# QUESTION-ANSWERING SYSTEMS

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# *Introduction*

- QA is an important task in NLP.
- Aims at building systems that can automatically find answers to any questions.
- Requires understanding of natural language and contextual world language.

# *Application*

Fields in which QA system is employed:

- Agriculture
- Sports
- Railways

Some existing QA systems:

- BASEBALL
- LUNAR
- START

# History

**1950s**

QA systems can be traced back to 1950s.

**1980 and 1991**

Between 1980 and 1991, QA systems were given to knowledge base.

**1991 and 1999**

Between 1991 and 1999, use of statistical modeling and machine learning .

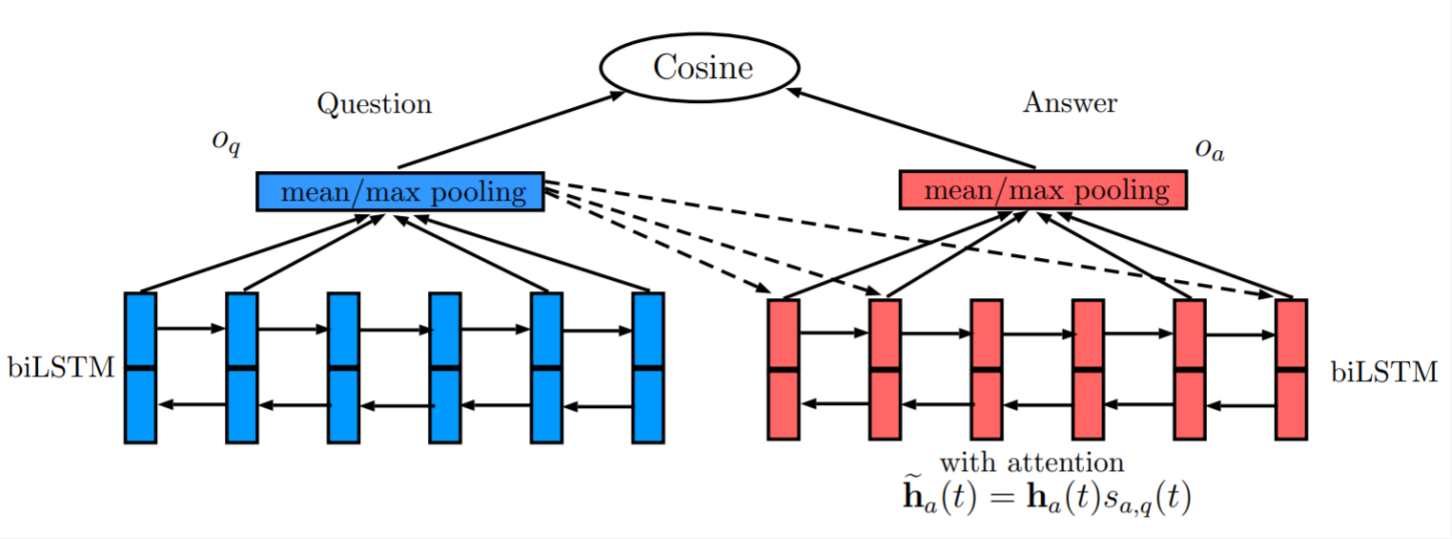
**2011**

Emergence of Siri in 2011, had a huge significance.

