Personality-Based Chatbot

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About Chatbots

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- **Rule-Based** : Answers using set of hand-crafted rules.
- **Retrieval** : Answer selected based on set of answers to the question.
- **Generative** : Generate proper responses, Seq2Seq, Encoder-Decoder, can generate new, complex responses.
- **Speaker-Addressee** : Predict how Speaker A would respond to message by Speaker B.

Personality Chatbots!

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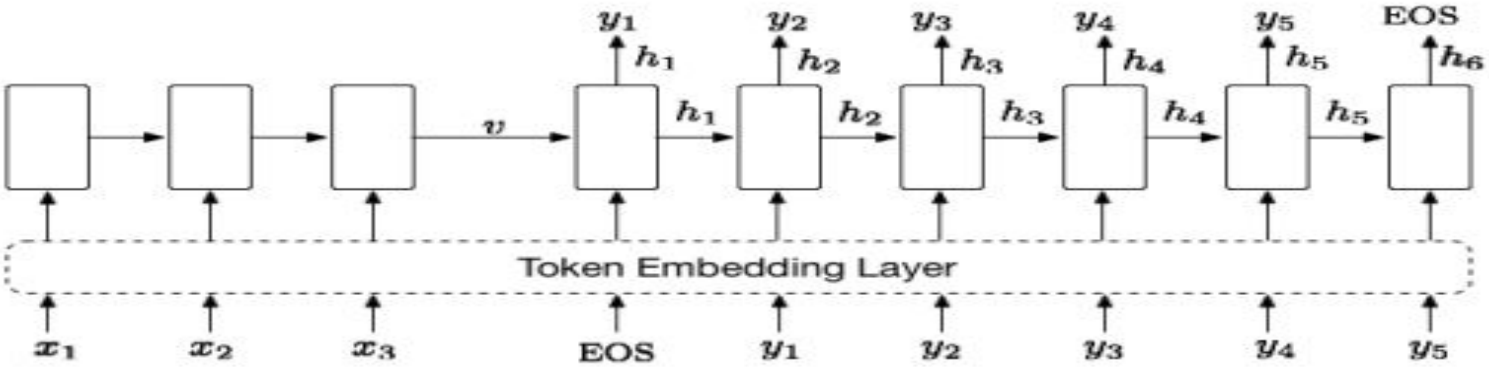
- Chatbots with Persona
- Persona - elements of identity (background facts or user profile), language behavior, and interaction style.
- Wide applications
  - Domain Specific Assistance like IT Helpdesk, Customer Care Representatives..
  - Entertainment

Dataset

- TV Series Corpus - Friends(Joey) , and Big Bang Theory (Sheldon) scripts
- Processed Scripts to have Q & A like format.
- Replaced the change in Scene by a separator as to differentiate the contexts.

Approach

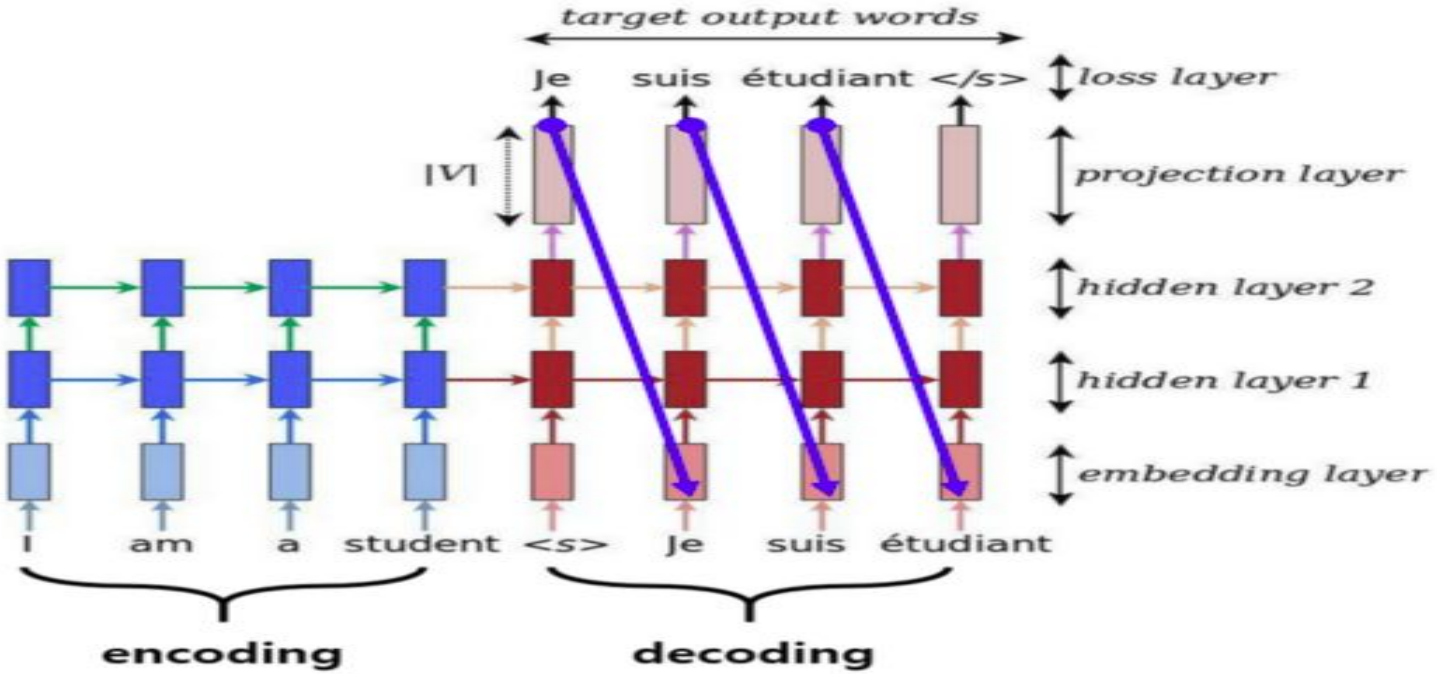
Sequence-to-sequence encoder-decoder model



