分类：2、3、5、8、10、14、16

问答系统：4、7、12、13、15、17  
CNN（等等其他深度神经网络）: 1、6、11、18

1、2、3、4、7、11、14、17

1. [**Generalizing and Hybridizing Count-based and Neural Language Models**](http://xueshu.baidu.com/s?wd=paperuri%3A%286709a74df464559c7f20677b28a00e27%29&filter=sc_long_sign&tn=SE_xueshusource_2kduw22v&sc_vurl=http%3A%2F%2Farxiv.org%2Fabs%2F1606.00499&ie=utf-8&sc_us=11944445622821267608)

Abstract:Language models (LMs) are statistical models that calculate probabilities over sequences of words or other discrete symbols. Currently two major paradigms for language modeling exist: count-based n-gram models, which have advantages of scalability and test-time speed, and neural LMs, which often achieve superior modeling performance. We demonstrate how both varieties of models can be unified in a single modeling framework that defines a set of probability distributions over the vocabulary of words, and then dynamically calculates mixture weights over these distributions. This formulation allows us to create novel hybrid models that combine the desirable features of count-based and neural LMs, and experiments demonstrate the advantages of these approaches.

本文提到的目前存在两种常用的语言建模模型：基于计数的N-GRAM语言模型和神经语言模型，前者具有可伸缩性和测试速度快的特性，后者具有优秀的建模的特性。

这篇文章证明了这两种模型可以混合使用，并进行实现，最后结果得到的混合模型保持两种模型的优点。

推荐理由：我们试着可以学习这种混合语言模型，代替N-GRAM语言模型（现在的语言模型）进行建模。

2. [**Rationale-Augmented Convolutional Neural Networks for Text Classification**](http://xueshu.baidu.com/s?wd=paperuri%3A%2811d9b4ee8937307ada5e4b8c0d360fbc%29&filter=sc_long_sign&tn=SE_xueshusource_2kduw22v&sc_vurl=http%3A%2F%2Farxiv.org%2Fabs%2F1605.04469&ie=utf-8&sc_us=4657314743589010090)

Abstract**:** We present a new Convolutional Neural Network (CNN) model for text classification that jointly exploits labels on documents and their component sentences. Specifically, we consider scenarios in which annotators explicitly mark sentences (or snippets) that support their overall document categorization, i.e., they provide rationales. Our model uses such supervision via a hierarchical approach in which each document is represented by a linear combination of the vector representations of its constituent sentences. We propose a sentence-level convolutional model that estimates the probability that a given sentence is a rationale, and we then scale the contribution of each sentence to the aggregate document representation in proportion to these estimates. Experiments on five classification datasets that have document labels and associated rationales demonstrate that our approach consistently outperforms strong baselines. Moreover, our model naturally provides explanations for its predictions.

提出的方法：这篇文章提出一个新的基于文本分类的CNN的文本分类模型——Rationale-augmented CNN。

他们的监督模型通过一个分层的方法，每个文档被表示为组成它的句子的矢量的线性组合。

推荐理由：我们的问答系统项目中获取问题后，需要分析和分类，这篇文章正好是介绍文本分类的最新的技术。

3. **Aspect Level Sentiment Classification with Deep Memory Network**

Abstract: We introduce a deep memory network for aspect level sentiment classification. Unlike feature-based SVM and sequential neural models such as LSTM, this approach explicitly captures the importance of each context word when inferring the sentiment polarity of an aspect. Such importance degree and text representation are calculated with multiple computational layers, each of which is a neural attention model over an external memory. Experiments on laptop and restaurant datasets demonstrate that our approach performs comparable to state-of-art feature based SVM system, and substantially better than LSTM and attention-based LSTM architectures. On both datasets we show that multiple computational layers could improve the performance. Moreover, our approach is also fast. The deep memory network with 9 layers is 15 times faster than LSTM with a CPU implementation.

这篇文章是介绍有关深度记忆网络和SVM的文章观点的分类方法。

实验结果是比基于LSTM架构的深度记忆网络速度快了15倍。

可以参考因为是文章观点（主旨）分类。

4. **Conditional Generation and Snapshot Learning in Neural Dialogue Systems**

Abstract: Recently a variety of LSTM-based conditional language models (LM) have been applied across a range of language generation tasks. In this work we study various model architectures and different ways to represent and aggregate the source information in an end-to-end neural dialogue system framework. A method called snapshot learning is also proposed to facilitate learning from supervised sequential signals by applying a companion cross-entropy objective function to the conditioning vector. The experimental and analytical results demonstrate firstly that competition occurs between the conditioning vector and the LM, and the differing architectures provide different trade-offs between the two. Secondly, the discriminative power and transparency of the conditioning vector is key to providing both model interpretability and better performance. Thirdly, snapshot learning leads to consistent performance improvements independent of which architecture is used.

