1.Deep Feature Fusion Network Architectures for Answer Quality Prediction in Community Question Answering

Community Question Answering (cQA) forums have become a popular medium for soliciting answers to specific user questions from experts and experienced users in a given topic. However, for a given question, users sometimes have to sift through a large number of low-quality or irrelevant answers to find out the answer which satisfies their information need. To alleviate this, the problem of Answer Quality Prediction(AQP) aims to predict the quality of an answer posted in response to a forum question. Current AQP systems either learn models using - a) various hand-crafted features(HCF)orb)Deep Learning(DL) techniques which automatically learn the feature representations. In this paper, we propose a novel approach for AQP known as - “Deep Feature Fusion Network (DFFN)” which combines the advantages of both hand-crafted features and deep learning based systems. Given a question-answer pair along with its metadata, a DFFN architecture independently - a) learns features using the Deep Neural Network (DNN) and b) computes hand-crafted features leveraging various external resources and then combines them using a fully connected neural network trained to predict the quality of the given answer. DFFN is an end-end differentiable model and trained as a single system. We propose two different DFFN architectures which vary mainly in the way they model the input question/answer pair - a) DFFN-CNN which uses a Convolutional Neural Network (CNN) and b) DFFN-BLNA which uses a Bi-directional LSTM with Neural Attention(BLNA).Both these proposed variants of DFFN(DFFN-CNN and DFFNBLNA) achieve state-of-the-art performance on the standard SemEval-2015 and SemEval-2016 benchmark datasets and outperforms baseline approaches which individually employ either HCF or DL based techniques alone.

**深层功能融合网络架构的回答质量预测社区问题回答（相关性不大）**

社区问题回答（cQA）论坛已成为征求专家和有经验的用户在给定主题中的特定用户问题的答案的流行媒介。然而，对于给定的问题，用户有时必须筛选大量低质量或不相关的答案以找到满足他们的信息需要的答案。为了减轻这一点，答案质量预测（AQP）的问题旨在预测响应于论坛问题张贴的答案的质量。当前的AQP系统使用 - a）各种手工制造特征（HCF）orb学习模型）深度学习（DL）技术，其自动学习特征表示。在本文中，我们提出一种称为“深特征融合网络（DFFN）”的AQP的新方法，其结合了手工制作特征和基于深度学习的系统的优点。给定问题 - 答案对及其元数据，DFFN架构独立地 - a）使用深层神经网络（DNN）学习特征，和b）利用各种外部资源计算手工制作的特征，然后使用完全连接的神经网络训练以预测给定答案的质量。 DFFN是一个端到端可区分的模型，并训练为单个系统。我们提出两种不同的DFFN架构，其主要在它们对输入问题/答案对建模的方式上有所不同 - a）使用卷积神经网络（CNN）的DFFN-CNN和b）使用具有神经的双向LSTM的DFFN-注意（BLNA）.DFFN（DFFN-CNN和DFFNBLNA）的这些提出的变体在标准SemEval-2015和SemEval-2016基准数据集上实现最先进的性能，并优于单独使用HCF或DL基于技术。

2.Weighted Neural Bag-of-n-grams Model: New Baselines for Text Classification

NBSVM is one of the most popular methods for text classification and has been widely used as baselines for various text representation approaches. It uses Naive Bayes (NB) feature to weight sparse bag-of-n-grams representation. N-gram captures word order in short context and NB feature assigns more weights to those important words. However, NBSVM suffers from sparsity problem and is reported to be exceeded by newly proposed distributed (dense) text representations learned by neural networks. In this paper, we transfer the n-grams and NB weighting to neural models. We train n-gram embeddings and use NB weighting to guide the neural models to focus on important words. In fact, our methods can be viewed as distributed (dense) counterparts of sparse bag-of-n-grams in NBSVM.We discover that n-grams and NB weighting are also effective in distributed representations. As a result, our models achieve new strong baselines on 9 text classification datasets, e.g. on IMDB dataset, we reach performance of 93.5% accuracy, whichexceedspreviousstate-of-the-artresultsobtainedbydeepneuralmodels. All source codes are publicly available at <https://github.com/zhezhaoa/neural_BOW_toolkit.>