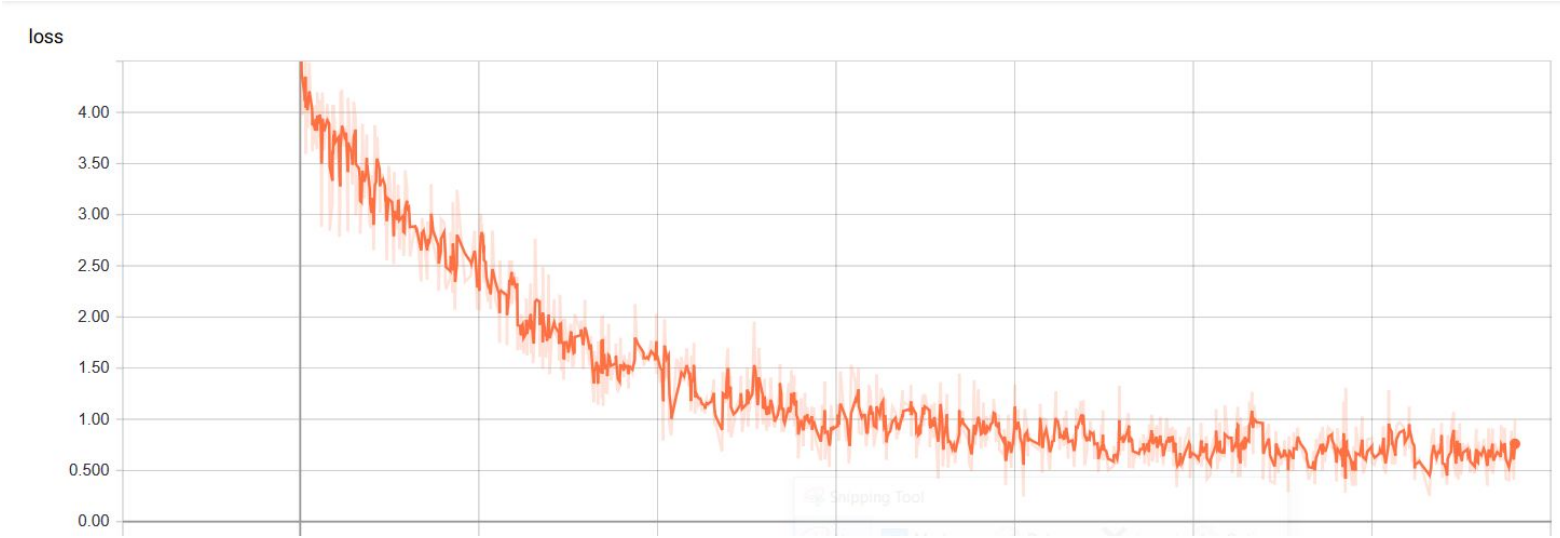
- The model is fed input sentence X(words x1, x2 and x3) and outputs sentence Y(words y1, y2, y3, y4 and y5).
- V represents thought vector of x. The hidden state ht captures the sequential information in [x, y1, y2, . . . , yt−1].