提出的问题：最近各种基于LSTM的语言模型已经应用在语言生成任务成为热点。

这篇文章中通过学习各种模型体系结构和不同的方式表示和聚合源信息在一个端到端的神经对话系统框架，这种学习的方法称为“快照学习”。

解决的办法：本篇文章研究模型架构和不同的方法表示汇总源信息在一个终端到另一个终端的神经对话系统框架。

实验和分析结果表明,首先调节向量和LM之间发生竞争和不同的架构提供不同的两者之间权衡。其次,条件反射向量的辨别力和透明度提供了模型的可解释性和更好的性能的关键。

5. **Inducing Domain-Specific Sentiment Lexicons from Unlabeled Corpora**

Abstract**:** A word's sentiment depends on the domain in which it is used. Computational social science research thus requires sentiment lexicons that are specific to the domains being studied. We combine domain-specific word embeddings with a label propagation framework to induce accurate domain-specific sentiment lexicons using small sets of seed words, achieving state-of-the-art performance competitive with approaches that rely on hand-curated resources. Using our framework we perform two large-scale empirical studies to quantify the extent to which sentiment varies across time and between communities. We induce and release historical sentiment lexicons for 150 years of English and community-specific sentiment lexicons for 250 online communities from the social media forum Reddit. The historical lexicons show that more than 5% of sentiment-bearing (non-neutral) English words completely switched polarity during the last 150 years, and the community-specific lexicons highlight how sentiment varies drastically between different communities.

这是一篇有关词语情感（褒义、贬义、中性词）的研究。主要研究在不同的领域和社交场所中词的感情的变化。

6. **Speculation and Negation Scope Detection via Convolutional Neural Networks**

Abstract: Speculation and negation are important information to identify text factuality. In this paper, we propose a Convolutional Neural Network (CNN)-based model with probabilistic weighted average pooling to address speculation and negation scope detection. In particular, our CNN-based model extracts those meaningful features from various syntactic paths between the cues and the candidate tokens in both constituency and dependency parse trees. Evaluation on BioScope shows that our CNN-based model significantly outperforms the state-of-the-art systems on Abstracts, a sub-corpus in BioScope, and achieves comparable performances on Clinical Records, another sub-corpus in BioScope.

推测和否定是识别文本真实性的重要信息。在本文中，我们提出一个基于卷积神经网络（CNN）的模型，使用概率加权平均池来寻址推测和否定范围检测。特别地，我们的基于CNN的模型从区域和依赖分析树中的线索和候选令牌之间的各种句法路径中提取那些有意义的特征。

7. **Solving Verbal Questions in IQ Test by Knowledge-Powered Word Embedding**

Abstract: Verbal comprehension questions appear very frequently in Intelligence Quotient (IQ) tests, which measure human’s verbal ability including the understanding of the words with multiple senses, the synonyms and antonyms, and the analogies among words. In this work, we explore whether such tests can be solved automatically by the deep learning technologies for text data. We found that the task was quite challenging, and simply applying existing technologies like word embedding could not achieve a good performance, due to the multiple senses of words and the complex relations among words. To tackle these challenges, we propose a novel framework to automatically solve the verbal IQ questions by leveraging improved word embedding by jointly considering the multi-sense nature of words and the relational information among words. Experimental results have shown that the proposed framework can not only outperform existing methods for solving verbal comprehension questions but also exceed the average performance of the Amazon Mechanical Turk workers involved in the study.

这是一篇有关IQ测试里解决语言理解问题的论文。

文章里提出一个新的框架，通过联合考虑词的多义性和词之间的关系信息，利用改进的词嵌入自动解决语言智商问题。实验结果表明，提出的框架不仅可以胜过现有的解决语言理解问题的方法，而且还超过参与研究的亚马逊机械工人的平均性能。

推荐建议：IQ测试和我们的问答系统有点相似。而且文章中提出解决语言理解问题的方法，也可以进行学习，试用到问答系统中。

8. **A Position Encoding Convolutional Neural Network Based on Dependency Tree for Relation Classification**

Abstract: With the renaissance of neural network in recent years, relation classification has again

become a research hotspot in natural language processing, and leveraging parse trees is a common and effective method of tackling this problem. In this work, we offer a new perspective on utilizing syntactic information of dependency parse tree and present a position encoding convolutional neural network (PECNN) based on dependency parse tree for relation classification. First, tree based position features are proposed to encode the relative positions of words in dependency

trees and help enhance the word representations. Then, based on a redefinition of“context”, we design two kinds of tree-based convolution kernels for capturing the semantic and structural information provided by dependency trees. Finally, the features extracted by convolution module are fed to a classifier for labelling the semantic relations. Experiments on the benchmark dataset show that PECNN outperforms state-of-the-art approaches. We also compare the effect of different position features and visualize the influence of tree based position feature by tracing back the convolution process.