**加权神经n克袋模型：文本分类的新基线（相关）**

NBSVM是用于文本分类的最流行的方法之一，并且已经广泛用作各种文本表示方法的基线。它使用朴素贝叶斯（NB）特征来加权稀疏的n-gram表示。N-gram在短的上下文中捕获字顺序，NB特征向这些重要的字分配更多的权重。然而，NBSVM遭受稀疏问题，并且据报道由神经网络学习的新提出的分布式（密集）文本表示超过。在本文中，我们将n元和NB加权转移到神经模型。我们训练n元语法嵌入和使用NB加权来指导神经模型关注重要的词。事实上，我们的方法可以被视为NBSVM中稀疏袋n-gram的分布式（密集）对应。我们发现n-gram和NB权重在分布式表示中也有效。因此，我们的模型在9个文本分类数据集上实现了新的强基线。在IMDB数据集上，我们达到93.5％的精度的性能，其中超过最先进的所获得的双显式模型。所有源代码都公开发布在https://github.com/zhezhaoa/neural\_BOW\_toolkit。

3.UTCNN:a Deep Learning Model of Stance Classification on Social Media Text

Most neural network models for document classification on social media focus on text information to the neglect of other information on these platforms. In this paper, we classify post stance on social media channels and develop UTCNN, a neural network model that incorporates user tastes, topic tastes, and user comments on posts. UTCNN not only works on social media texts, but also analyzes texts in forums and message boards. Experiments performed on Chinese Facebook data and English online debate forum data show that UTCNN achieves a 0.755 macroaverage f-score for supportive,neutral,and unsupportive stance classes on Facebook data,which is significantly better than models in which either user, topic, or comment information is withheld. This model design greatly mitigates the lack of data for the minor class without the use of oversampling. In addition,UTCNN yields a 0.842 accuracy on English online debate forum data, which also significantly outperforms results from previous work as well as other deep learning models, showing that UTCNN performs well regardless of language or platform.

**UTCNN：社交媒体文本姿态分类的深度学习模型 (相关性不大)**

用于社交媒体上的文档分类的大多数神经网络模型集中于文本信息而忽略这些平台上的其他信息。在本文中，我们在社交媒体渠道分类后立场，并开发UTCNN，一个神经网络模型，包括用户的口味，主题口味和用户对帖子的评论。 UTCNN不仅在社交媒体文本上工作，而且还在论坛和留言板中分析文本。在中国Facebook数据和英语在线辩论论坛数据上进行的实验表明，UTCNN在Facebook数据上实现了支持性，中立和不支持的立场类的0.755的宏观平均f分，这显着优于用户，话题或评论的模型信息被扣留。这种模型设计极大地减轻了次级类的数据缺乏，而不使用过采样。此外，UTCNN在英语在线辩论论坛数据上产生了0.842的准确性，这也显着优于以前的工作以及其他深度学习模型的结果，表明UTCNN在不考虑语言或平台的情况下表现良好。

4.Grammatical Templates: Improving Text Difficulty Evaluation for Language Learners

Language students are most engaged while reading texts at an appropriate difficulty level. However, existing methods of evaluating text difficulty focus mainly on vocabulary and do not prioritize grammatical features, hence they do not work well for language learners with limited knowledge of grammar. In this paper, we introduce grammatical templates, the expert-identified units of grammar that students learn from class, as an important feature of text difficulty evaluation. Experimental classification results show that grammatical template features significantly improve text difficulty prediction accuracy over baseline readability features by7.4%. Moreover, we build a simple and human-understandable text difficulty evaluation approach with 87.7% accuracy, using only 5 grammatical template features.

Keywords text difficulty evaluation, education, grammatical templates, language learners.

**语法模板：改进语言学习者的文本难度评估（相关）**

语言学生在阅读适当难度的文本时最热衷。 然而，现有的评估文本难度的方法主要集中在词汇上，并且不优先考虑语法特征，因此它们对于语法知识有限的语言学习者不能很好地工作。 在本文中，我们引入语法模板，专家识别的语法单元，学生从课堂学习，作为文本难度评估的重要特征。 实验分类结果表明，语法模板特征显着提高文本难度预测精度超过基线可读性特征的7.4％。 此外，我们构建一个简单的，人类可以理解的文本难度评估方法，具有87.7％的准确性，只使用5个语法模板特征。

关键词 文本难度评价，教育，语法模板，语言学习者。

5.Neural Attention for Learning to Rank Questions in Community Question Answering

In real-world data, e.g., from Web forums, text is often contaminated with redundant or irrelevant content, which leads to introducing noise in machine learning algorithms. In this paper, we apply Long Short-Term Memory networks with an attention mechanism,which can select important parts of text for the task of similar question retrieval from community Question Answering (cQA) forums. In particular, we use the attention weights for both selecting entire sentences and their subparts, i.e., word/chunk, from shallow syntactic trees. More interestingly, we apply tree kernels to theﬁltered text representations,thus exploiting the implicit features of the subtree space for learning question reranking. Our results show that the attention-based pruning allows for achieving the top position in the cQA challenge of SemEval 2016, with a relatively large gap from the other participants while greatly decreasing running time.