Approach

Example in Machine Translation



Evaluation



Cross Entropy Loss

Epochs: 200 , Max Length: 8 , Learning Rate: 0.001

Demo

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Say Hi! To Joey

Results(Good)

SAY HI TO JOEY!

YOU: HI!

JOEY: HEY!

YOU: WHO ARE YOU?

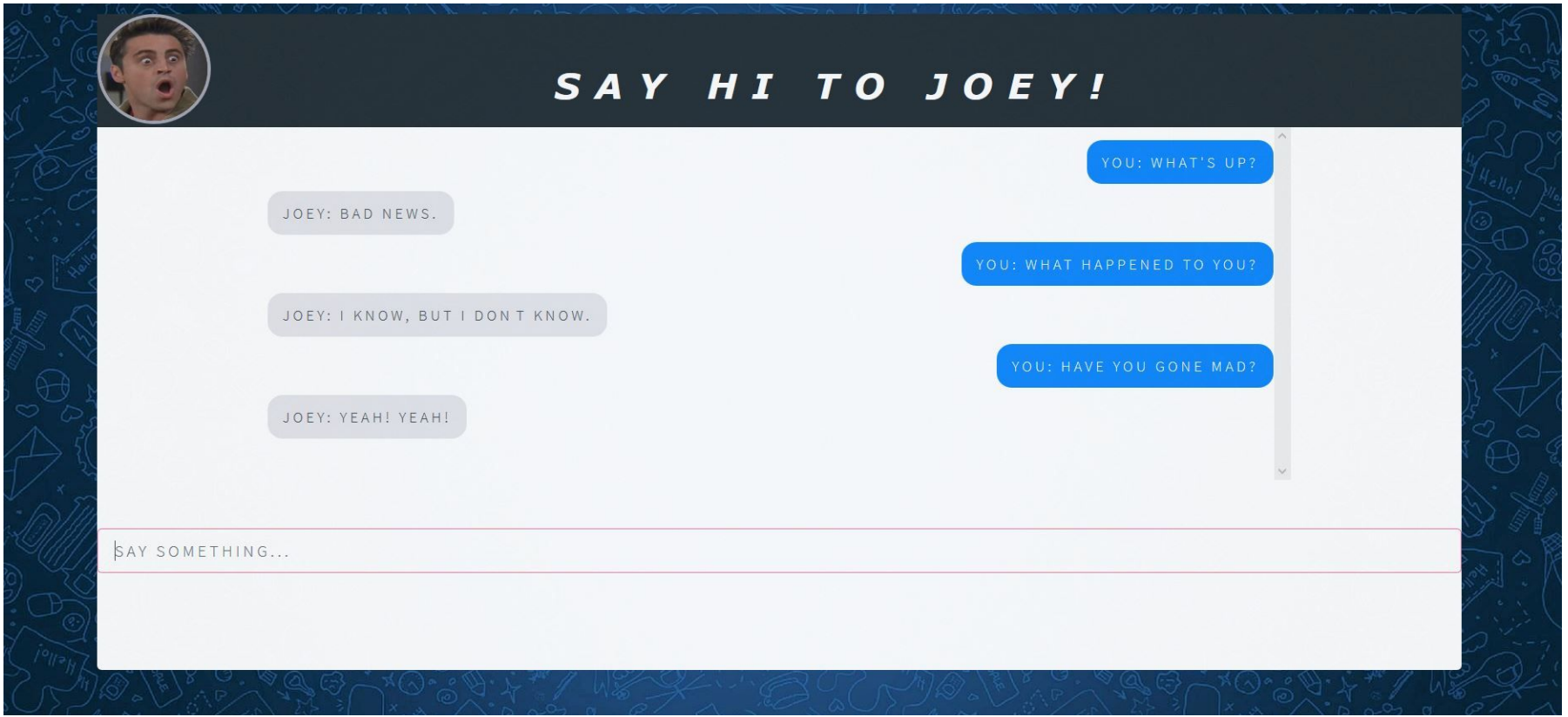
JOEY: JOEY TRIBBIANI! FROM THE WALL!

YOU: ARE YOU AN IDIOT?

JOEY: YEAH. YEAH.

SAY SOMETHING...

Results(Random)



Conclusion

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- Chatbot is able to mimic the persona to an extent.
- Able to answer fluently.
- Better performance for short, similar sentences in corpus.
- Loss of context is seen w.r.t previous queries.
- Random answers for questions which are very different than actual script.

Questions???