# *Various Approaches*

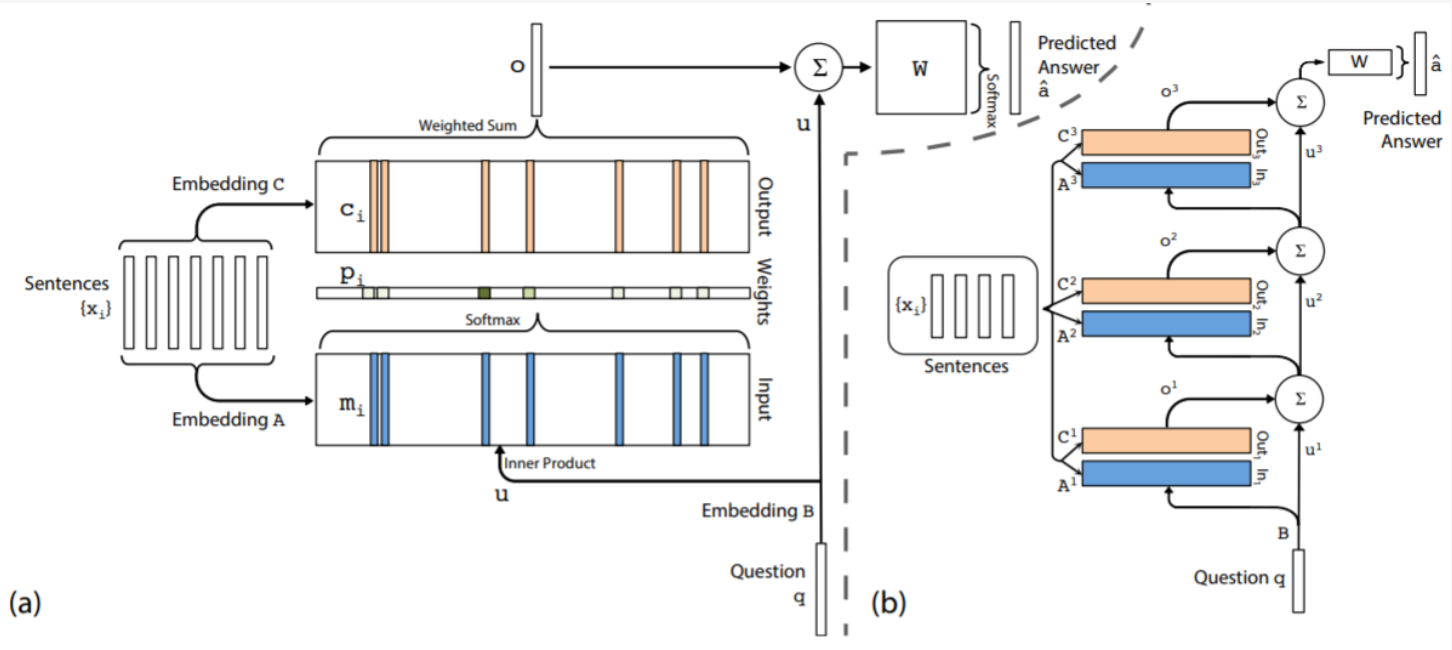
- Bidirectional LSTM
- Memory network architecture
- Seq2seq model
- Logistic model
- Bidirectional attention flow mechanism

# *Bidirectional LSTM*



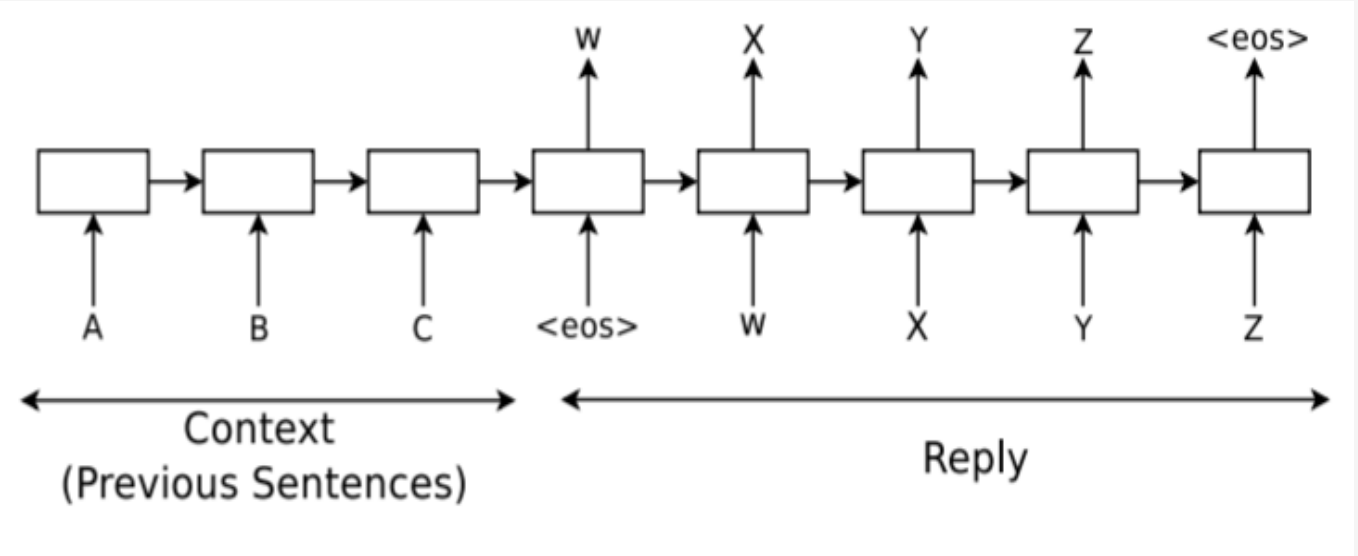

- In 2015, IBM Watson published a paper, "LSTM-Based Non Factoid Answer Selection".
- Elaborates on application of LSTM algorithm in QA system.

# *Memory Network Architecture*




- Facebook's "End-to-End Memory networks" puts Memory Network into a new architecture called MemN2N.