**神经注意学习排名问题在社区问题回答（相关性不大）**

在真实世界的数据中，例如从Web论坛，文本经常被冗余或不相关的内容污染，这导致在机器学习算法中引入噪声。在本文中，我们应用长短期内存网络与注意机制，可以选择文本的重要部分，用于类似问题检索的任务从社区问题回答（cQA）论坛。特别地，我们使用注意权重来从浅的句法树中选择整个句子及其子部分，即词/块。更有趣的是，我们将树内核应用于过滤的文本表示，从而利用子树空间的隐式特征来学习问题重新排序。我们的研究结果表明基于注意的修剪允许实现在cQA挑战在SemEval 2016的顶部位置，与其他参与者相对较大的差距，同时大大减少运行时间。

6.Simple Question Answering by Attentive Convolutional Neural Network

This work focuses on answering single-relation factoid questions over Freebase. Each question can acquire the answer from a single fact of form (subject, predicate, object) in Freebase. This task, simple question answering (SimpleQA), can be addressed via a two-step pipeline: entity linking and fact selection. In fact selection, we match the subject entity in a fact candidate with theentitymentioninthequestionbyacharacter-levelconvolutionalneuralnetwork(char-CNN), and match the predicate in that fact with the question by a word-level CNN (word-CNN). This work makes two main contributions. (i) A simple and effective entity linker over Freebase is proposed. Our entity linker outperforms the state-of-the-art entity linker over SimpleQA task. 1 (ii)A novel attentive max pooling is stacked over word-CNN,so that the predicate representation canbematchedwiththepredicate-focusedquestionrepresentationmoreeffectively. Experiments show that our system sets new state-of-the-art in this task.

**简单问题回答由注意卷积神经网络（相关）**

这项工作侧重于回答关于Freebase的单关系factoid问题。每个问题可以从Freebase中的形式（主语，谓词，对象）的单个事实获取答案。这个任务，简单的问题回答（SimpleQA），可以通过两步管道来解决：实体链接和事实选择。实际上，选择，我们匹配事实候选中的主体实体与字符级卷积神经网络（char-CNN）的查询，并且通过字级CNN（字-CNN）将该事实中的谓词与问题匹配。这项工作有两个主要贡献。 （i）提出了一个简单有效的实体链接器。我们的实体链接器优于SimpleQA任务的最先进的实体链接器。 1（ii）一个新颖的注意最大池集合堆叠在word-CNN上，使得谓词表示可以与聚焦的疑问表示有效。实验表明，我们的系统在这项任务中设定了新的最先进的技术

7.Modeling topic dependencies in semantically coherent text spans with copulas

The exchangeability assumption in topic models like Latent Dirichlet Allocation (LDA) often results in inferring inconsistent topics for the words of text spans like noun-phrases, which are usually expected to be topically coherent. We propose copulaLDA, that extends LDA by integrating part of the text structure to the model and relaxes the conditional independence assumption between the word-specific latent topics given the per-document topic distributions. To this end, we assume that the words of text spans like noun-phrases are topically bound and we model this dependence with copulas. We demonstrate empirically the effectiveness of copulaLDA on both intrinsic and extrinsic evaluation tasks on several publicly available corpora.

**使用copulas在语义一致的文本中建模主题依赖关系（相关性不大）**

主题模型（如潜在Dirichlet分配（LDA））中的可交换性假设常常导致对于文本跨度（如名词短语）的词推断不一致的主题，这通常预期是局部一致的。 我们提出copulaLDA，其通过将文本结构的一部分整合到模型中来扩展LDA，并且放宽在给定每文档主题分布的词特定潜在主题之间的条件独立假设。 为此，我们假设文本跨度像单词短语的词是局部约束，我们用copulas模拟这种依赖。 我们经验证明copulaLDA对内在和外在评价任务在几个公开可用的语料库的有效性。

8.Context-aware Natural Language Generation for Spoken Dialogue Systems

Natural language generation (NLG) is an important component of question answering(QA) systems which has a significant impact on system quality. Most tranditional QA systems based on templates or rules tend to generate rigid and stylised responses without the natural variation of human language. Furthermore, such methods need an amount of work to generate the templates or rules. To address this problem, we propose a Context-Aware LSTM model for NLG. The model is completely driven by data without manual designed templates or rules. In addition, the context information, including the question to be answered, semantic values to be addressed in the response,and the dialogue act type during interaction,are well approached in the neural network model, which enables the model to produce variant and informative responses. The quantitative evaluation and human evaluation show that CA-LSTM obtains state-of-the-art performance

