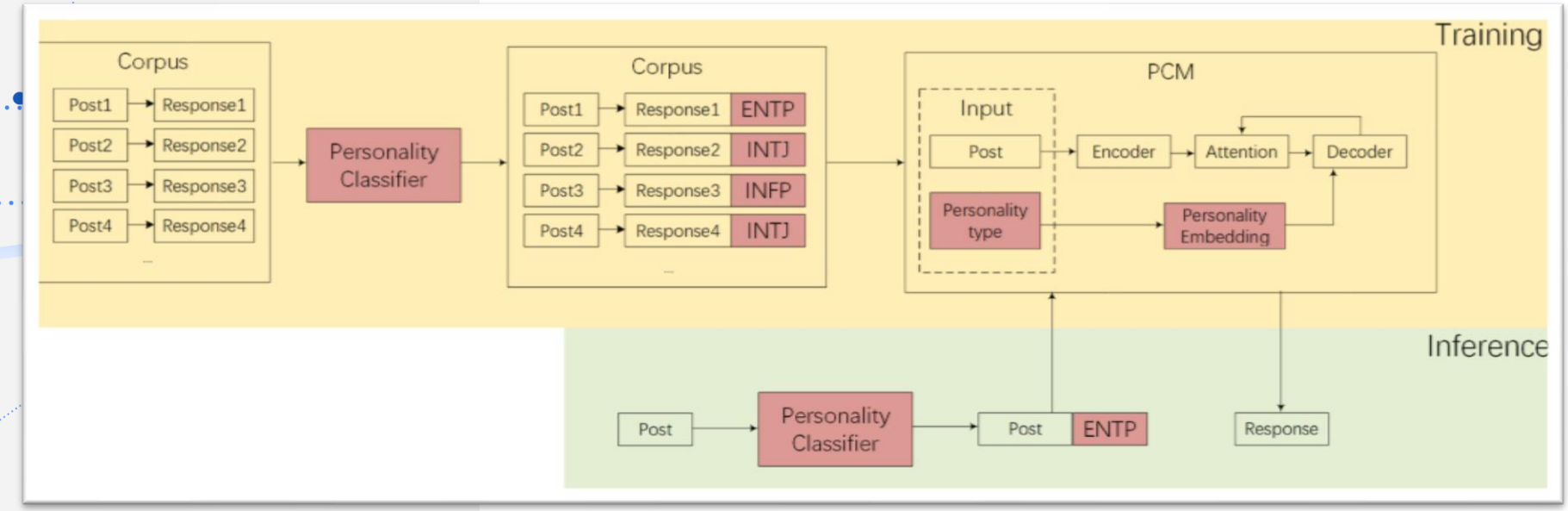
Given a post $X = (x_1, x_2, .., x_n)$ and a personality type e of the response to be generated, the goal is to generate a response $Y = (y_1, y_2, .., y_n)$ that is coherent with the personality type e.

The most intuitive approach to modeling emotion in response generation is to take as additional input the emotion category of a response to be generated.

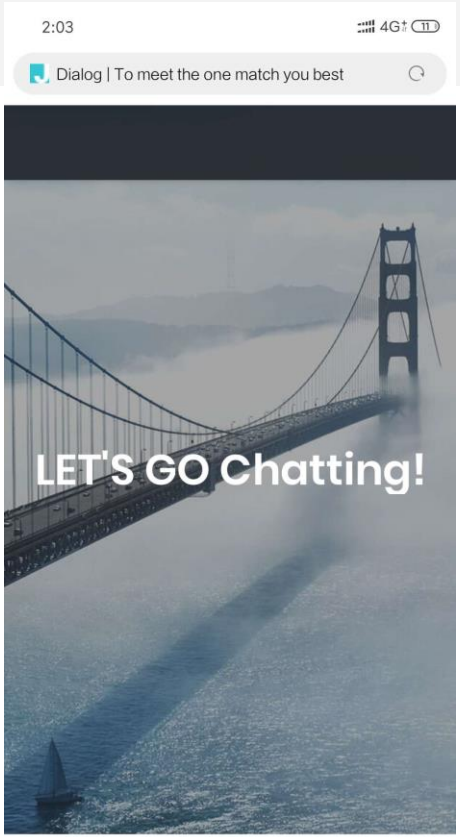
$$s_t = GRU(s_{t-1}, [c_t; e_{y_{t-1}}; v_e])$$

Vector of a personality type v_e

Generator
——Chatting Machine Network



Results


2:03
4G
Dialog | To meet the one match you best
LET'S GO Chatting!

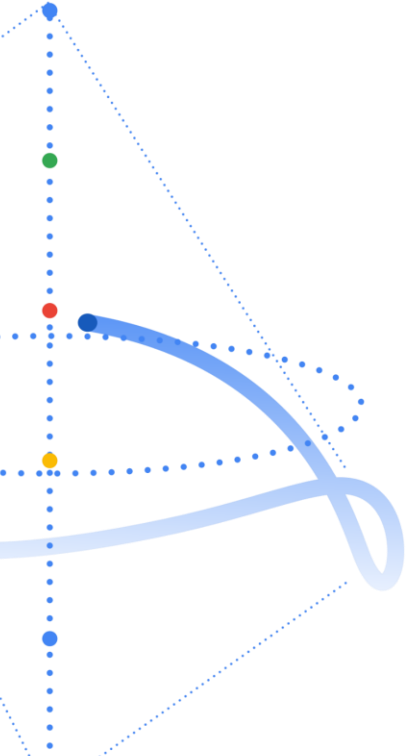

2:07
4G
let's chat
find your soulmate
hello, my name is cola ~
do you like trump ?
no , i am afraid .
your character analysis
0.8
0.6
0.4
0.2
0
Extroversion
Sensing
Feeling
Perceiving

Future Work

- Deep personality analysis
- Better personality dialogue generation

Reference

[1] Peters, Matthew E., et al. "Deep contextualized word representations." arXiv preprint arXiv:1802.05365 (2018).
[2] Pennington, Jeffrey, Richard Socher, and Christopher Manning. "Glove: Global vectors for word representation." Proceedings of the 2014 conference on empirical methods in natural language processing (EMNLP). 2014.
[3] Er, Meng Joo, et al. "Attention pooling-based convolutional neural network for sentence modelling." Information Sciences 373 (2016): 388-403.
[4] Wang, Wenhui, et al. "Gated self-matching networks for reading comprehension and question answering." Proceedings of the 55th Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers). Vol. 1. 2017.
[5] Bahdanau, Dzmitry, Kyunghyun Cho, and Yoshua Bengio. "Neural machine translation by jointly learning to align and translate." arXiv preprint arXiv:1409.0473 (2014).
[6] Sutskever, Ilya, Oriol Vinyals, and Quoc V. Le. "Sequence to sequence learning with neural networks." Advances in neural information processing systems. 2014.
[7] Zhou, Hao, et al. "Emotional chatting machine: Emotional conversation generation with internal and external memory." *Thirty-Second AAAI Conference on Artificial Intelligence*. 2018.



Google AI ML Winter Camp
谷歌 AI 机器学习应用冬令营

Thank You

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