# *Seq2seq Model*

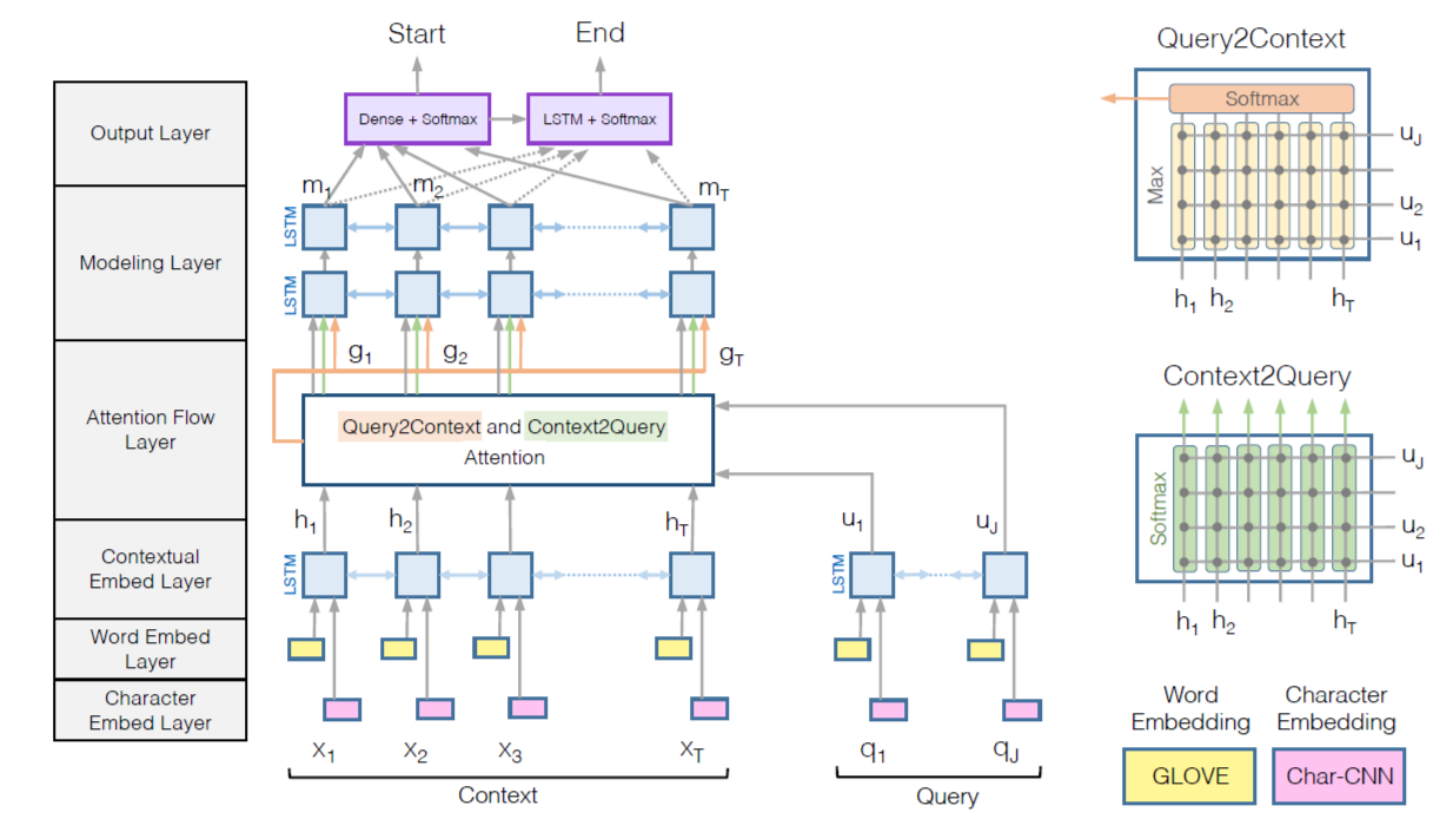



- Google's "A Neural Conversational Model" uses seq2seq model for QA.

# *Logistic Model*

- SQuAD dataset was released in 2016, which contains 107,785 Question-Answer pairs on 536 articles.
- To access the difficulty of SQuAD, a logistic regression model with a range of features, 180 million features, was implemented.
- Logistic model was developed, and its accuracy was compared with three baseline methods.

# *Bidirectional attention flow mechanism*




- In 2018, model was proposed to use bidirectional attention flow mechanism to achieve state-of-the-art results on SQuAD dataset and CNN/DailyMail cloze test.
- BiDAF network is a multistage hierarchical process that represents the context at different levels of granularity.

# *References*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