**语音对话系统的语境感知自然语言生成（相关）**

自然语言生成（NLG）是问答（QA）系统的重要组成部分，对系统质量有重大影响。 基于模板或规则的大多数传统QA系统倾向于产生刚性和程式化的响应，而没有人类语言的自然变化。 此外，这样的方法需要大量的工作来生成模板或规则。 为了解决这个问题，我们建议NLG的上下文感知LSTM模型。 该模型完全由数据驱动，没有手动设计的模板或规则。 另外，在神经网络模型中很好地接近了上下文信息，包括要回答的问题，在响应中要解决的语义值和在交互期间的对话行为类型，这使得模型能够产生变体和信息性响应 。 定量评价和人体评价表明，CA-LSTM获得了最先进的性能

9.Get Semantic With Me! The Usefulness of Different Feature Types for Short-Answer Grading

Automated short-answer grading is key to help close the automation loop for large-scale, computerised testing in education. A wide range of features on different levels of linguistic processing has been proposed so far. We investigate the relative importance of the different types of features across a range of standard corpora (both from a language skill and content assessment context, in English and in German). We find that features on the lexical, text similarity and dependency level often suffice to approximate full-model performance. Features derived from semantic processing particularly benefit the linguistically more varied answers in content assessment corpora.

获取语义与我！ 不同特征类型对短回答分级的有用性（相关性不大）

自动短回答分级是帮助关闭教育中大规模计算机化测试的自动化循环的关键。 到目前为止，已经提出了不同级别的语言处理的广泛的特征。 我们调查不同类型的特征在一系列标准语料库（从语言技能和内容评估语境，英语和德语）的相对重要性。 我们发现，词汇，文本相似性和依赖性水平上的特征通常足以近似全模型性能。 源自语义处理的特征特别有益于在语言学上更多样的内容评估语料库的答案。

10.Robust Text Classification for Sparsely Labelled Data Using Multi-level Embeddings

The conventional solution for handling sparsely labelled data is extensive feature engineering. This is time consuming and task and domain specific. We present a novel approach for learning embedded features that aims to alleviate this problem. Our approach jointly learns embeddings at different levels of granularity (word, sentence and document) along with the class labels. The intuition is that topic semantics represented by embeddings at multiple levels results in better classification. We evaluate this approach in unsupervised and semi-supervised settings on two sparsely labelled classification tasks, outperforming the handcrafted models and several embedding baselines.

**使用多级嵌入的稀疏标签数据的鲁棒文本分类(相关性不大)**

用于处理稀疏标记数据的常规解决方案是广泛的特征工程。 这是耗时的，并且任务和域特定。 我们提出一种新颖的方法来学习嵌入式功能，旨在减轻这个问题。 我们的方法联合学习嵌入在不同的粒度级别（词，句子和文档）以及类标签。 直觉是，通过在多个级别的嵌入表示的主题语义导致更好的分类。 我们在无监督和半监督设置中对两个稀疏标记分类任务评估此方法，优于手工模型和几个嵌入基线。

11.Hybrid Question Answering over Knowledge Base and Free Text

Recent trend in question answering (QA) systems focuses on using structured knowledge bases (KBs) to find answers. While these systems are able to provide more precise answers than information retrieval (IR) based QA systems, the natural incompleteness of KB inevitably limits the question scope that the system can answer. In this paper, we present a hybrid question answering(hybrid-QA)systemwhichexploitsbothstructuredknowledgebaseandfreetexttoanswera question. The main challenge is to recognize the meaning of a question using these two resources, i.e., structured KB and free text. To address this,we map relational phrases to KB predicates and textual relations simultaneously, and further develop an integer linear program (ILP) model to infer on these candidates and provide a globally optimal solution. Experiments on benchmark datasets show that our system can benefit from both structured KB and free text, outperforming the state-of-the-art systems.

