# Intelligent QA Review

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# Some views about QA myself

- Artificial Intelligence

- Question and Answering

- Machine Translation ...

- I think it is too far from real artificial intelligence

- I conduct some research about Computer Game and Information Retrieval.

# Hope for AI and etc.

- Deep learning and Neural Networks

- Sequence to Sequence and End to End model

- Chinese poem and songci generation strengthen my faith

  ✧春信香深雪 / 冰肌瘦骨绝 / 梅花不可知 / 何处东风约

  ✧红霞淡艳媚妆水 / 万朵千峰映碧垂 / 一夜东风吹雨过 / 满城春色在天辉

  ✧哀筝一弄湘江曲 /风流水上人家绿 /小艇子规啼/不堪春去时/花前杨柳下/红叶满庭洒/月落尽成秋/愁思欲寄留

# Three big problems of QA

- Information Extraction and Knowledge Base Construction

- Question Comprehension or Understanding

- Knowledge Reasoning

# Information Extraction and KB Construction

- Baseball, Lunar and etc.(1950~1990)

- Lexicon knowledge: WordNet, HowNet;  World knowledge:Cyc.

- Problems:

    ✧Heterogeneous.

    ✧Manually.

    ✧Specific field.

    ✧Semi-structured.

# Information Extraction and KB Construction

- What can we do?

  ✧ Find big data resource with high quality.

  ✧ Automatic Information Extraction.

- What researchers have done:

  ✧ Construct Freebase, YAGO and DBpedia based on Wiki with automatic information extraction technology.

  ✧ Others: TextRunner, ReVerb, R2A2, Wanderlust and NELL.

# Question Comprehension or Understanding

- Problems:

  ✧ Understand the questions in natural language format.

  ✧ Put natural language question to the format which computer can deal with.

- Solutions:

  ✧ Semantic Parsing;

  ✧ Information Retrieval.

# Question Comprehension or Understanding

- Semantic Parsing :

  ✧Aim: Natural language questions->Semantic Expression.

  ✧CCG

- Disadvantages:

  ✧Manually;

  ✧Specific field.

# Question Comprehension or Understanding

- Information Retrieval:

  ✧Segmentation, Named Entity Recognition-> Find the entity and keywords.

  ✧Ensure the relations and conduct search the Knowledge Base.

- Disadvantages:

  ✧IR and LSA can not hold the complexity of natural language(Question is

  usually natural language.)

# Question Comprehension or Understanding

- Better methods:

  ✧ End to end methods. (Attention and Memory models)

- Advantages:

  ✧ Avoid the complex question understanding problems.

  ✧ Simple model and good performance.

# Knowledge Reasoning

- Sample:
  - ✧ We know the "place of birth" of one person, we can know the nationality of the person even though "nationality" information is not included in the Knowledge Base.

- Traditional methods:
  - ✧ Charlotte Homes(UW) and PRA(CMU) system

- Disadvantages:
  - ✧ Manually.

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# Knowledge Reasoning

- Promising methods:

  ✧Memory

  ✧End to end Memory.

- Advantages:

  ✧Simple model.

  ✧Learn to learn automatically.

# Knowledge Reasoning

- Where is the Question Answering review pdf?

  ✧ http://cslt.riit.tsinghua.edu.cn/mediawiki/images/6/6c/2016-03-06_%E6%99%BA%E8%83%BD%E9%97%AE%E7%AD%94%E7%B3%BB%E7%BB%9F%E7%A0%94%E7%A9%B6%E7%BB%BC%E8%BF%B0.pdf

- Welcome to discuss with me.

# *Thank you!*

## *Presented by Tianyi Luo*

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