这篇文章是基于关系分类数的位置编码的CNN。

关系分类是NLP的近年研究热点，利用分析树解决这个问题目前是个通用且有效的方法。

本文提出一个基于依赖分析树的位置编码卷积神经网络（PECNN）用于关系分类。

推荐建议：分类可以用于问答系统的问题分类，而且关系分类是近年NLP的热点

10．**Attention-based LSTM for Aspect-level Sentiment Classification**

Abstract: Aspect-level sentiment classification is a finegrained task in sentiment analysis. Since it

provides more complete and in-depth results,aspect-level sentiment analysis has received much attention these years. In this paper, we reveal that the sentiment polarity of a sentence is not only determined by the content but is also highly related to the concerned aspect.For instance, “The appetizers are ok, but the service is slow.”, for aspect taste, the polarity is positive while for service, the polarity is negative. Therefore, it is worthwhile to explore the connection between an aspect and the content of a sentence. To this end, we propose an Attention-based Long Short-Term

Memory Network for aspect-level sentiment classification. The attention mechanism can concentrate on different parts of a sentence when different aspects are taken as input. We

experiment on the SemEval 2014 dataset and results show that our model achieves state-ofthe-art

performance on aspect-level sentiment classification.

这是使用LSTM在方面级的情绪分类的中的应用。

虽然说是分类但是好像和问题系统的问题分类没有多大关系。

11. **Keyphrase Extraction Using Deep Recurrent Neural Networks on Twitter**

Abstract: Keyphrases can provide highly condensed and valuable information that allows users to quickly acquire the main ideas. The task of automatically extracting them have received considerable attention in recent decades. Different from previous studies, which are usually focused on automatically extracting keyphrases from documents or articles, in this study, we considered the problem of automatically extracting keyphrases from tweets. Because of the length limitations of Twitter-like sites, the performances of existing methods usually drop sharply. We proposed a novel deep recurrent neural network (RNN) model to combine keywords and context information to perform this problem. To evaluate the proposed method, we also constructed a large-scale dataset collected from Twitter. The experimental results showed that the proposed method performs significantly better than previous methods.

这篇文章是使用RNN获取推特文章的Keyphrase（关键词）。他们提出了一种新的深层复发神经网络（RNN）模型来组合关键字和上下文信息来执行此问题。实验结果表明该方法执行明显好于以前方法。

推荐建议：虽然本篇文章是文本的关键字的提取的方法，但是推特中的文本和我们问答系统的问题都是短文本，而且提取关键词可以用于问题的分类中。

12.**On Generating Characteristic-rich Question Sets for QA Evaluation**

Abstract: We present a semi-automated framework for constructing factoid question answering (QA) datasets, where an array of question characteristics are formalized, including structure complexity, function, commonness, answer cardinality, and paraphrasing. Instead of collecting questions and manually characterizing them, we employ a reverse procedure, first generating a kind of graph-structured logical forms from a knowledge base, and then converting them into questions. Our work is the first to generate questions with explicitly specified characteristics for QA evaluation. We construct a new QA dataset with over 5,000 logical form-question pairs, associated with answers from the knowledge base, and show that datasets constructed in this way enable finegrained analyses of QA systems.

这是一遍有关QA系统评估的研究论文。提出了半自动框架构建的特征丰富的问题集。

推荐理由：可以用于我们的问答系统后期的性能评估中

13. How NOT To Evaluate Your Dialogue System: An Empirical Study of Unsupervised Evaluation Metrics for Dialogue Response Generation

Abstract: We investigate evaluation metrics for dialogue response generation systems where supervised labels, such as task completion, are not available. Recent works in response generation have adopted metrics from machine translation to compare a model's generated response to a single target response. We show that these metrics correlate very weakly with human judgements in the non-technical Twitter domain, and not at all in the technical Ubuntu domain. We provide quantitative and qualitative results highlighting specific weaknesses in existing metrics, and provide recommendations for future development of better automatic evaluation metrics for dialogue systems.

这一篇同样是评估系统，对对话系统的评估

14. **Regularizing Text Categorization with Clusters of Words**

Abstract: Regularization is a critical step in supervised learning to not only address overfitting, but also to take into account any prior knowledge we may have on the features and their dependence. In this paper, we explore stateof-the-art structured regularizers and we propose novel ones based on clusters of words from LSI topics, word2vec embeddings and graph-of-words document representation. We show that our proposed regularizers are faster than the state-of-the-art ones and still improve text classification accuracy. Code and data are available online.