**混合问题回答知识库和自由文本（相关）**

问答（QA）系统的最近趋势集中在使用结构化知识库（KBs）来寻找答案。虽然这些系统能够提供比基于信息检索（IR）的QA系统更精确的答案，但是KB的自然不完全性不可避免地限制了系统可以回答的问题范围。在本文中，我们提出一个混合问题回答（混合QA）系统，其中的四个结构的知识库和问题。主要的挑战是使用这两个资源，即结构化的KB和自由文本来识别问题的含义。为了解决这个问题，我们将关系短语同时映射到KB谓词和文本关系，并进一步开发一个整数线性规划（ILP）模型来推断这些候选项并提供一个全局最优解。基准数据集的实验表明，我们的系统可以受益于结构化的KB和自由文本，优于最先进的系统。

12.Combination of Convolutional and Recurrent Neural Network for Sentiment Analysis of Short Texts

Sentiment analysis of short texts is challenging because of the limited contextual information they usually contain. In recent years, deep learning models such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs) have been applied to text sentiment analysis with comparatively remarkable results. In this paper, we describe a jointed CNN and RNN architecture, taking advantage of the coarse-grained local features generated by CNN and long-distance dependencies learned via RNN for sentiment analysis of short texts. Experimentalresultsshowanobviousimprovementuponthestate-of-the-artonthreebenchmarkcorpora,MR,SST1and SST2, with 82.28%, 51.50% and 89.95% accuracy, respectively.

**卷积和反复神经网络的组合的情绪分析的短文本（相关性不大）**

短文本的情绪分析是有挑战性的，因为它们通常包含的有限的上下文信息。 近年来，诸如卷积神经网络（CNN）和复发神经网络（RNN）的深度学习模型已经应用于文本情绪分析，具有相当显着的结果。 在本文中，我们描述一个联合的CNN和RNN架构，利用CNN产生的粗粒度局部特征和通过RNN学习的长距离依赖性用于短文本的情感分析。 实验结果显示，研究结果显示，最高级的标准品，MR，SST1和SST2的精确度分别为82.28％，51.50％和89.95％。

13.Towards Sub-Word Level Compositions for Sentiment Analysis of Hindi-English Code Mixed Text

Sentiment analysis (SA) using code-mixed data from social media has several applications in opinion mining ranging from customer satisfaction to social campaign analysis in multilingual societies. Advances in this area are impeded by the lack of a suitable annotated dataset. We introduce a Hindi-English (Hi-En) code-mixed dataset for sentiment analysis and perform empiricalanalysiscomparingthesuitabilityandperformanceofvariousstate-of-the-artSAmethods in social media. In this paper, we introduce learning sub-word level representations in LSTM (Subword-LSTM) architecture instead of character-level or word-level representations. This linguistic prior in our architecture enables us to learn the information about sentiment value of important morphemes. This also seems to work well in highly noisy text containing misspellings as shown in our experiments which is demonstrated in morpheme-level feature maps learned by our model. Also, we hypothesize that encoding this linguistic prior in the Subword-LSTM architecture leads to the superior performance. Our system attains accuracy 4-5% greater than traditional approaches on our dataset, and also outperforms the available system for sentiment analysis in Hi-En code-mixed text by 18%.

**针对印地语 - 英语代码混合文本情感分析的子词水平组成（相关性不大）**

使用来自社交媒体的代码混合数据的情感分析（SA）在意见挖掘中具有多个应用，从多语言社会中的客户满意度到社交活动分析。这一领域的进展受到缺乏适当的注释数据集的阻碍。我们引入一个用于情绪分析的印地语 - 英语（Hi-En）代码混合数据集，并在社交媒体中进行经验分析，比较各种现有技术方法的适合性和性能。在本文中，我们介绍了LSTM（Subword-LSTM）架构中的学习子字层级表示，而不是字符级或字级表示。这种在我们的架构中的语言先验使我们能够学习重要语素的情感价值的信息。这也似乎在高度嘈杂的文本包含拼写错误，如我们的实验所示，在我们的模型学习的语素级特征地图中显示。此外，我们假设在Subword-LSTM架构中编码这个语言先验，导致出色的性能。我们的系统达到比我们的数据集上的传统方法大4-5％的精度，并且在Hi-En代码混合文本中的情感分析的可用系统优于18％。

14.Constraint-Based Question Answering with Knowledge Graph

Web Questions and Simple Questions are two benchmark data-sets commonly used in recent knowledge-based question answering (KBQA) work. Most questions in them are ‘simple’ questionswhichcanbeansweredbasedonasinglerelationintheknowledgebase. Such data-set slack the capability of evaluating KBQA systems on complicated questions. Motivated by this issue, we release a new data-set, namely Complex Questions1, aiming to measure the quality of KBQA systems on ‘multi-constraint’ questions which require multiple knowledge base relations to get the answer. Beside, we propose a novel systematic KBQA approach to solve multi-constraint questions. Compared to state-of-the-art methods, our approach not only obtains comparable results on the two existing benchmark data-sets, but also achieves significant improvements on the Complex Questions.

**基于约束的问题回答知识图（无关）**

Web问题和简单问题是最近基于知识的问答（KBQA）工作中常用的两个基准数据集。 他们中的大多数问题是“简单”的问题，可以基于知识库中的单一关系。这样的数据集松弛评估KBQA系统的复杂问题的能力。 受这个问题的启发，我们发布了一个新的数据集，即复杂问题1，旨在测量KBQA系统的质量“多约束”问题，需要多个知识库关系来得到答案。 此外，我们提出一种新的系统KBQA方法来解决多约束问题。 与最先进的方法相比，我们的方法不仅在两个现有的基准数据集上获得可比较的结果，而且在复杂问题上实现了显着的改进。

15.CNN-and LSTM-based Claim Classification in Online User Comments

When processing arguments in online user interactive discourse, it is often necessary to determine their bases of support. In this paper, we describe a supervised approach, based on deep neural networks, for classifying the claims made in online arguments. We conduct experiments using convolutional neural networks (CNNs) and long short-term memory networks (LSTMs) on two claim data sets compiled from online user comments. Using different types of distributional word embeddings, but without incorporating any rich,expensive set of features,we achieve a significant improvement over the state of the art for one data set (which categorizes arguments as factual vs. emotional), and performance comparable to the state of the art on the other data set (which categorizes propositions according to their verifiability). Our approach has the advantages of using a generalized, simple, and effective methodology that works for claim categorization on different data sets and tasks.

**在线用户评论中基于CNN和LSTM的声明分类（相关）**

当在在线用户交互话语中处理论证时，通常需要确定它们的支持基础。在本文中，我们描述一种监督方法，基于深层神经网络，用于分类在在线论据的索赔。我们使用卷积神经网络（CNN）和长期短期记忆网络（LSTM）对从在线用户评论编译的两个索赔数据集进行实验。使用不同类型的分布式字嵌入，但没有并入任何丰富，昂贵的特征集合，我们实现了对于一个数据集（将参数分类为事实与情绪）的现有技术的显着改进，并且性能可与其他数据集（根据其可验证性对命题进行分类）的技术水平。我们的方法具有使用广泛，简单，有效的方法的优点，该方法适用于对不同数据集和任务的权利要求分类。

16.Reading and Thinking: Re-read LSTM Unit for Textual Entailment Recognition

Recognizing Textual Entailment (RTE) is a fundamentally important task in natural language processing that has many applications. The recently released Stanford Natural Language Inference (SNLI1) corpus has made it possible to develop and evaluate deep neural network methods for the RTE task. Previous neural network based methods usually try to encode the two sentences and send them together into multi-layer perceptron, or use LSTM-RNN to link two sentence together while using attention mechanic to enhance the model’s ability. In this paper, we propose to use the intensive reading mechanic, which means to re-read the sentence (read the sentence again) according to the memory of the other sentence for a better understanding of the sentence pair. The re-read process can be applied alternatively between the two sentences. Experiments show that we achieve results better than current state-of-art equivalents.

**重读LSTM单位的文本识别（相关）**

识别文本约束（RTE）是具有许多应用的自然语言处理中的根本重要的任务。 最近发布的斯坦福自然语言推理（SNLI1）语料库使得开发和评估RTE任务的深层神经网络方法成为可能。 以前的基于神经网络的方法通常尝试编码两个句子并将它们一起发送到多层感知器，或使用LSTM-RNN链接两个句子在一起，同时使用注意力机制来增强模型的能力。 在本文中，我们建议使用密集阅读技巧，这意味着根据另一句话的记忆重新读取句子（再次阅读句子），以更好地理解句子对。 重读过程可以替代地应用于两个句子之间。 实验表明，我们实现的结果优于当前的技术水平。

17.A Paraphrase and Semantic Similarity Detection System for User Generated Short-Text Content on Microblogs

Existing systems deliver high accuracy and F1-scores for detecting paraphrase and semantic similarity on traditional clean-text corpus. For instance, on the clean-text Microsoft Paraphrase benchmark database, the existing systems attain an accuracy as high as 0.8596. However, existing systems for detecting paraphrases and semantic similarity on user-generated short-text content on microblogs such as Twitter, comprising of noisy and ad hoc short-text, needs significant research attention. In this paper, we propose a machine learning based approach towards this. We propose a set of features that, although well-known in the NLP literature for solving other problems, have not been explored for detecting paraphrase or semantic similarity, on noisy user-generated short-text data such as Twitter. We apply support vector machine (SVM) based learning. We use the benchmark Twitter paraphrase data, released as a part of SemEval 2015, for experiments. Our system delivers a paraphrase detection F1-score of 0.717 and semantic similarity detection F1-score of 0.741, thereby significantly outperforming the existing systems, that deliver F1-scores of 0.696 and 0.724 for the two problems respectively. Our features also allowustoobtainarankamongthetop-10,when trained on the Microsoft Paraphrase corpus and tested on the corresponding test data,therebyempiricallyestablishingourapproachasubiquitous across the different paraphrase detection databases.