基于聚类的正则化文本分类

在本文中，探讨了最先进的结构正则化器，提出基于LSI主题，word2vec嵌入和词语文档表示的词集合的新的。实验结果显示提出的正则化器比最先进的正则化器更快，仍然提高文本分类的准确性。

推荐理由：LSI和word2vec都是最近NLP中文本相似度和文本分类的热点研究方法。

而且文本涉及到正规化分类也是我们的问答系统所需要的。

15. **Creating Causal Embeddings for Question Answering with Minimal Supervision**

Abstract：A common model for question answering (QA) is that a good answer is one that is closely related to the question, where relatedness is often determined using general-purpose lexical models such as word embeddings. We argue that a better approach is to look for answers that are related to the question in a relevant way, according to the information need of the question, which may be determined through task-specific embeddings. With causality as a use case, we implement this insight in three steps. First, we generate causal embeddings cost-effectively by bootstrapping cause-effect pairs extracted from free text using a small set of seed patterns. Second, we train dedicated embeddings over this data, by using task-specific contexts, i.e., the context of a cause is its effect. Finally, we extend a state-of-the-art reranking approach for QA to incorporate these causal embeddings. We evaluate the causal embedding models both directly with a casual implication task, and indirectly, in a downstream causal QA task using data from Yahoo! Answers. We show that explicitly modeling causality improves performance in both tasks. In the QA task our best model achieves 37.3% P@1, significantly outperforming a strong baseline by 7.7% (relative).

问题回答（QA）的常见模型是一个好的答案是与问题密切相关的，其中关联性通常使用通用词汇模型如词嵌入来确定。

提出问题：这篇文章认为更好的方法是寻找答案与问题相关的方式,根据需要问题的信息，这可能是通过特定于任务的映射进行确定。

解决办法：这篇文章认为更好的方法是根据问题的信息需求，以相关的方式寻找与问题相关的答案，这可以通过任务特定的嵌入来确定。

16. **Learning Term Embeddings for Taxonomic Relation Identification Using Dynamic Weighting Neural Network**

Abstract: Taxonomic relation identification aims to recognize the ‘is-a’ relation between two terms. Previous works on identifying taxonomic relations are mostly based on statistical and linguistic approaches, but the accuracy of these approaches is far from satisfactory. In this paper, we propose a novel supervised learning approach for identifying taxonomic relations using term embeddings. For this purpose, we first design a dynamic weighting neural network to learn term embeddings based on not only the hypernym and hyponym terms, but also the contextual information between them. We then apply such embeddings as features to identify taxonomic relations using a supervised method. The experimental results show that our proposed approach significantly outperforms other state-of-the-art methods by 9% to 13% in terms of accuracy for both general and specific domain datasets.

提出问题：以前的大多数研究是基于统计识别分类关系和语言方法，但这些方法的准确性是远不能令人满意。

解决办法：提出一个新颖的监督学习方法，使用术语映射进行识别的关系分类。

推荐理由：分类、关系分类是热点。本文是把**术语嵌入**都加权的动态神经网络的关系分类中，我们可以把考虑嵌入不同种类问题的关键词。

17. **Clustering Question-Answer Archives**

Abstract: Community-driven Question Answering (CQA) systems that crowdsource experiential information in the form of questions and answers and have accumulated valuable reusable knowledge. Clustering of QA datasets from CQA systems provides a means of organizing the content to ease tasks such as manual curation and tagging. In this paper, we present a clustering method that exploits the two-part question-answer structure in QA datasets to improve clustering quality. Our method, MixKMeans, composes question and answer space similarities in a way that the space on which the match is higher is allowed to dominate. This construction is motivated by our observation that semantic similarity between question-answer data (QAs) could get localized in either space. We empirically evaluate our method on a variety of real-world

labeled datasets. Our results indicate that our method significantly outperforms stateof-the-art clustering methods for the task of clustering question-answer archives.

聚类问答系统的研究

提出的问题：QA聚类数据集从CQA系统提供了一种组织内容,以缓解人工管理和标签等任务。

解决的办法：本文提出了一个聚类方法,该方法利用了QA问答两部分结构数据集来提高聚类质量，结果表明,我们的方法明显优于问答先进的聚类方法聚类的任务饮片档案。

18. Convolutional Neural Network Language Models

Abstract**:** Convolutional Neural Networks (CNNs) have shown to yield very strong results in several Computer Vision tasks. Their application to language has received much less attention, and it has mainly focused on static classification tasks, such as sentence classification for Sentiment Analysis or relation extraction. In this work, we study the application of CNNs to language modeling, a dynamic, sequential prediction task that needs models to capture local as well as long-range dependency information. Our contribution is twofold. First, we show that CNNs achieve 11-26% better absolute performance than feed-forward neural language models, demonstrating their potential for language representation even in sequential tasks. As for recurrent models, our model outperforms RNNs but is below state of the art LSTM models. Second, we gain some understanding of the behavior of the model, showing that CNNs in language act as feature detectors at a high level of abstraction, like in Computer Vision, and that the model can profitably use information from as far as 16 words before the target