**用于微博的用户生成短文内容的释义和语义相似度检测系统（相关）**

现有系统提供高精度和F1分数用于检测传统干净文本语料库上的释义和语义相似性。例如，在纯文本Microsoft Paraphrase基准数据库上，现有系统的精度高达0.8596。然而，用于检测微博（例如Twitter）上的用户生成的短文内容上的释义和语义相似性的现有系统需要重要的研究关注，包括嘈杂和特设短文本。在本文中，我们提出了一种基于机器学习的方法。我们提出了一组特征，虽然在NLP文献中是众所周知的用于解决其他问题，但是没有被探索用于在噪声用户生成的短文本数据（例如Twitter）上检测释义或语义相似性。我们应用基于支持向量机（SVM）的学习。我们使用基准Twitter释义数据，作为SemEval 2015的一部分发布，用于实验。我们的系统提供了改写检测F1评分0.717和语义相似性检测F1评分0.741，从而显着优于现有系统，分别为两个问题提供0.696和0.724的F1得分。我们的特征也允许在微软翻译语料库上训练并在相应的测试数据上进行测试，从而在不同的释义检测数据库之间广泛建立自己的语言。

18.Sequence to Backward and Forward Sequences: A Content-Introducing Approach to Generative Short-Text Conversation

Using neural networks to generate replies in human-computer dialogue systems is attracting increasing attention over the past few years. However, the performance is not satisfactory: the neural network tends to generate safe, universally relevant replies which carry little meaning. In this paper, we propose a content-introducing approach to neural network-based generative dialogue systems. We first use pointwise mutual information (PMI) to predict a noun as a keyword, reflecting the main gist of the reply. We then propose seq2BF, a “sequence to backward and forward sequences”model,which generates a reply containing the given keyword. Experimental results show that our approach significantly outperforms traditional sequence-to-sequence models in terms of human evaluation and the entropy measure, and that the predicted keyword can appear at an appropriate position in the reply.

**序列向后和向前序列：内容介绍方法生成短文对话（相关）**

使用神经网络在人机对话系统中产生回答在过去几年中越来越受到关注。然而，性能不令人满意：神经网络往往生成安全，普遍相关的答复，意义很小。在本文中，我们提出一种基于神经网络的生成式对话系统的内容介绍方法。我们首先使用点互信息（PMI）来预测一个名词作为关键词，反映回复的主要要点。然后，我们提出seq2BF，一个“序列向后和向前序列”模型，生成包含给定关键字的答复。实验结果表明，我们的方法在人类评估和熵测量方面显着优于传统的序列到序列模型，并且预测关键词可以出现在答复中的适当位置。

19.Text Classification Improved by Integrating Bidirectional LSTM with Two-dimensional Max Pooling

Recurrent Neural Network (RNN) is one of the most popular architectures used in Natural Language Processsing (NLP) tasks because its recurrent structure is very suitable to process variable length text. RNN can utilize distributed representations of words by first converting the tokens comprising each text into vectors, which form a matrix. And this matrix includes two dimensions: the time-step dimension and the feature vector dimension. Then most existing models usually utilize one-dimensional (1D) max pooling operation or attention-based operation only on the time-step dimension to obtain a fixed-length vector. However, the features on the feature vector dimension are not mutually independent, and simply applying 1D pooling operation over the time-step dimension independently may destroy the structure of the feature representation. On the other hand, applying two-dimensional (2D) pooling operation over the two dimensions may sample more meaningful features for sequence modeling tasks. To integrate the features on both dimensions of the matrix, this paper explores applying 2D max pooling operation to obtain a fixed-length representation of the text. This paper also utilizes 2D convolution to sample more meaningful information of the matrix. Experiments are conducted on six text classification tasks, including sentiment analysis, question classification, subjectivity classification and newsgroup classification. Compared with the state-of-the-art models, the proposed models achieve excellent performance on 4 out of 6 tasks. Specifically, one of the proposed models achieves highest accuracy on Stanford Sentiment Treebank binary classification and fine-grained classification tasks.

**通过将双向LSTM与二维最大池集成来改进文本分类（相关度不大）**

递归神经网络（RNN）是自然语言处理（NLP）任务中使用的最流行的体系结构之一，因为其循环结构非常适合于处理变长文本。 RNN可以通过首先将包括每个文本的令牌转换为形成矩阵的向量来利用词的分布式表示。该矩阵包括两个维度：时间步长维度和特征向量维度。然后，大多数现有模型通常仅利用一维（1D）最大池操作或基于注意的操作在时间步长维上获得固定长度向量。然而，特征向量维上的特征不是相互独立的，并且简单地在时间步长维上应用1D池化操作可以独立地破坏特征表示的结构。另一方面，在二维上应用二维（2D）池操作可以对序列建模任务采样更有意义的特征。为了在矩阵的两个维上集成特征，本文探讨了应用2D最大池操作以获得文本的固定长度表示。本文还利用2D卷积来对矩阵的更有意义的信息进行采样。对六个文本分类任务进行实验，包括情感分析，问题分类，主观性分类和新闻组分类。与最先进的模型相比，提出的模型在6项任务中的4项上实现了出色的性能。具体来说，所提出的模型之一在斯坦福情绪树库二进制分类和细粒度分类任务中达到最高准确度。

20.An Interactive System for Exploring Community Question Answering Forums

We present an interactive system to provide effective and efficient search capabilities in Community Question Answering (cQA) forums. The system integrates state-of-the-art technology for answer search with a Web-based user interface specifically tailored to support the cQA forum readers. The answer search module automatically finds relevant answers for a new question by exploring related questions and the comments within their threads. The graphical user interface presents the search results and supports the exploration of related information. The system is running live as a part of the Qatar Living forums.

**探索社区问题回答论坛的交互系统（相关）**

我们提出一个交互式系统，以提供有效和高效的搜索功能在社区问题回答（cQA）论坛。 该系统集成了最先进的技术用于答案搜索与基于Web的用户界面，专门为支持cQA论坛读者量身定制。答案搜索模块通过探索相关问题和他们的话题中的评论来自动地找到新问题的相关答案。图形用户界面呈现搜索结果并支持对相关信息的探索。 该系统作为卡塔尔生活论坛的一部分正在运行。

21.The Open Framework for Developing Knowledge Base And Question Answering System

Developing a question answering(QA)system is a task of implementing and integrating modules of different technologies and evaluating an integrated whole system, which inevitably goes with a collaboration among experts of different domains. For supporting a easy collaboration, this demonstration presents the open framework that aims to support developing a QA system in collaborative and intuitive ways. The demonstration also shows the QA system developed by our novel framework.

**开发知识库和问题回答系统的开放框架（相关度不大）**

开发问答（QA）系统是实现和集成不同技术的模块和评估整合的整个系统的任务，这不可避免地伴随着不同领域的专家的合作。 为了支持简单的协作，本演示提供了开放框架，旨在支持以协作和直观的方式开发QA系统。 演示还展示了我们的新框架开发的QA系统。

22.Natural Language Processing for Intelligent Access to Scientific Information

During the last decade the amount of scientific information available on-line increased at an unprecedented rate. As a consequence, nowadays researchers are overwhelmed by an enormous and continuously growing number of articles to consider when they perform research activities like the exploration of advances in specific topics, peer reviewing, writing and evaluation of proposals. Natural Language Processing Technology represents a key enabling factor in providing scientists with intelligent patterns to access to scientific information. Extracting information from scientific papers, for example, can contribute to the development of rich scientific knowledge bases which can be leveraged to support intelligent knowledge access and question answering. Summarization techniques can reduce the size of long papers to their essential content or automatically generate state-of-the-art-reviews. Paraphrase or textual entailment techniques can contribute to the identification of relations across different scientific textual sources. This tutorial provides an overview of the most relevant tasks related to the processing of scientific documents, including but not limited to the in-depth analysis of the structure of the scientific articles, their semantic interpretation, content extraction and summarization.

**自然语言处理，用于智能获取科学信息（相关）**

在过去十年中，在线数量的科学信息以前所未有的速度增长。因此，如今的研究人员不断增加的数量的文章，当他们进行研究活动，如探索特定主题的进展，同行评审，写作和评估的建议时，考虑。自然语言处理技术是为科学家提供获取科学信息的智能模式的关键的有利因素。例如，从科学论文中提取信息可以有助于开发丰富的科学知识库，可以利用它来支持智能知识访问和问答。汇总技术可以将长纸张的尺寸减小到其基本内容，或自动生成最先进的评论。释义或文本蕴涵技术可以有助于确定不同科学文本来源之间的关系。本教程概述了与处理科学文档相关的最相关的任务，包括但不限于对科学文章结构，其语义解释，内容提取和摘要的深入分析。